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**Investigating the Effectiveness of Using Artificial Intelligence (AI) Mobile Applications,
ELSA Speak, to Enhance Listening and Speaking Proficiency**

The Case of First Year Students of English Department at Ouargla University.

Presented and publicly defended by

Ikram AZEBCHIKH

Iness BOUSSAID

Supervised by

Farida SADOUNE

Jury

Dr. Farida SADOUNE	Supervisor	Ouargla university.
Dr. Youcef BENCHEIKH	Examiner	Ouargla university.
Dr. Nouredine BELARBI	President	Ouargla university.

Academic year: 2023/2024

Dedications

In the name of Allah, Most Merciful, and Most Compassionate God's praise

and peace upon our prophet Mohammed

With deep love, this humble work is wholeheartedly dedicated to

My beloved parents Tahar and Keira,

The soul of my grandfather Ahmed and my supportive grandmother Aness,

My inspirational grandparents Messoud and Sabah,

My humble brothers,

All who answered the call with no hesitation or delay through day and night.

AZEBCHIKHIGRAM

I dedicate this work to my lovely parents Habiba and Lakhmissi.

My adorable sisters Asma, Yasmine, and Safia and her husband, and her

daughter Arinas

I dedicate it also to my brothers Nadjib, Abderrazek, and Ibrahim.

To the soul of my grandparents Elmahboubi and Rabia,

To all my family and my all friends.

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Abstract

The current study aims to investigate the effectiveness of using Artificial Intelligence (AI) mobile applications in developing first year Bachelor students ' listening and speaking skills of English Department at Kasdi Merbah University in Ouargla. The significance of the research is to explore the efficacy of these tools in enhancing listening and speaking in which can be significant in contributing the teaching method in language educations. In order to answer the stated questions and test research hypotheses, a mixed method approach is employed. Therefore, a questionnaire and a t- test are conducted to gather the required data. After the analysis of the obtained data, the questionnaire's results suggest that the use of AI-driven mobile applications can assist learners to improve listening and speaking abilities, while t-test's findings propose that the use of AI-supported language learner mobile applications, particularly *ELSA*, tend to improve listening and speaking skills.

Keywords: Artificial Intelligence, Listening, Speaking, *ELSA*, Mobile Application

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List of Abbreviations

AI: Artificial Intelligence.

AIEd: Artificial Intelligence in Education.

App:Application.

ASR: Automatic Speech Recognition.

AWE: Automated Writing Evaluation.

CALL: Computer-Assisted Language Learning.

CDA: Computerized Dynamic Assessment.

CF: Corrective Feedback.

DA: Dynamic Assessment .

DDL:Data-Driven Learning.

EFL: English as a Foreign Language.

ELSA: English Language Speech Assistant

FL: Foreign Languages.

FLA: Foreign Language Anxiety.

GE: General English.

ICALL: Intelligent Computer-Assisted Language Learning.

ILTS: Intelligent Language Tutoring Systems.

IMALL: Intelligent Mobile-Assisted Language Learning.

IPA: Intelligent Personal Assistance.

IPA: Intelligent Personal Assistants.

MALL: Mobile Assisted Language Learning.

NLP:Natural Language Processing.

PLL: Personalized Language Learning.

SPSS: Statistical Package for the Social Sciences.

VR: Virtual Reality.

General Introduction

In the field of education technology, the emergence of mobile technologies in the early 2000s gave rise to a new acronym: Mobile Assisted Language Learning (MALL). According to Yoon and Kim (2020), MALL refers to any language learning mobile applications that make the learning process accessible anytime and anywhere. This innovative approach has found its way into unexpected spaces where technology intersects with everyday activities.

With the emergence of Artificial Intelligence (AI) technologies, Intelligent Mobile-Assisted Language Learning (IMALL) has appeared as a new educational approach. According to Obari and Lambacher (2019), IMALL represents the amalgamation of MALL and AI, combining the portability and accessibility of mobile devices with the intelligent features of AI technologies. In the field of education, AI is increasingly being explored as a promising tool to promote language learning and teaching, particularly in the development of EFL Oral Skill.

In the contemporary world, there has been an increasing emphasis on the need for English language proficiency, particularly in listening and speaking. Oral skills are recognized as crucial aspects in the study of a second or foreign language. Consequently, several new teaching techniques have been developed to improve language learning, including the use of IMALL to enhance listening and speaking skills.

The use of AI in language instruction has the potential to promote autonomy, motivation, engagement. In this regard, AI-driven language learning applications offer learners a personalized learning experience, adaptive language content, accessibility, instant feedback, and tracking the learning process. Despite numerous studies exploring the effect of IMALL on various aspects and skills of language learning, the literature still lacks sufficient research studies investigating its effects on L2 speaking and listening. In

particular, little research attention has been given to the use of AI-based language learning applications to improve speaking and listening in Algeria. Therefore, further research is crucial to enhance the body of literature, eliciting empirical evidence for the investigation of the efficacy and practical use of mobile technology.

1. The Statement of the Problem

Teaching and learning speaking and listening in EFL settings pose significant challenges due to the complexities involved, such as engaging in presentations, discussions, lectures, and conversations. The emergence of artificial intelligence has led to the development of various programs and applications aimed at assisting learners in mastering these skills. Therefore, this study seeks to investigate the effectiveness of using artificial intelligence in improving speaking and listening skills

2. The Aim of the Study

The purpose of this study is to investigate the effectiveness of AI-based applications in improving the speaking and listening skills of first year Bachelor students and explore *ELSA's* effects on speaking and listening abilities.

3. Research Objectives

The objectives of this study are:

- To explore the attitudes of first-year Bachelor students of the English Department at Kasdi Merbah University in Ouargla towards the utilization of Artificial Intelligence applications for enhancing listening and speaking skills.
- To assess the effectiveness of AI-based applications in improving listening and speaking skills among first year Bachelor students of the English Department at Kasdi Merbah University in Ouargla.

- To determine the effects of *ELSA* (English Language Speech Assistant) on the listening and speaking abilities of first year Bachelor students of the English Department at Kasdi Merbah University in Ouargla.

4. Research Questions

To fulfill the objectives of this study, it is essential to address the following questions:

- What are the attitudes of first-year Bachelor students of the English Department at Kasdi Merbah University in Ouargla towards the use of Artificial Intelligence applications for improving listening and speaking skills?
- How effective are AI-based applications in enhancing listening and speaking skills among first-year Bachelor students of the English Department at Kasdi Merbah University in Ouargla?
- What are the effects of *ELSA* (English Language Speech Assistant) on the listening and speaking abilities of first-year Bachelor students of the English Department at Kasdi Merbah University in Ouargla?

5. Research Hypotheses

The hypotheses of the study are:

- First year Bachelor students of the English Department at KasdiMerbah University in Ouargla will demonstrate positive attitudes towards the use of Artificial Intelligence applications for improving listening and speaking skills.
- The use of AI-based applications significantly enhances listening and speaking skills among first year Bachelor students of English Department at KasdiMerbah University in Ouargla.
- The implementation of *ELSA* (English Language Speech Assistant) application will positively impacts the listening and speaking abilities of first-year Bachelor students of English Department at Kasdi Merbah University in Ouargla.

6. The Significance of the Study

In fact, the use of Artificial Intelligence (AI) has seen a significant increase in the last years. In this regard, exploring the effectiveness of AI-based applications in enhancing speaking and listening skills can contribute to improving teaching methods and curriculum development in language education, particularly for EFL learners. Furthermore, investigating EFL learners' attitudes towards AI-based applications provides insights into the acceptance and integration of technology in language learning contexts, paving the way for more effective and innovative educational practices. Moreover, studies on using AI to improve listening and speaking are limited, especially in the context of EFL in Algeria

7. The methodology

The researchers aim to investigate the effectiveness of using AI-based mobile applications, employing a mixed-method approach for data collection in this study. Initially, a questionnaire is designed and administered among 57 first-year Bachelor students of the English Department at Kasdi Merbah University in Ouargla to elicit the students' attitudes towards Artificial Intelligence applications for enhancing both listening and speaking skills, as well as to verify the effectiveness of using these tools in improving the two skills. Subsequently, a t-test is conducted with a sample of 19 students to assess the effectiveness of AI-based language learning applications, particularly focusing on *ELSA*, in improving listening and speaking skills.

8. Population and Sample

The population of this study comprises first year Bachelor students of English Department at KasdiMerbah University in Ouargla. The sample size of questionnaire is 57 students, while the sample of t-test is 19. Additionally, the sampling strategy in both methodologies is random.

9. Limitation

- Although the Application of the *ELSA* was widespread between learners, the available version was limited. In addition, the access to the premium version was too expensive.

10. The Definition of Key Terms and Variables

10.1. Artificial intelligence

According to Popenici and Kerr (2017), Artificial intelligence refers to an automated system that is capable to mimic human intellectual processes such as reasoning, and conduct human activities such as participate in oral interaction.

10.2. Listening skills

Listening involves the process of receiving, interpreting, remembering, and storing sounds to respond later.

10.3. Speaking skills

Speaking refers to the abilities that learners use to express their ideas, perceptions, and experiences verbally.

11. The Structure of the Dissertation

This dissertation composes of an independent variable, which is artificial intelligence, and two dependent variables, which are listening and speaking. The overall framework of this dissertation is divided into two chapters: theoretical and practical. Therefore, the theoretical section includes a review of the literature concerning the three variables, while the practical section represents the study's fieldwork.

The present study is structured into two main chapters, in addition to the introduction and conclusion sections. The introduction section presents a general overview of the study, including the background, statement of the problem, aim, significance, objectives, questions, hypothesis, methodology, population, sample, limitations, and the definition of key terms and variables. Chapter one reviews the relevant literature, which is divided into two sections. The

first section is devoted to AI in EFL teaching and learning, including its definition, components, MALL, IMALL, AI-powered mobile app technologies and their applications for language learning and teaching, advantages, and disadvantages of AI-based language learning mobile applications. The second section reviews speaking and listening skills, including their processes, sub-skills, usage in language teaching and learning, the implementation of AI, and seven examples of AI-driven language learning applications. Chapter two is devoted to the analytical framework, encompassing the methodological design, data analysis and interpretations, as well as results' discussions. Then, the conclusion section is dedicated to provide a general conclusion that overviews all that has been done throughout the entire study. Lastly, the work concludes with a list of references, appendices, and an abstract written in Arabic and French.

Chapter I:

Theoretical Overview

Introduction

The first chapter explores the theoretical framework of the study, where the literature was extensively examined. According to the nature of study, this chapter comprises two primary sections, each offering a detailed overview of key aspects of the research. The first section focuses on Artificial Intelligence in EFL Teaching and Learning, while the second section emphasizes speaking and listening skills.

Section I: Artificial Intelligence in EFL Teaching and Learning

The first section presents the previous literature concerning Artificial Intelligence in EFL Teaching and Learning, AI definition, components, advantages, disadvantages, and the applications of AI-based mobile tools in language teaching and learning. In addition, it focuses on Mobile-Assisted Language Learning (MALL) and Intelligent Mobile-Assisted Language Learning (IMALL)

1.1. Definition of Artificial Intelligence

Recently, one of the prominent technologies is AI. "It is a broad field that is used in many disciplines such as computer science, statistics, linguistics, psychology, and decision science" (Ghareeb, 2020, p. 78). It encompasses a wide-ranging domain utilized across various disciplines including computer science and linguistics. United States Defense Science Board (2016) defines AI as "the capability of computer systems to perform tasks that normally require human intelligence (e.g., perception, conversation, decision-making)" (p. 05). AI refers to the creation of computer systems that can perform tasks requiring human-like intelligence. Moreover, McCarthy (2007) considers AI as science and defines it as follows:

It is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand

human intelligence, but AI does not have to confine itself to methods that are biologically observable. (p. 02)

1.2.AI Components

Artificial Intelligence serves as a broad category encompassing various specialized components, each designed to serve a specific purpose within the realm of AI. Over several decades, numerous researchers, scientists, and innovators introduced eight elements of AI including:

1.2.1. Natural Language Processing

According to Jurafsky and Martin (2000), Natural Language Processing (NLP) is a field of computer science, linguistics, and artificial intelligence concerned with the interactions between technological devices and human languages. It refers to specific algorithms developed to enable technological devices to input, analyze, and output language in a way that is similar to human language.

1.2.2. Neural Networks

A neural network is a computational model inspired by the function of the brain. It consists of networks of interconnected neurons. These networks are used for speech and language processing, such as natural language understanding and machine translation. (Jurafsky & Martin, 2000)

1.2.3. Vision

It refers to the ability of a computer system to understand and interpret visual information, such as images or video, like how humans perceive and comprehend visual stimuli. (Jurafsky & Martin, 2000)

1.2.4. *Chatbots and Dialogue Systems*

Chatbots are computer programs or artificial intelligence agents designed to engage in conversation with human users, through text or speech interactions. (Jurafsky& Martin, 2000)

1.2.5. *Machine Learning*

Machine learning is an AI technology. It allows machines to learn without having previously been programmed to perform specific tasks. For this purpose, it needs Big Data to function. (Jurafsky& Martin, 2000)

1.2.6. *Automatic Speech Recognition and Text-to-Speech*

Automatic Speech Recognition and Text-to-Speech are one of the significant components of spoken language processing. Automatic speech recognition is a technology that processes human spoken language and converts it to text. However, text-to-speech refers to a technology that enables text to be converted into speech sounds that are similar to human sounds. (Jurafsky& Martin, 2000)

1.2.7. *Expert Systems*

Expert Systems are computer programs designed to mimic the decision-making abilities of a human expert in a particular domain or field. According to Jurafsky and Martin (2000), expert systems incorporate specialized knowledge and reasoning mechanisms to solve complex problems within a specific domain.

1.2.8. *Evolutionary Computation*

Evolutionary Computation is a problem-solving approach inspired by biological evolution. It involves creating populations of potential solutions, and then selecting the best solutions to form new generations. Gradually, this process leads to the evolution of better answers to the stated problem. (Holland, 1975)

1.3. AI in Language Teaching and Learning

In the 21st century, AI is one of the considerable technologies that made human lives became more comfortable and efficient in various domains. EFL learning and teaching is no exception. Due to the increasing demand for English language skills, researchers are actively exploring up-to-date approaches aimed at enhancing language learning outcomes, such as the integration of AI technologies in the EFL context. Innovative AI-driven technologies, including natural language processing, Chabot, speech recognition systems, virtual tutors, and language learning applications, are valuable tools and sources for the advancement of language learning and teaching as they boost learners' autonomy (Nininget al., 2023).

AI in Education (AIEd) is interdisciplinary field, and it is concerned with the computer science, education, and psychology. "AIED is interdisciplinary research "at the frontiers of computer science, education, and psychology". It promotes rigorous research and development of interactive and adaptive learning environments for learners of all ages, across all domains" (International AIED Society, 2010, as cited in Underwood &Luckin, 2011).

During the last 25 years, AIEd become a scientific research field that aims at investigating the adoption of AI technologies for educational purposes, both in and outside the classroom. It concentrates on the affective, social, and cognitive dimensions of learning, to conduct an inquiry into cooperation, meta cognition, self-regulation, motivation, emotions, scaffolding, and the implementation of data mining methodologies. In addition, It actively explores how the utilization of AI technologies can assist learning and teaching process(Underwood &Luckin, 2011).

1.4. Mobile-Assisted Language Learning (MALL)

Mobile-Assisted Language Learning (MALL) is an educational approach that involves the use of mobile technology, such as Smartphone's, to support language learning. According to O'Malley et al (2003), MALL is "any sort of learning that happens when the

learner is not in a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies” (p. 6). MALL approach to language enables students to independently direct and control their learning, unrestricted by the constraints of time and place. In contrast to Computer-Assisted Language Learning (CALL), the portability of MALL is recognized as a significant advantage in improving the learning experience (Yoon & Kim, 2020). Moreover, MALL applications, such as *Duolingo*, expanded the scope of language learning beyond traditional desktop computers, enabling learners to engage in interactive language practice in the target language on mobile platforms. From the previous studies on Mobile-Assisted Language Learning (MALL), it is possible to extract the fundamental principles that can be applied to learning via mobile devices. These encompass equitable use, presenting the content in its simplest form to ensure accessibility for all learners; flexible use, entailing the breakdown of content into smaller units; tolerance for error, providing scaffolding; and instructional climate, entailing the reinforcement of learning through regular reminders, quizzes, and interactive e-questions (Elias, 2011, as cited in Li, 2020). In the Algerian context, the educational materials often lack authenticity and fail to engage students due to the heavy reliance on traditional teaching methods. To address this challenge, integrating Mobile-Assisted Language Learning (MALL) applications into the curriculum can significantly enhance the learning experience and overcome these limitations.

1.5. Intelligent Mobile-Assisted Language Learning (IMALL)

E-learning has emerged as a dynamic and flexible educational approach, leveraging digital technologies to deliver learning content anytime and anywhere. In this regard, the evolution from Computer-Assisted Language Learning (CALL) to Mobile-Assisted Language Learning (MALL) to Intelligent Computer-Assisted Language Learning (ICALL) and then to Intelligent Mobile-Assisted Language Learning (IMALL) represents a progression in the

integration of technology into language education. Similarly, the sequence of appearance for these technologies progresses from desktop-based CALL to mobile-based MALL, followed by the integration of AI capabilities in ICALL, and finally, the convergence of mobile devices and AI in IMALL.

Intelligent Mobile-Assisted Language Learning is a field within the realm of language education. It represents the amalgamation of MALL and ICALL, combining the portability and accessibility of mobile devices with the intelligent features of AI technologies (e.g., natural language processing and machine learning) to provide personalized, adaptive, customized, and interactive language learning experiences on mobile platforms.

The literature confirms AI-integrated Mobile-assisted Language Learning is an effective way for teaching and learning of language. According to Obari and Lambacher (2019), incorporating AI technology into mobile learning is crucial. It could be a key component of education for future generations. Moreover, it could be seen as an essential skill required for 21st-century education. They also (2019) stated, “With mobile devices, AI learning has been experienced more efficiently and smoothly” (p. 6). In addition to that, the integration of AI technology into mobile learning has reformed educational settings, facilitating the development of more comprehensive learning environments (Kepuska&Bohouta, 2018). Correspondingly, the incorporation of AI in the classroom has reshaped the responsibilities of both students and teachers. AI programs offer language learners a flexible learning environment, allowing them to have autonomy over their learning experience (Lam & Lawrence, 2002, as cited in Kim, 2022).

The previous experimental studies in MALL have proved the positive impact of AI-powered language applications on English learning (Kim, 2018; Kim, Kim, & Cha, 2021; Kim, Cha, & Kim, 2020; Pham, Pham, Nguyen, Nguyen, & Cao, 2018; Kim, 2022; Goda, Yamada, Matsukawa, Hata, & Yasunami, 2014; Xu, Wang, Collins, Lee, & Warschauer,

2021). In this vein, Huang, Hew, and Fryer (2022) Confirm AI applications can help L2 learners to improve their speaking, writing, listening, and reading abilities as well as vocabulary, grammar, critical thinking, and meaning negotiation skills, regarding their English level. As Jones, Richards, Cho, and Lee (2018) stated, the majority of second language learners seek help from AI-based language learning apps for their English learning. Particularly, they have confidence in these applications to boost their scores on official English proficiency tests.

1.6. AI-powered Mobile Tool Technologies and their Applications for Language Learning and Teaching

According to the journal of China Computer-Assisted Language Learning, Son, Ružić, and Philpott (2023) presented seven (7) AI technologies and their applications for language learning and teaching including:

1.6.1. Natural Language Processing(NLP)

Natural Language Processing (NLP) is concerned with the analysis and the generation of spoken and written language. It is considered as one of the most fundamental algorithms in nowadays mobile applications. In the context of EFL, NLP has two primary applications. Firstly, it is used to analyze learners' language by tutoring systems in Intelligent Computer-Assisted Language Learning, for automated scoring in language testing, and for the analysis of learners' corpora. Secondly, it is used for the analysis of native language, in assisting the search and the presentation of native language reading material(e.g., categorizing texts based on their content, topic, and difficulty level and providing summarizes.), providing targeted access to relevant examples from native language corpora(i.e., NLP enables the extraction of specific examples from large native language corpora that are relevant to a particular topic, concept, or language skill to provide contextually appropriate illustrations of language

usage), as well as supporting the generation of exercises, games, and tests based on native language materials (Meurers, 2012).

1.6.2. *Intelligent Language Tutoring Systems (ILTS)*

ILTS is one of the outstanding AI technologies that are designed to provide personalized lessons and feedback on EFL learners' progress without the need for human teacher involvement. Henceforth, it promotes autonomous learning. In the EFL context, it is employed for individualized feedback, the adjustment of materials to the learners' needs, corrective feedback, error detection, and offering cultural context tied to the language being studied (Amaral, Meurers & Ziai, 2011; Choi, 2016 as cited in Sonet et al., 2023). It can be found in mobile apps such as *Duolingo* and *Rosetta Stone*.

1.6.3. *Automatic Speech Recognition (ASR)*

The technology of Automatic Speech Recognition (ASR) is used to understand the inputs of human language and generate the outputs (i.e., spoken and written texts). It is employed in software applications that utilize voice recognition and speech-to-text, such as Intelligent Personal Assistants (IPAs) and note-taking apps. In the field of EFL, ASR is considered as a prominent tool in improving listening and speaking skills. Numerous studies show that the integration of ASR into language learning software and applications can enhance the learning outcome. The investigation revealed its potential in pronunciation practice (Evers & Chen, 2022), receiving vocabulary (Bashori et al., 2022), speaking performance (van Doremalen et al., 2016), anxiety-reduced environment (Tai & Chen, 2023), the improvement of L2 speaking proficiency (Dizon, 2020), listening abilities (Chen et al., 2023), immediate, personalized, and autonomous feedback (e.g., Chen, 2011; Dai & Wu, 2023; Dizon, 2017; McCrocklin, 2016, 2019), interactive, engaging, and enjoyable learning experience, motivation (Moussalli & Cardoso, 2020; Tai & Chen, 2023), autonomous learning (McCrocklin, 2016), personalizing the learning content according to a learner's

needs and goals (Chen et al., 2023), and assessing the speaking abilities of EFL learners (Cox & Davies, 2012). In addition, several studies show that *PAs* such as *Alexa* and *Google Assistant* can offer students opportunities for practicing conversations, and learners like interacting with an animated chat system (Chenet al., 2023; Dizon, 2017; Forsyth et al., 2019). Henceforth, ASR has gained considerable investigation in the field of AIED, and it can be a promising tool for language learning and teaching. (Son et al., 2023)

1.6.4. Computerized Dynamic Assessment (CDA)

Computerized Dynamic Assessment (CDA) is an approach to assessment that combines elements of dynamic assessment with computer technology. In CDA, the use of computer technology enables the dynamic assessment process to be implemented in a digital format. CDA offers learners with automatic mediations. In CDA, Corrective Feedback (CF) has commonly been highlighted as the key topic of discussion. In Dynamic Assessment (DA), learners directly engage with a proficient one, known as mediator, to assist them in their learning process and provide feedback. However, Computerized Dynamic Assessment (CDA) utilizes computer-based tools and technologies to provide customized feedback. Researchers have been interested in the potential of computers to provide effective and immediate CF, personalized and adaptive assessment experiences, assess multiple learners simultaneously, decreasing anxiety, increasing intrinsic motivation, and offering insights into learners' potential for learning (Abdel-Al Ibrahim, Karimi&Abdelrasheed,2023 ;Ebadi&Saeedian, 2015).

1.6.5. Automated Writing Evaluation (AWE)

One of the AI techniques that used in ICALL is Automated Writing Evaluation AWE tools. It offers students with feedbacks on their written works. It is counted as an efficient equipment in enhancing writing abilities. Several studies have investigated the effectiveness of AWE tools (e.g., *grammarly* and *QuillBot*) and their impact on writing improvement. The studies

show that it can be effective and efficient in providing feedback on errors and assisting writers (Lee, 2020; Zhai& Ma, 2022). In addition, researches such as Barrot(2023) and Wang et al. (2013)support its effectiveness in autonomous learning as they can identify and correct errors independently.

1.6.6. Chatbots

Chatbots, also known as dialogue system, or virtual agent, are software applications and programs designed to stimulate human conversation. The virtual robots interact with users via text or audio. Chatbots have the ability to assume human-like appearances through the integration of text, audio, and visual cues. By the incorporation of these elements, they create emotionally immersive experiences. As a consequence, virtual agents are effectively enriched the interactions with users (son et al, 2023). In the EFL context, chatbot mobile applications were extensively been investigated. Several studies report the potential of chatbots for language learning in instant response using natural language processing, reducing learner anxiety, unlimited patience of chatbots, focusing on specific topics, and exterminating human teachers interference (Bibauw et al., 2019; Coniam, 2014; Fryer et al., 2020 as cited in son et al., 2023).Moreover, researches claim that virtual assistance may promote learner's awareness of critical thinking skills, and improve speaking performance (Goda et al., 2014; Kim et al., 2021). According to Ayedoun et al. (2019), chatbot can support learners'communication strategies, as it can encourage willingness to communicate. Additionally, Coniam (2014) argued that if teachers get access to logs of conversations between chatbots and students to identify the students' errors, it enables them to plan lesson where they can address these errors effectively.

1.6.7. Data Driven Learning (DDL)

Data-Driven Learning (DDL) is a pedagogical approach that encourages learners to engage directly with the own investigation of authentic language data. Language corpora offer

learners with the linguistic patterns that are naturally occurring in their target language. Henceforth, it simplifies the use of corpora (Pérez-Paredes, 2022). Researchers are trying to make DDL as an effective tool for language learning. For instance, they attempt to examine how to integrate DDL into mobile-assisted language learning (Pérez-Paredes et al., 2019), use it for extensive reading (Hadley & Charles, 2017), and use corpus data for essay writing correction (Tono et al., 2014). In order to facilitate the use of DDL, scientists integrated AI technologies such as natural language processing and machine learning to analyze large corpora of text. According to numerous studies, the benefits of DDL include its use of authentic linguistic data (Pérez-Paredes, 2022), its potential for error correction (Tono et al., 2014), its scaffolding of learning (Hadley & Charles, 2017), its accommodation of learner variability (Crosthwaite et al., 2021), its incorporation into lesson plans (Crosthwaite et al., 2021), and its potential for improving productive knowledge (Crosthwaite & Steeples, 2022).

1.7. The Role of the Teacher in AI Driven Classroom

Although AI generated content has the potential to transform the language learning experience, the role of the teacher remains vital in AI-driven classrooms. According to "The Role of Teachers" (2024), there are five main roles and responsibilities of the teachers in AI driven classroom. Firstly, teachers have an essential role in designing and modifying the curriculum to effectively incorporate AI-generated content. They can determine learning objectives, choose suitable AI resources, and ensure the curriculum aligns with the content produced by AI algorithms. Secondly, teachers offer instructional support by guiding and facilitating students' interactions with AI-generated content. They assist students in interpreting and analyzing the material, facilitate discussions, and provide further explanations or examples when necessary. Thirdly, teachers use AI-generated content to tailor instruction to students' individual needs. By leveraging AI data, they identify strengths and areas needing support, providing targeted interventions and scaffolding. Fourthly,

teachers assess students' progress and provide feedback. Although AI can offer automated feedback, teachers are essential for interpreting it and offering specific guidance for improvement. Fifthly, teachers create supportive, inclusive classrooms and use AI content to enhance social-emotional skills through discussions, collaboration, and empathy.

1.8. Advantages of AI-powered Language Learning Mobile apps

The integration of Artificial Intelligence (AI) in education offers numerous benefits:

1.8.1. Personalized Learning Experiences

Several AI-driven language learning apps use AI algorithms to offer customized content and adaptive feedback. AI-based apps involves tailoring the learning experience to meet the unique needs, preferences, style, and abilities of learners. Moreover, these apps offer an opportunity for learners to track their progress and deliver aptitude-oriented materials (Kessler, 2018).

1.8.2. Speed of Learning

According to Xie, Chu, Hwang and Wang (2019), AI language learning tools utilize algorithms to automate tasks and offer personalized learning experiences according to learners' needs and progress. This efficiency helps learners save time during their language learning journey. In addition, it provides instance feedback and correction to enable users to enhance their skills more rapidly (De La Vall& Araya, 2023).

1.8.3. Accessibility

AI-integrated language mobile apps make resources and services more available and practical for learners, regardless of their physical or cognitive abilities. This enables learners to study at their preferred times and places thus providing flexible learning journey (Goldentha, Park, Liu, Mieczkowski& Hancock, 2021).

1.8.4. *Real-Time Feedback*

AI-based apps can provide immediate feedback to learners (Porter & Grippa, 2020). These features help them to identify their strengths and weaknesses, and thereby, remediate the areas of improvement (De La Vall & Araya, 2023).

1.8.5. *Autonomous Learning*

AI-based language learning apps enable learners to independently navigate their learning journey by providing personalized resources, adaptive assessments, and instant feedback. Therefore, they empower learners to take control of their learning progress at their own pace. (Fatmawati & Wirza, 2022).

1.8.6. *Ability to Learn Multiple Languages Simultaneously*

Some AI language learning platforms enable users to study multiple languages at the same time, this can be beneficial for individuals seeking to broaden their language proficiency for either personal or professional purposes (De La Vall & Araya, 2023).

1.8.7. *Engagement*

AI-driven tools can ensure student engagement and motivation by adapting content to meet individual needs and providing interactive and immersive learning experiences. In addition to that, these apps help students to reduce their learning anxiety (Johnson, Vilhjálmsson, & Marsella, 2005; De Haas, Vogt & Krahmer, 2020; Xu, Dugdale, Wei & Mi, 2022, as cited in De La Vall & Araya, 2023).

1.8.8. *Cost-Effectiveness*

Numerous AI language learning tools provide affordable options, often free or at low cost, making them more economical compared to traditional methods like in-person classes or hiring tutors (De La Vall & Araya, 2023).

1.8.9. Cultural Exposure

De La Vall, Araya (2023) stated that “Through interactive lessons and real-life scenarios, AI language learning tools can introduce users to different cultural elements, such as customs, traditions, and social norms”(p. 05).

1.8.10. Language Practice

The integration of artificial intelligence (AI) within language applications offers innovative avenues for language practice and skills enhancement. AI- tools could simulate real-life scenarios in which learners can practice their language skills in a more realistic environment, such as virtual reality (VR) technology (Al-Gindy, Felix, Ahmed, Matoug, &Alkhidir, 2020; Parmaxi, 2020, as cited in De La Vall& Araya, 2023).

1.9. Challenges and Limitations to Using AI Language Learning Tools

According to De La Vall& Araya (2023), there are several disadvantages of AI tools:

1.9.1. Lack of human interaction

Most AI apps do not include direct human interaction, which can be challenging for learners who prefer a more interactive learning experience.

1.9.2. Limited ability to understand or produce creative or original language

AI models lacks the imagination, intuition, linguistic conventions, cultural references, emotional subtleties, and personal experiences that humans rely on for understanding and generating original and creative language, which AI systems may find challenging to capture without explicit guidance.

1.9.3. Difficulty in Replicating Cultural and Contextual Nuances of Language

AI tools may struggle to understand the cultural and contextual aspects of a language such as colloquialisms and accents. As a result, AI language learning tools might need assistance in reproducing the cultural and contextual nuances of language

1.9.4. *Dependence on Large Amounts of Data for Training*

AI language learning tools depends on pre-established data and patterns to create content which can lead to a deficiency of resources and biases in presenting the language learning materials. In addition, this may lead to lack of generating In-depth, accurate, and knowledgeable content.

1.9.5. *Limited Ability to Recognize Errors*

Language learning tools powered by AI may not be able to detect or correct errors with the same level of accuracy as a human teacher. Consequently, learners may result in forming bad habits or consistently making mistakes without proper correction.

1.9.6. *Inability of Accessibility*

Due to poor connection, complexity to use AI apps, and in-app purchase, not all times learners have the ability to access the technology.

1.9.7. *Privacy*

AI systems often require access to large amounts of data to function effectively, and this data may include personal or sensitive information of users, which can be exploited such as using personal browsing history or language proficiency levels without informed consent.

Section II: Speaking and Listening Skills

The first section introduces previous literature regarding listening and speaking, emphasizing their nature as processes, their significance in language teaching and learning contexts, and various subskills involved. Additionally, the section explores the utilization of AI-powered mobile applications to enhance these two skills. Furthermore, It discusses seven AI-based language learning tools designed specifically for improving listening and speaking abilities.

2.1. Listening skills

Listening is one of the important skills in language teaching and learning.

2.1.1. As a process

Listening is an important component in second language learning. It is one of the receptive skills. Risqia (2022) describes listening as “the process of recognizing a person's verbal output by using the auditory organ”(p. 10). Listening is the process of understanding and responding to the meaning of what is heard, and identifying speaker’s accent, pronunciation, grammar, and vocabulary (Yusnida et al., 2017; Thomlison, 1984 & Hamouda, 2013). Glikjani and Sabouri (2016) defines listening as “Listening is a process of receiving what the speaker says, making and showing meaning, negotiating meaning with the speaker and answering, and creating meaning by participation, creativity, and empathy”(p. 10). Therefore, it is the process of receiving what the speaker says appropriately in order to get the message properly. According to Taylor & Francis (2019), the listening process involves five stages: receiving, understanding, remembering, interpreting, evaluating, and responding.

Researchers categorize listening processes as bottom-up or top-down, based on how listeners’ process input. Rubin (1994) explained bottom-up process as following:

Is a process of decoding the sounds that one hears in a linear fashion, from the smallest meaningful units (or phonemes) to complete texts. In other words, the

listeners make use of his knowledge of words, syntax, and grammar to work on form.
(p.20)

As a result, the process is text-based. On the other hand, Top down process is “the process in which listeners employ background knowledge or textual schema to make sense of what they hear” (Hue, 2019, p.270).

During hearing comprehension, the two processes are inseparable. Listening comprehension is an interactive process that involves prior knowledge and linguistic information, rather than a top-down or bottom-up approach.

2.1.2. Listening Skills in Language Teaching and Learning

One of the require skills in EFL classroom is listening. According to Bengehya(2021), instructor should improve the listening skills of EFL learners to develop their abilities of meaning’s comprehension, introducing them to a range of native speaker accents, pronunciation, and new grammatical structures. In addition, the author adds that listening is a complex skill that requires constant practice, similarly to reading, writing, and speaking. It is a necessary skill that gives information for efficient communication.

Listening skill has a great importance in language teaching and learning. According to Maisarah (2016), the quality of listening determine the quality of communication because it is considered as the beginning of the ability to speak (i.e., before speaking, one must listen). In this regard, Nation and Newton (2009) explain that listening is the first skill the learner should acquire because the mastery of this ability leads to the mastery of speaking, writing, and reading skills. Bengehya (2021) Stated that “As for the listener’s reactions, it is worth mentioning that no one can react to a message that was not well understood. Likewise, a bad listening will certainly lead to a bad feedback”(p. 07). In addition to that, Rost (1994) report that “Listening is vital in the language classroom because it provides input for the learners. Without understanding input at the right level, any learner simply can’t begin” (p.141). In

order to ensure the involvement of learners in classroom communication activities, the instructor must reinforce the listening skills as the initial step. Moreover, when learners actively listen to instructions and explanations, they are better equipped to understand the material being presented.

Despite the significance of listening skills, both teachers and students have disregarded the importance of developing this ability, believing that they can acquire it naturally with minimal guidance. As a result, several countries' education systems are producing good writers, but the students are not proficient in listening and consequently struggle with speaking (Bengehya, 2021).

2.1.3. Listening Sub-Skills

Always one has a purpose for listening to make sense of the listening text. There are various types of listening sub-skills to help listeners make sense of what they hear. Various sources have introduced several categories of listening sub skills, among which:

Listening for Gist. According to Brown (2006), learner could listen for the main idea. It is an extensive listening for skimming in order to get the general idea of what is said.

Listening for Specific Information. It refers to when a person listens selectively to specific information that he/she just want to listen to and ignoring everything else that is unnecessary. In another meaning, there is no need to understand everything but only focus on one particular piece of information (Solak & Erdem, 2016)

Listening for Details. According to Brown (2006), learner could listen for details. It is an intensive listening for scanning to understand as much information as possible.

Listening to Make Inferences. According to Brown (2006), Speakers often convey meaning indirectly, leaving aspects of their message implied rather than explicitly stated. As a result, listeners need to infer the intended meaning by reading between the lines.

Listening to Questions and Responding. According to Solakand Erdem(2016), it refers to when a learner listen to answer questions.

2.1.4. Assessment of Listening

The basic task in making assessment is to take particular theoretical notions about the nature of the construct being measured (Buck, 2001). Historically, there have been three main approaches to language testing: the discrete-point, integrative and communication approaches. The basic notion of discrete-point testing is to isolate the units of linguistic knowledge and test each one separately. The most common tasks for testing are phonemic description tasks, response evaluation, and paraphrase recognition. However, Oller(1979) explained that integrative testing emphasize assessing the processing of language as opposed to assessing knowledge about the elements of the language. In another meaning, integrative tests assess learners' capacity to use several units of language all simultaneously. The most common tasks are noise testing, dictation, sentence repetition, statement evaluation, and listening cloze. Meanwhile, the basic idea underlying communicative approach is the language is used for the purpose of communication. According to Hymes (1972), Communicative tests assesses student's ability to use the language to communicate in the target language use situation. In the same vein, Morrow (1979) explained that the approach assesses students' performance rather than competence. The main feature of test's tasks is authenticity.

According to Ghareeb (2020), the assessment of listening is considered as the most challenging task among the four skills; therefore, test writer should consider several parameters. According to British Council Aptis Official (2016), a good listening assessment should simulate the real-life use of language such as assessing student's ability to extract information from an announcement at a train station. The listening ability is assessed based on the following criteria: listening for gist, specific information, details, discriminating

speech sounds, and inferring information. Moreover, listening tasks can be done in different ways such as listening to audio recording, simulated live discussion, and university lecture. In addition, the activities may take the form of multiple choices, short answer, longer response, and single word tasks. Furthermore, the characteristics of good test are validity, reliability, and practicability.

2.1.5. AI and Listening Skill

Several academic studies investigated the utilization of AI-powered mobile applications to enhance listening skills. According to the previous studies (e.g., Ghoneim & Elghotmy, 2021; Suryana, Asrianto, & Murwantono, 2020; Ghareeb, 2020), the integration of AI-based language learning mobile applications have a positive impact on listening skills improvement. Furthermore, several studies (e.g., Steinbergen-Hu & Cooper, 2014; Rodinatz & Sarbasoya, 2012) suggested that AI tools could assist EFL learners to practice listening skill in a realistic and authentic environment. In addition, According to Ghareeb 2020, the engagement with smart devices provides platforms for interactive conversations and intense practice of the foreign language that simulate real-life situations. This authenticity enables learners to grasp naturally the aspects of language such as structures, ease of understanding, and predictive analysis that are not taught in schools, and improve the active listening skill. According to Suryana, Asrianto, and Murwantono (2020), AI applications enrich listening learning opportunities and provide various interactive activities such as *Duolingo*' games.

In this sense, numerous investigations (e.g., Bajaj & Sharma, 2018; Liang & Chen, 2018; Xue & Li, 2018; Catlin & Blamires, 2019; Mu, 2019) suggest that the use of artificial intelligence applications such *Siri (Apple)*, *Galaxy (Samsung)*, *Google assistant*, *ELSA*, *Duolingo*, and *Virtual Reality* makes the learning of listening more personalized, adaptive,

interactive, motivated, and efficient by offering individualized feedback, interactive exercises, and tracking the learning process.

2.2. Speaking skills

Speaking is one of the important skills in language teaching and learning.

2.2.1. As Process

Among the four language skills, speaking holds considerable significance. It is an interactive process to generate meaning through the production, reception, and interpretation of information (Brown, 1994). As Hedge (2001) stated, Speaking skills involve the ability to effectively convey the intended meaning using appropriate vocabulary, grammar, and pronunciation. In this vein, Eliyasun, Rosnija, and Salam (2018) report that speaking is the process of communicating and exchanging ideas verbally. Consequently, it is a mental process to share and convey messages to others. When people want to communicate, they should know how to use grammar, pronunciation, and vocabulary.

2.2.2. Speaking Skills in Language Teaching and Learning

In learning English, mastering speaking is one of the four essential skills. According to Luoma (2009), Oral communication abilities are a fundamental component of language in the language-teaching curriculum. Concerning this, Haryudin and Jamilah, 2018 stated that learning to speak English as foreign language is a challenging, as learners aim to master vocabulary, pronunciation, and grammar, alongside the pursuit of fluency and paralinguistic elements of speech. Consequently, when learners want to speak, they must consider and incorporate all these aspects.

Richards (2008) stated that for many second-language or foreign-language learners, achieving proficiency in speaking skills in English is the primary concern. Therefore, Learners often measure their success in language learning, as well as the effectiveness of their English course, based on the extent to which they perceive improvement in their spoken

language proficiency (Haryudin&Jamilah, 2018). In this context, Richards and Renandya (2002) claim that the ability to communicate appropriately in social interactions requires the proper use of verbal and non-verbal language. Concerning the practice of speaking, it is a hard task to do for both teacher and learner. It is considered fundamental in teaching, and should be practiced inside and outside the classroom (Richards, 2008). Through extensive practice, learners will become accustomed to using the English language. As a result, it leads to fluent speaking.

2.2.3. Speaking Sub-skills

In the pursuit of spoken language fluency, attaining mastery in both fluency and accuracy is essential. Key aspects to focus on include:

Fluency. It refers to the ability to speak the foreign language speedily and confidently as if it were one's own. Jamatlou (2011) describes fluency as the flow or the fluidity of speakers' speech. Lennon (1990) defines fluency as the competence of using the language smoothly and effortlessly. In this regard, Lennon (1990) adds that fluency in a foreign language is achieved when an individual can speak it as fluently as a native speaker, with minimal silent pauses, filled pauses (such as "ers" and "emm"), self-corrections, false starts, and hesitations. According to Harmer (2015), Fluency pertains to use speech content to communicate effectively.

Segalowitz (2010) categorizes fluency into three notions. The first notion is cognitive fluency (The speaker's capability to effectively plan and deliver their speech), the second notion is utterance fluency (the speaker's ability to manage pauses and speech tempo), and the third notion is perceived fluency (The impression formed by listeners regarding the speaker's fluency)

Accuracy. The pursuit of accuracy in spoken English is essential for proficiency in English as a Foreign Language (EFL), as it is fundamental for effective

communication. Housen and Kuiken (2009) define Speaking accuracy as the production of speech without errors. According to Michel, Kuiken, and Vedder, (2007), Accuracy is reflected in the speaker's ability to avoid errors in speech performance, which can be measured by self-repair attempts to errors. According to Collins (2023), Accuracy pertains to the correctness and precision of language usage, which includes proper grammar, vocabulary, and pronunciation.

Vocabulary. Vocabulary is a very important element of speaking skills. It refers to the set of all words and phrases a person knows and uses correctly to communicate ideas and interpret the speaker's meaning (Alqahtani, 2015; McKeown & Curtis, 2014). According to Tarigan (2008), The level of language proficiency an individual attains is determined by the quantity and quality of their vocabulary. In this respect, Alharthi (2019) indicates to the strong relationship between vocabulary knowledge and the ability to speak which have the potential to anticipate proficiency and language use. Mastering vocabulary enables learners to speak and communicate their ideas effectively, as it helps them to minimize the misunderstandings (Uzer, 2017). Therefore, the use of the appropriate vocabulary is a crucial component to ensure the successful communication between the speaker and the listener of L2.

Pronunciation. Pronunciation is another area that needs accuracy in order to enhance speaking ability. It refers to the production of English sounds and the ability of L2 learners to pronounce a word correctly (Cakmak, 2019; Gilakjani, 2012). Mastery of pronunciation is essential to assist learners in developing their speaking skills. According to Vasbieva, et al. (2016) English as a Foreign Language learners ought to exercise the pronunciation of the new words they are learning accurately. Yudar, Aditomo and Silalahi (2020) claim that appropriate pronunciation improves the ability of learners to communicate and understand people, especially native speakers. However, incorrect pronunciation affects the successful of

the communication. According to Aulia (2018), mispronunciation of structures or words can limit students' English communication effectiveness.

Grammar. Another factor that requires accuracy is grammar. It refers to the basic structures and rules for forming words and constructing sentences (Gregg, 2017). Yudha, Lekatompessy, and Patty (2023) stated that “Learners should follow the rules to communicate effectively with the language” (p. 35). As it is well understood, the rule is grammar here. For this reason, speaking requires appropriate grammar in order to communicate effectively. According to Hornby (2000), speaking and grammar are two significant components of the foreign language learning process, and these two activities are related. Therefore, learners should understand grammar to engage in meaningful communication.

2.2.4. Assessment of Speaking

To judge students' overall language competence, it is important to test their command of spoken language. Weir (1993) has proposed a three parts framework to test spoken interaction, covering operations, performance conditions, and level of performance. Concerning operations, the first aspect to be assessed is the use of language routines that are informational and interactional. The informational routines refer to ways of presenting information such as instruction, comparison, and description. Meanwhile, interactional routines consider ordered sequences of turns as in telephone conversation or meeting. The conditions of performance refer to the other parameters of assessment of speaking abilities such as the time of the discourse, the time between the exchanges, the number of people involved, and the familiarity of the people involved. On the other hand, the level of performance focuses on fluency (smoothness of the talk) and accuracy (pronunciation, vocabulary, and grammar).

According to Madsew (1983), the assessment of speaking is regarded as the most challenging task among the four skills; therefore, test writer should consider several parameters. As stated by British council Aptis Official (2016), a good speaking assessment should simulate the real-life use of language such testing student's ability to ask in follow directions. To obtain the necessary behaviors of students, the teacher should include different authentic tasks and activities for instance interview, oral presentation, information transfer exercises, role-play, group discussion, and interactive tasks. Furthermore, the speaking ability is assessed based on the following criteria: fluency and accuracy (vocabulary, grammar, and pronunciation). In addition, holistic grading and analytical marking scheme are scoring procedures of oral test. Holistic grading refers to evaluating all the criteria at the same time. The rating is impressionistic and hence subjective. However, analytic marking scheme evaluates the learner separately on each criterion. The grading is detailed and objective. Moreover, the characteristics of good test are validity, reliability, and practicability.

2.2.5. AI and speaking skills

The body of literature concerning the use of AI-driven mobile apps to improve speaking abilities presents a wide range of academic investigations. According to the previous studies (e.g., Hsu, Chen & Yu, 2021; Zou, Liviero, Hao& Wei, 2020; Zafari, Heidari, Tabrizi&Chalakh, 2020), the integration of AI-based language learning mobile apps have a positive impact on speaking skills improvement. Fundamentally, some researchers investigated the AI effect on fluency (AlZawaideh, 2022), accuracy (Hynes, 2016), pronunciation (Fathi& Jelani, 2017), vocabulary (Hao et al., 2021), grammar (Shafaei,2012), communication skills (Alkinani, 2021), all of which indicate positive results toward the use of AI tools in improving speaking proficiency.

Furthermore, several studies suggested (Hamuddin et al., 2020; Daniels, 2015) that AI tools could assist EFL learners to practice speaking skill in immersive and authentic

environment when a native speaker of the foreign language is unavailable. According to Ghareeb(2020), the engagement with smart devices provides platforms for interactive conversations and intense practice of the foreign language that simulate real-life situations. Moreover, the communication breakdown is not always allied with a deficiency of ability, it may be happened because of fear of being misunderstood or negative judgment. To remedy the affective filters, EFL learners tend to practice the foreign language with virtual assistance (i.e., AI agents). In this regard, several studies (e.g., Chien et al., 2020; Kaplan-Rakowski& Gruber, 2021; Tai & Chen, 2020; Stachowicz-Stanusch&Amann, 2018; Ghareeb, 2020; Goda et al., 2014; Teimouri et al., 2019) suggested that the use of *chatbots* , *Virtual Reality*(VR, i.e., is a simulated 3D environment that enables users to interact with a virtual world), and *Intelligent Personal Assistants* (IPA) help students to reduce the anxiety, stress, and fear factors. Consequently, AI- based mobile applications improve their willingness to communicate, engagement, confidence, and motivation. As Kim (2017) stated, AI- supported platforms assist EFL learners to speak the language in more fluent, confident, and comprehensive way. As well, researchers (e.g., Fryer & Carpenter, 2006; Samad& Ismail, 2020) explain that the use of virtual agents are enjoyable, friendly, interesting , and motivating , besides they provide human-like interactions.

In addition, according to Alioucheand Mezghich (2022) “some chatbots can give immediate, formative feedback on the learners’ fluency, pronunciation, grammar, vocabulary, stress, and intonation” (p.44). Supplementary, they add that AI tools provide learners with adaptive environment, formative feedback, recommendations, independence learning, and scaffolding. In addition, Chen (2016) and Chen et al. (2014) explained that *Chatbots*, *VR*,and *IPA* provide authentic interactive environment that mimic different real-life contexts by giving various useful and realistic scenarios in encouraging way. Therefore, AI-powered apps can foster a conducive environment to enhance the speaking abilities of EFL learners.

2.3. Seven Examples of AI language Learning Mobile Applications to Enhance Listening and Speaking

There are numerous of AI-based language learning applications in Google Play and App Store. The most popular applications are:

2.3.1. *ELSA Speak*

ELSA stands for English Language Speech Assistant .It is a mobile app that uses AI algorithms to provide authentic, autonomous, adaptive, and customized environment to help learners to improve their speaking and listening skills. The key features of the app are offering an AI coach, real-time speech recognition feedback, and personalizing the learners' daily curriculum.

2.3.2. *Yoodli*

The application is a free communication coach. The app uses AI algorithms to improve listening and speaking skills with private, real-time, and judgement free coaching. The key features of the app are tracklearners' progress over time, offers real-time private live coaching, providing instance feedback, gives an in-depth analysis of the user's speaking styleand listening abilities such as pacing and filler word usage, and customizing the audience settings such as job interview and sales calls.

2.3.3. *Virtual Orator*

The applicationleverages Virtual Reality (VR) technology to stimulate realistic scenarios in a virtual world. The key features of the applicationareoffering realistic simulation of public speaking settings for learners and customizing their practice sessions by adjusting the virtual setting, the size, and the behavior of the audience to better align with their specific objectives. These allow learners to overcome speaking anxiety and improve their active listening.

2.3.4. *Orai*

The AI-driven application is designed for improving speaking and listening skills that provides users with the opportunity to practice their presentations and receive immediate feedback on areas needing improvement. The key features of the application are practicing speaking and listening skills, offering personalized and interactive lessons, developing fluency aspects such as clarity, voice quality, pacing, and confidence, and providing detailed analysis of recorded speeches.

2.3.5. *Amazon Alexa*

Alexa is an Intelligent Personal Assistant that can be an effective tool to improve speaking skills. According to Dizon (2020), the use of Alexa can help students to improve speaking skills. The key features of the application are engaging in conversations with Alexa to practice listening and speaking, giving the opportunity to ask Alexa anything could help learners to improve their listening and speaking such as tongue twisters, podcasts, setting daily challenges, and providing feedback and correction on pronunciation and grammar.

2.3.6. *VOA Learning English Listening every day*

The application consists of stories, lessons, up-to-date news reports which aims to assist English learners to develop their listening skills every day. The application regularly updates its content daily to provide users with fresh lessons and information. It covers a wide range of popular topics including world news, education, business, science, technology, American history, culture, nature, and stories. By leveraging AI, VOA offers learners personalized recommendations based on their English level, interest, and needs. In addition, the application uses Natural Language Processing to provide transcriptions to improve listening and analyze recorded voices to improve speaking.

2.3.7. Duolingo

The application offers courses that allow learners to practice listening and speaking the language. It is designed to be adapted to the users' level and help them learn at their own pace. The lessons combine the best technologies in artificial intelligence and linguistics to provide a personalized learning by providing real-time feedbacks, adaptive content, and tracking the learning process. By leveraging AI, Duolingo offers a variety of engaging content and exercises such as stories, which incorporate authentic spoken language. As a result, it immerses learners in a motivated environment that provides users with exposure to real-world conversation to improve their listening comprehension and speaking fluency.

Conclusion

The aim of this chapter was to examine deeply the fundamental concepts of this study. Through an extensive literature review, two main sections were identified: Artificial Intelligence (AI), speaking, and listening skills in the realm of English as a Foreign Language (EFL) teaching and learning.

Chapter II:

Field work

Introduction

The present study is conducted to investigate the effectiveness of using Artificial Intelligence mobile application to improve listening and speaking skills. Therefore, this chapter is designed to present the research methodology design and procedures of the investigation, including the causes beyond the used methodology, data collection tools, sample methodologies, and data analysis procedures. In addition, it exhibits the analysis, discussion, and interpretation of the results in order to achieve the stated objectives, assess the validity of the alternative hypothesis, and derive reasonable conclusions.

1. Research Methodology Design

It is a systematic plan of actions about how research is going to be conducted. It includes the description of used approaches and methodologies.

1.1. Approach

Due to the research nature, a mixed-method approach is used in order to collect the data. The word "mixed" implies combining the tools of the qualitative and quantitative approaches within a single study. It used in order to combine the strengths and eliminate the weaknesses of both approaches. According to Creswell (2014), the combination of data offers a stronger understanding of the stated problem. On the one hand, The quantitative data collection tools is applied with the intention of precisely measuring and producing reliable data (i.e., the use of numeric data) and eliminate any individual-based subjectivity. On the other hand, the qualitative method is employed in order to contextualize the quantitative data and provide a detailed description to the obtained statistics.

1.2. Research style

With the aim of achieving the stated objectives of the research problem, the data were collected using two methodologies that are pre-experiment and survey. The experiment is

conducted to gather the quantitative data, and the survey is created to collect the both of qualitative and quantitative data.

1.3.Methods

To collect data for the present research,a mixed (i.e., close-ended and open-ended) questionnaire and t-test are used. The questionnaire was implemented to identify the potential benefits, drawbacks, and students' attitudes toward the use of AI-based mobile applications in improving listening and speaking skills. The T-test was conducted to verify the effectiveness of using AI-based mobile applications in improving listening and speaking skills.

1.3.1. The Questionnaire

This section includes the description and the administration of questionnaire.

Description of the Questionnaire.The questionnaire consists of 38 questions. It contains 31 closed-ended and seven open-ended questions(see appendix A). The closed-ended items include the following kinds of questions: rating scale, multiple choice, and numeric items. However, the open-ended items include specific open and clarification. In addition, it is divided into three sections:

Section 1: It contains 04 questions. They refer to the students' demographical information.

Section 2: It contains 06 questions. They refer to general information of Artificial Intelligence.

Section 3: It contains 14 questions. They refer to the use of AI-based mobile application in enhancing listening skills.

Section 4: It consists of 14 questions. They refer to the use of AI-based mobile application in enhancing speaking skills.

Administration of the Questionnaire.The questionnaire was administered to 57 first-year Bachelor students of the English Department at KasdiMerbah University in Ouargla

during the academic year of 2023/2024. It was distributed on March 3rd, 2024, and the responses were gathered on the same day.

1.3.2. Listening's T-Test

The pre-experimental study follows a t-test format with three stages: the pre-test, treatment phase, and post-test. The subjects of the study are 19 first year Bachelor of the English Department at KasdiMerbah University in Ouargla during the second semester of the academic year 2023/2024, and there is no control group.

The Pre-Test. The first stage in the experiment is the pre-test

Description of Pre-Test. The listening test is a ready-made published one by the "IELTS Fever" website. The source of the test is one of the biggest websites that designs listening, speaking, reading, and writing tests. These sample tests are designed similarly to the IELTS original exam. The listening test sample is provided with test questions, audio, and answers. The test questions (see appendix B) and audio transcription (see appendix C) are provided below. The level of difficulty is moderate to be appropriate for participants with diverse skill levels. To ensure accessibility, the questions range from easy to more challenging.

The listening test contains 40 questions and 04 sections, and they are structured as following:

Section 1: students will hear a telephone conversation between a hotel receptionist and a customer. Then, they should complete the given notes.

Section 2: student will hear a speech given by a man called George Dyson about Northfield Sports Complex. Then, they should select the correct option from a list of choices.

Section 3: student will hear two students called Siria and Greg talking about some research on renewable energy. Then, they should complete the given sentences, and select the correct option from a list of choices.

Section 4: student will hear part of a lecture about aquaculture and the fishing business. Then, they should complete the given notes.

Administration of the Pre-Test. The pre-listening test was administered to 19 first year Bachelor students of the English Department at KasdiMerbah university in Ouargla during the academic year of 2023/2024. The participants were tested on February 18th, 2024, on oral expression session for 35 minutes. The student heard a number of different recordings and they had to answer questions on what they hear. There was time for student to read the instructions and questions before the play of the recordings, and they had a chance to check their answers. All the recordings were played once only.

The Treatment Phase. After assessing the students' listening proficiency levels, they were provided access to an AI-based mobile application named *ELSA*. Throughout their 62-day learning journey, they received guidance and support via the WhatsApp application. Due to the in-app purchases, where certain advanced features require payment, approximately half of the students opted to subscribe.

The Description of ELSA application. *ELSA* is an Artificial Intelligence-based language learning application designed to assist learners in enhancing their English language skills. The application uses Artificial Intelligence to provide a personalized language learning experience by offering the following:

- **Real-time feedback**

ELSA provides immediate feedback to learners on their listening performance.

- **Autonomous learning**

ELSA immerses users in autonomous environments tailored for listening learning by providing AI coach.

- **Performance's assessment**

The application assesses users' performance in listening comprehension to enhance their skills continuously.

- **Learning process tracking**

The application analyzes and tracks the listening learning journey.

Furthermore, the application offers a range of features designed to help learners enhance their listening sub-skills, such as identifying main ideas, specific information, details, making inferences, and discriminating between different sounds, words, and intonations. As a result, it contributes to the development of active listening abilities among users. Active listening, recognized as a crucial communication technique, involves attentively capturing general idea, details and specific information, as well as inferring underlying messages to formulate a response to the speaker. Therefore, the application offers an opportunity to improve the listening sub-skills through the exposure to authentic conversations that reflect real-life situations by offering the following features: *ELSA AI Conversations, Conversation, and Video Conversations*

In addition, learners can improve their listening skills by practicing with *Minimal Pairs* feature by using audio files and multiple choices. The application presents to users a word displayed on the screen, such as "nice," accompanied by two audio clips. One audio clip pronounces the word "nice," while the other says "night." Users are asked to select the correct audio clip that matches the ending sound of the displayed word. This exercise serves as valuable practice for distinguishing between similar consonant and vowel sounds commonly encountered in spoken English.

Moreover, there are others features may help learners to improve indirectly their listening abilities such as *intonation, pronunciation, and word stress exercises*. These activities can assist them to identify the general features of spoken language.

The Post-Test.In the last stage, the post-test is conducted. The previous test is repeated, and it is administered to the same group in the same way on April 21st, 2024.

1.3.3. Speaking's T-Test

The pre-experimental study follows a T-test format with three stages: the pre-test, treatment phase, and post-test. The subjects of the study are 19 first year Bachelor student of The English Department at KasdiMerbah University in Ouargla during the second semester of the academic year 2023/2024, and there is no control group.

The Pre-Test.The first stage in the experiment is the pre-test.

Description of the Pre-Test.The pre-test is designed according to the topics that are discussed in listening test (see appendix D). It contains five questions and two sections. It is structured as following:

Section 01: it contains three questions, which are:

- Question 01: do you like sport?
- Question 02: what kind of sport do you enjoy?
- Question 03: why do you enjoy this specific sport more than the other kinds?

Section 02: it contains two authentic questions.

- Question 01: Imagine the following situation: you are planning a holiday in Tunisia and you need to make a hotel reservation. As a customer, you want to ask a hotelreceptionist about the available services and facilities. What kind of questions wouldyou ask?
- Question 02: Imagine you heard people in Tunisia consume genetically modified food. Is this a good reason to cancel your reservation? And why?

Administration of the Pre-Test.The pre-speaking test was administered to the same group that had previously taken the listening test on February 19th, 2024, during 2 hours on oral expression session. Furthermore, each student was asked individually and the answers

were recorded via their phones. Then, each one sent the recording to the researchers' WhatsApp to guarantee that participants provided their consent fully informed.

The Treatment Phase. The intervention for the speaking experiment was closely similar to that of the listening test. The students utilized the *ELSA* mobile application for duration of 62 days.

The Description of ELSA application. As explained above (see page 41,42), *ELSA* can provide personalized learning experiences and deliver real-time feedback on enhancing speaking skills. Additionally, it engages users in autonomous environments tailored for speaking learning by providing AI coach. Furthermore, the application analyzes and assesses users' speaking performance to continuously enhance their skills.

In addition, the application offers an opportunity to enhance speaking sub-skills. It presents a variety of features, which could help students to improve accuracy and fluency.

- **Fluency**

The application aids users in achieving fluency in speaking by immersing users in authentic environments. Learners engage in conversations with an AI bot about real-life tasks, such as job interview simulations, and receive instant feedback on their speaking performance. Additionally, it offers a range of topics at three level of difficulty (i.e., beginner, intermediate, advanced) in form of scenarios for users to practice with the AI bot where they receive feedback on their fluency and accuracy in details. Furthermore, it provides an opportunity to practice speaking without the fear of judgment. The features in the application are called **ELSA AI Conversations, Conversation, Video Conversations, and Topics.**

- **Pronunciation**

Students have the opportunity to listen to their pronunciation and record themselves to receive feedback. Then, *ELSA* assesses the recorded voice and provides students with feedback, accompanied by a score. In addition, learners can improve their ability of word stress and intonation. The features in the application are called *Pronunciation*, *Word Stress*, and *Intonation*.

- **Vocabulary**

ELSA can develop students' vocabulary through building a bank of words. *ELASA AI Conversation*, *ELSA dictionary*, *Unscrambling Words*, *Missing Letters*, *Audio Conversation*, *Video Conversation*, *Skills*, and *Topics* are all features in *ELSA* application which include exercises can help learners to build their vocabulary bank.

- **Grammar**

ELSA application can enhance learners' grammar in different ways deductively and inductively. Firstly, there are a great number of grammatical lessons in which they are introduced in form of authentic conversation such as articles, WH questions, and tenses. Secondly, when learners practice a conversation with an AI bot.

The Post-Test. The post-test was created in the same steps as the pre- test. The questions were the same.

1.4. Population and Samples

The population of the current study comprises first year Bachelor students at the Department of Letters and English Language of KasdiMerbah University in Ouargla. The sample size of questionnaire is 57 students, while the experiment is 19 students. Besides, the sampling strategy is random sampling to ensure the generalization of the result.

1.5. Data Analysis Procedures

The analysis approach differs based on the nature of the obtained data. Quantitative and qualitative methods were employed for analyzing questionnaire data, while qualitative methods were utilized for analyzing experiment data. . The data were analyzed by using the SPSS software.

1.5.1. Questionnaire

To analyze the data of the survey, a thematic analysis and descriptive statistics procedures are used. The thematic analysis has been used to divide the qualitative data into thematic sections, describe, and analyze the data accordingly. The descriptive statistics have been used to describe the frequencies and percentages of the results by using the SPSS software. Then, the results were converted into graphs.

1.5.2. T-Test

To analyze the data for the experiment, descriptive statistics procedures have been used to describe the mean of the test results by using SPSS software. Then, the results were converted into graphs.

2. The Data Analysis, Interpretation, and Discussion

This section includes analysis of students' questionnaire and experiment. Quantitative data will be analyzed by giving numbers, statistics, and percentages. However, qualitative data will be analyzed by identifying patterns and themes. In addition, it focuses on the discussion of the findings.

2.1. The Questionnaire Analysis and Interpretation

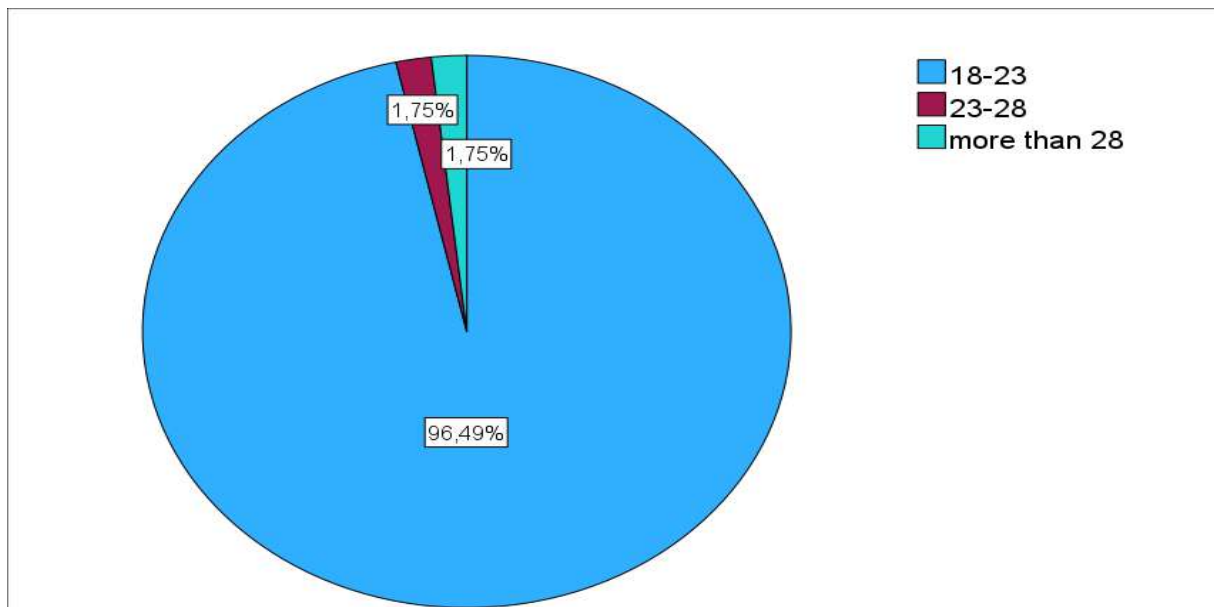
The semi-structured questionnaire (Refer to Appendix A) consists of 04 sections containing both open-ended and closed-ended questions.

Section One: Students' Profile

Item 01: What is your age?

Figure01

Age of Participants

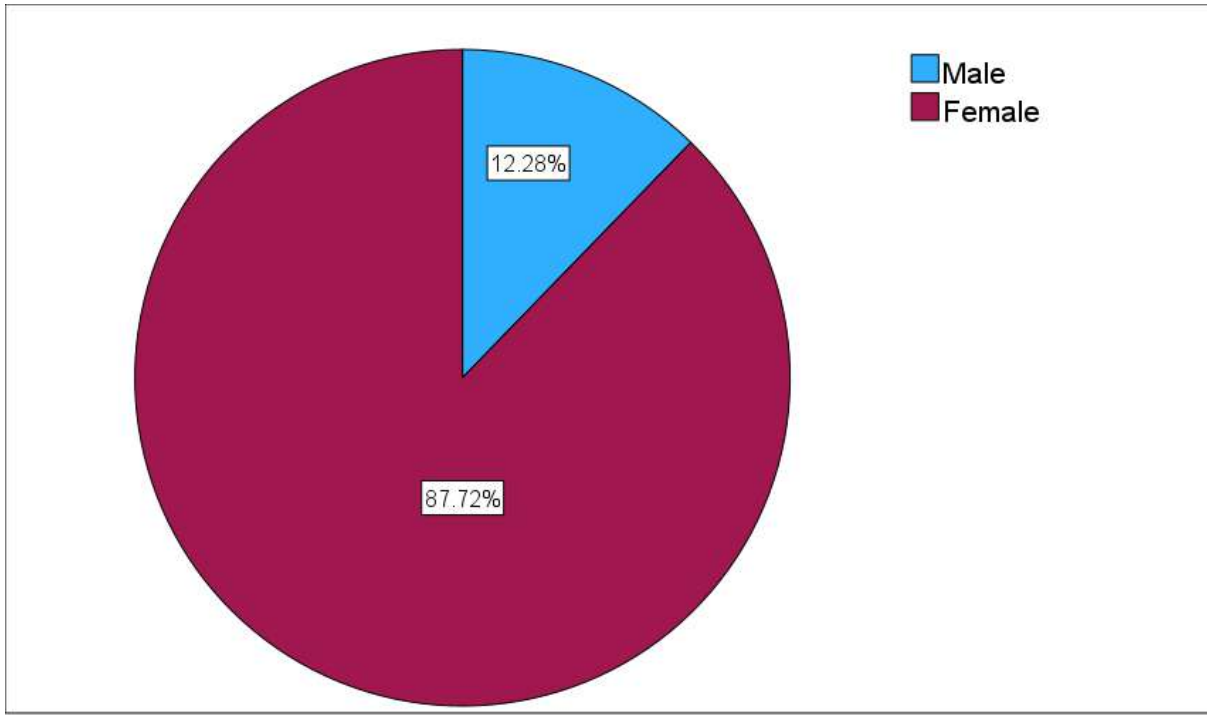


This figure shows that the most of participants are between the ages of 18-23, with only a small percentage of respondents are within the 23-28 and over 28 age ranges. As a result, the participants are primarily young adults. Learners in this age range are typically tech-savvy and comfortable with digital interfaces, making it easier for them to navigate and engage with language learning applications. In addition, this age group is more likely to incorporate technology into their daily routines, allowing for more consistent practice and reinforcement of language learning outside of formal classroom settings.

Item 02: what is your gender?

Figure02

Gender of Participants

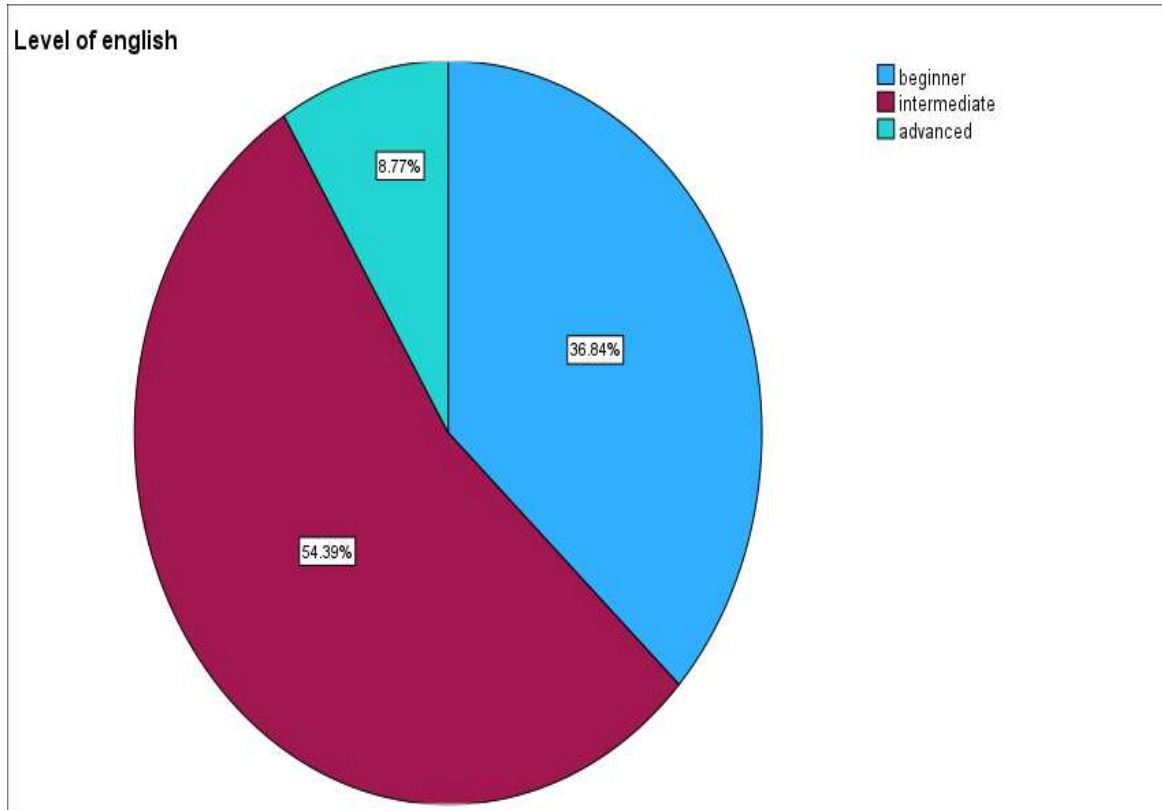


This pie graph presents the genders of participants. According to figure 02, 87.72% of answers were "female", and 12.28% of responses were "male". This indicates that females tend to study English language more than males.

Item 03: What is your level in English

Figure 03

Level of English Proficiency.

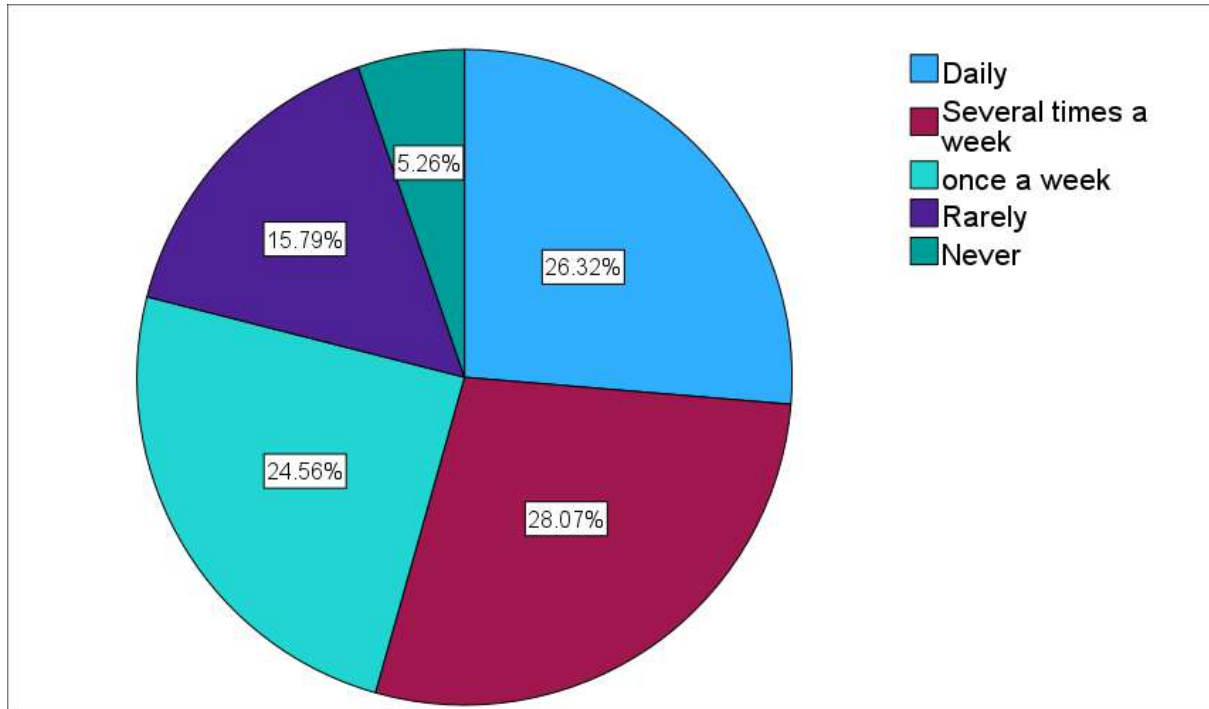


The Figure reveals the English level of 57 first year bachelor student of English Department at KadiMerbah University. 36.84 % of participants are *beginner*, 54.39 % are *intermediate*, and only 8.77 % are *advanced*. As a result, the dominant level is intermediate.

Item 04: How often do you use mobile applications for language learning purposes?

Figure 04

The Utilization of Mobile Applications for Education Purposes



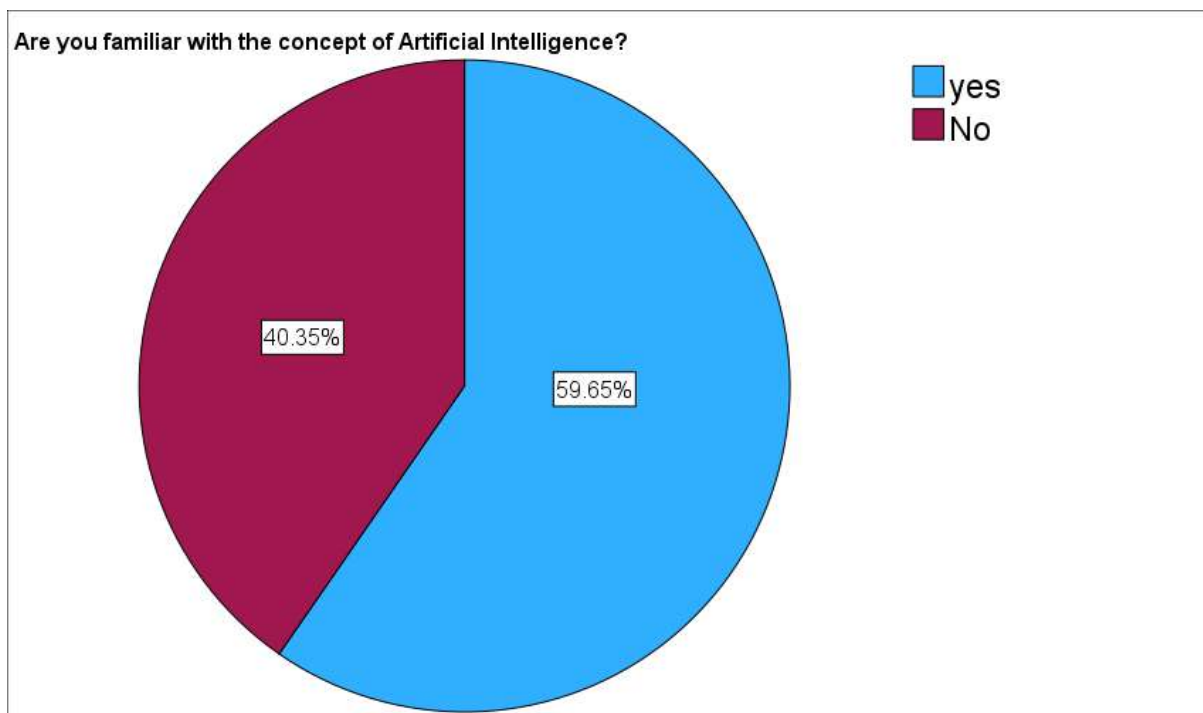
According to the figure, 28.07% of students use mobile applications *several times a week*, 26.32% use them *daily*, 24.56% *once a week*, 15.79% *rarely*, and 5.26% *never*. The percentages indicate that the digital natives utilize the mobile applications frequently for education purposes.

Section 2: Artificial Intelligence

Item 01: Are you familiar with the concept of Artificial Intelligence ?

Figure 05

The Familiarity of Artificial Intelligence

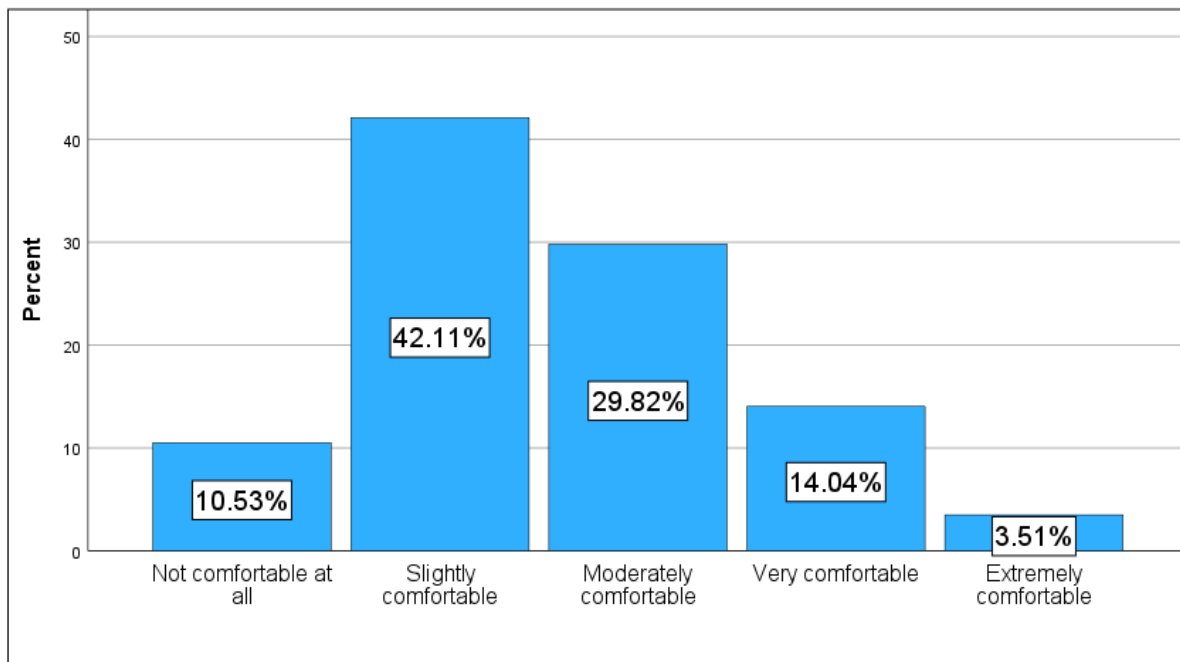


The figure shows the familiarity of Artificial Intelligence concept among the first year students. 59.65% of them are familiar with the concept whereas 40.35% of them are not. Although the percentage of the students who are aware with the notion is more than the half, the results of unfamiliarity are also negative in the area of digital natives.

Item 02: How comfortable are you with the idea of incorporating (integrating) AI in language learning applications?

Figure 06

The Comfort Level of Incorporating AI in Language Learning Applications

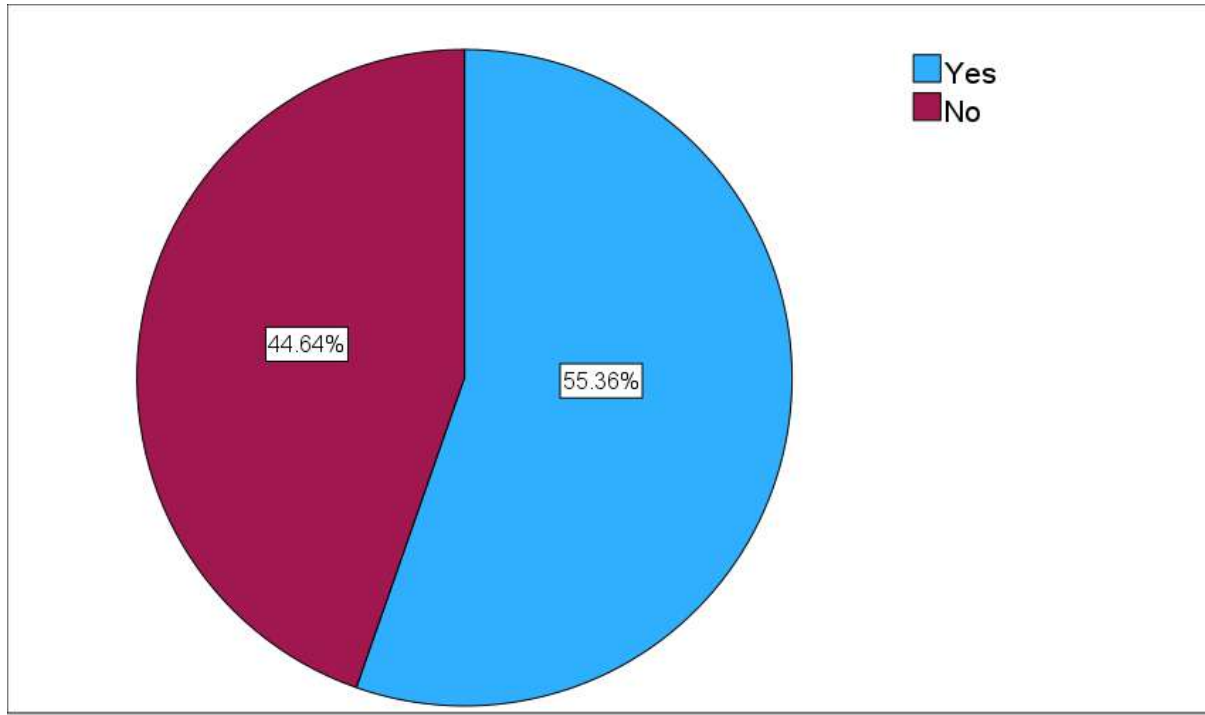


The question was measured on a Likert scale. As seen above, 10.53% of students express that they are *not comfortable at all*. In comparison, only 14.04% of participants are *very comfortable*, with 3.51% of them at the *extreme level*. However, the overriding percentages are *moderately* (29.82%) and *slightly* (42.11%) *comfortable*. Therefore, the percentages indicate that learners faced a substandard experience with AI-powered language learning applications since students are not aware enough about AI technologies as seen in the previous graph, and most free and available applications in the play stores are not effective. Nevertheless, several studies exhibit that AI-based applications are efficient and effective in enhancing language skills.

Item 03: Have you ever used AI-based application(s) for educational purposes?

Figure 07

The Utilization of AI-based Application(s) for Educational Purposes

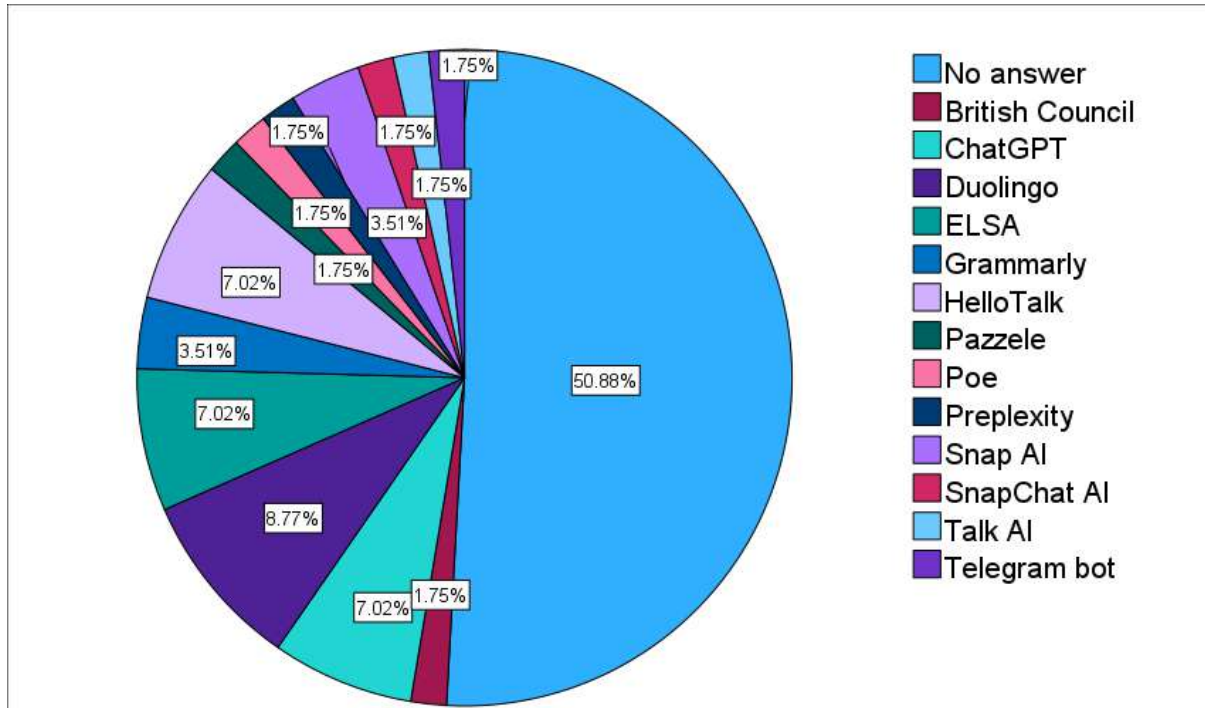


As shown in this graph, 42.86% of participant reported using AI-based application(s) for educational purposes, whereas 57.14% indicated they did not. Despite the familiarity and use of AI-driven tools like *Grammarly* and *ChatGPT* to aid learners, many learners are unaware that these applications are powered by AI. This lack of awareness is evidenced by the 40.35% of participants in figure 05 (40.35% of learners are not familiar with the concept of AI) which indicates large proportion in the age of technology.

Item 04: If yes , please specify the application (s) you have used?

Figure 08:

The percentages of specific Applications for Educational Purposes

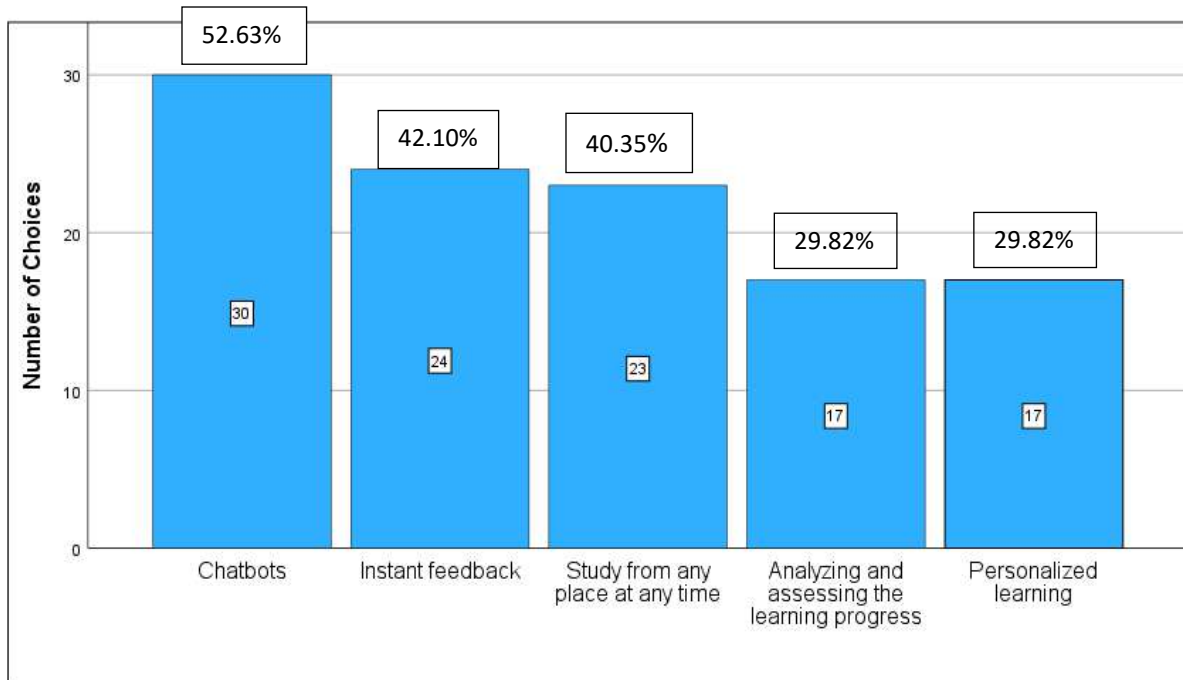


This pie chart reveals the percentages of the used applications for educational purposes in general. 50.88% of participants did not give answers, but the rest provides several AI-based applications. The participants reported that the most used application for educational purposes are *Duolingo(8.77%),ChatGPT(7.2%),ELSA(7.2%),* and*HelloTalk(7.2%)*.

Item 05: In your opinion, what specific AI feature(s) do you find most helpful in enhancing your language learning?

Figure 09

AI Features

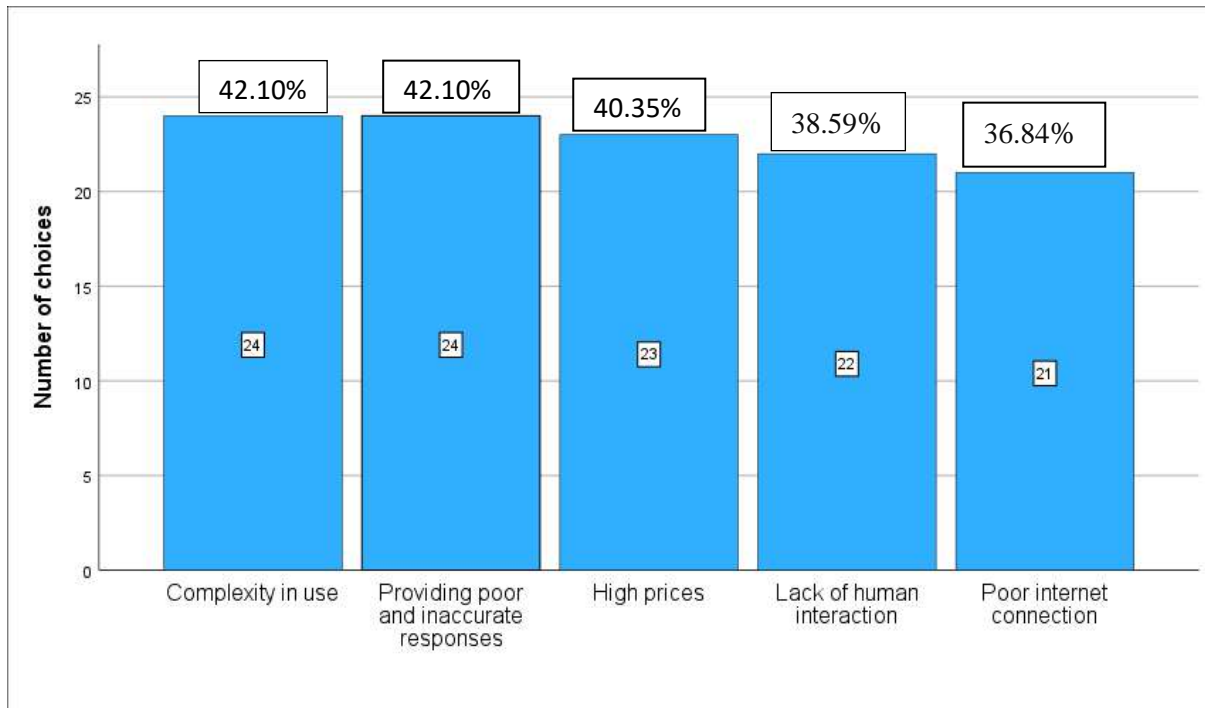


The results in figure 9 highlight the main AI features that students found beneficial in applications. Chatbots, with a percentage of 52.63%, appear as the most favored feature. This suggests that students recognize the importance of language practice facilitated by such tools. Additionally, 42.10% of respondents identified instant feedback as another significant feature. Conversely, 40.35% of learners value accessibility, as it allows them to study at their own pace. Finally, 29.82% of participants recognize the value of both analyzing and assessing the learning progress as well as personalized learning. These significant percentages of AI feature usage reflect students' awareness of the advantages offered by artificial intelligence, which enable them to effectively leverage AI technologies.

Item 06: In your opinion, what limitation(s) do you face while using AI-powered language learning applications?

Figure10

Challenges of Using AI Applications



The data from Figure 10 highlights the main challenges students face when using AI-powered language applications. Foremost among these challenges is the complexity in use, reported by 42.10% of respondents, which indicate a substandard experience in using these applications. Additionally, a parallel concern arises as 42.10% of participants express dissatisfaction with the quality and accuracy of knowledge. This dissatisfaction is caused by various reasons such as the overgeneralization of knowledge, lack of nuance and context, and misinterpretation of data. Furthermore, 40.35% of students face challenges related to high prices in app purchases as they find that free applications often lack effectiveness. Additionally, 38.59% of respondents refer to the lack of human interaction as a limitation, primarily due to the cognitive limitations of robots. Moreover, poor internet connection is

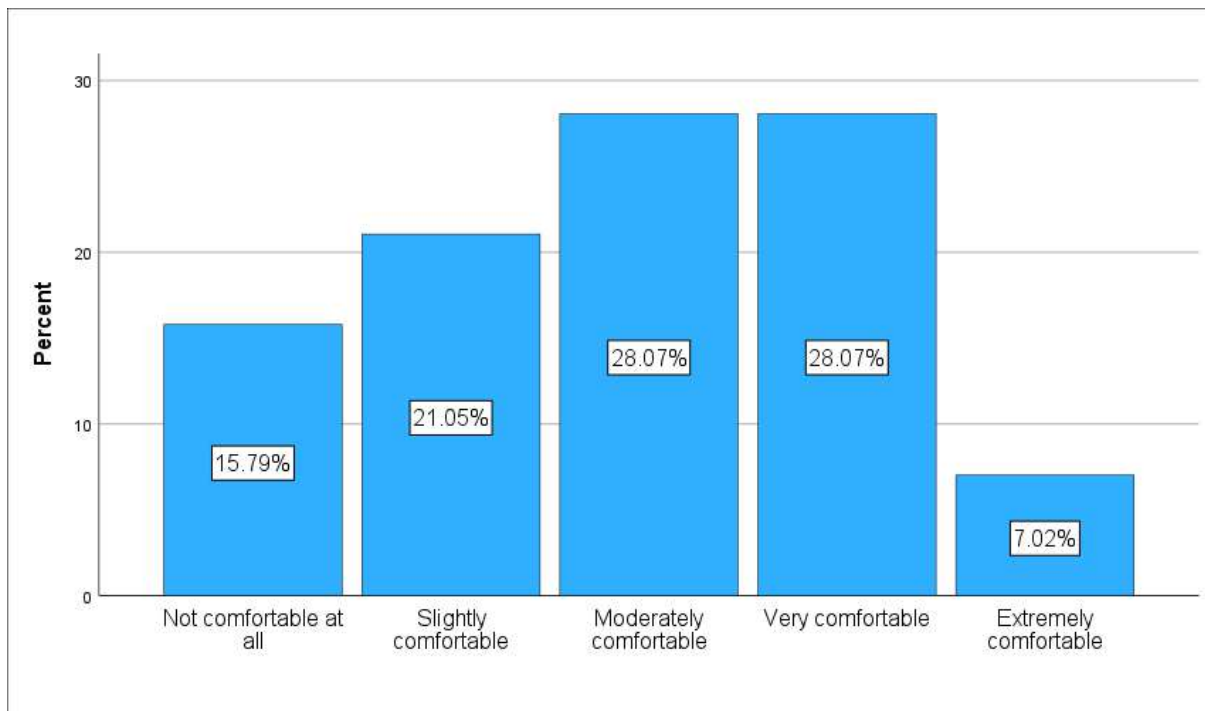
seen as an obstacle for 36.84% of responders because it hinders the smooth usage of these applications.

Section 3: AI in enhancing listening

Item 01: How comfortable are you with understanding native speakers in English ?

Figure11

The Comfort level of Understanding Native Speakers in English

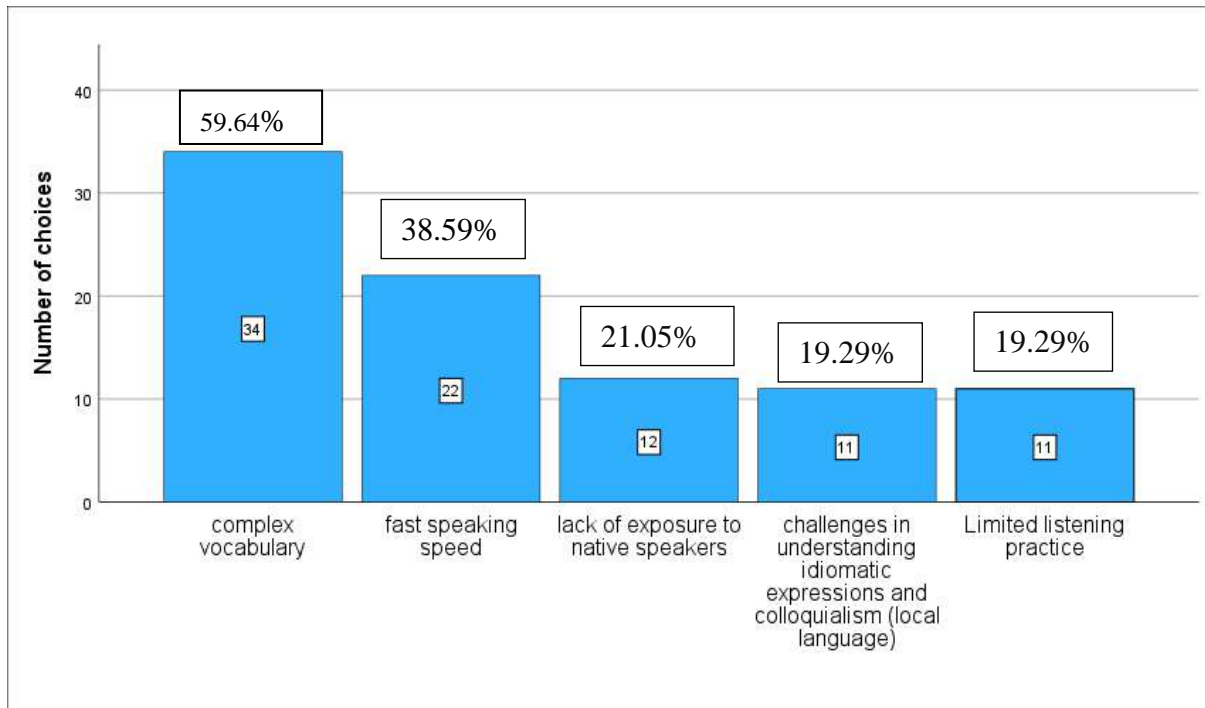


The graph describes the comfortability of understanding native speakers in English. 15.79% of learners answer *not comfortable at all*, and 21.05% reports *slightly comfortable* which indicate a lower proficiency in listening abilities. Additionally, 28.07% of participant express being *moderately comfortable* in understanding the natives, indicating an intermediate level. Conversely, 28.07% of respondents claim to feel *very comfortable*, and 7.02% report they are *extremely comfortable*. These two percentages reflect an advanced proficiency level in listening comprehension.

Item 02: In your opinion, what challenge(s) do you face while trying to improve your listening skills?

Figure 12

Challenges in Improving Listening



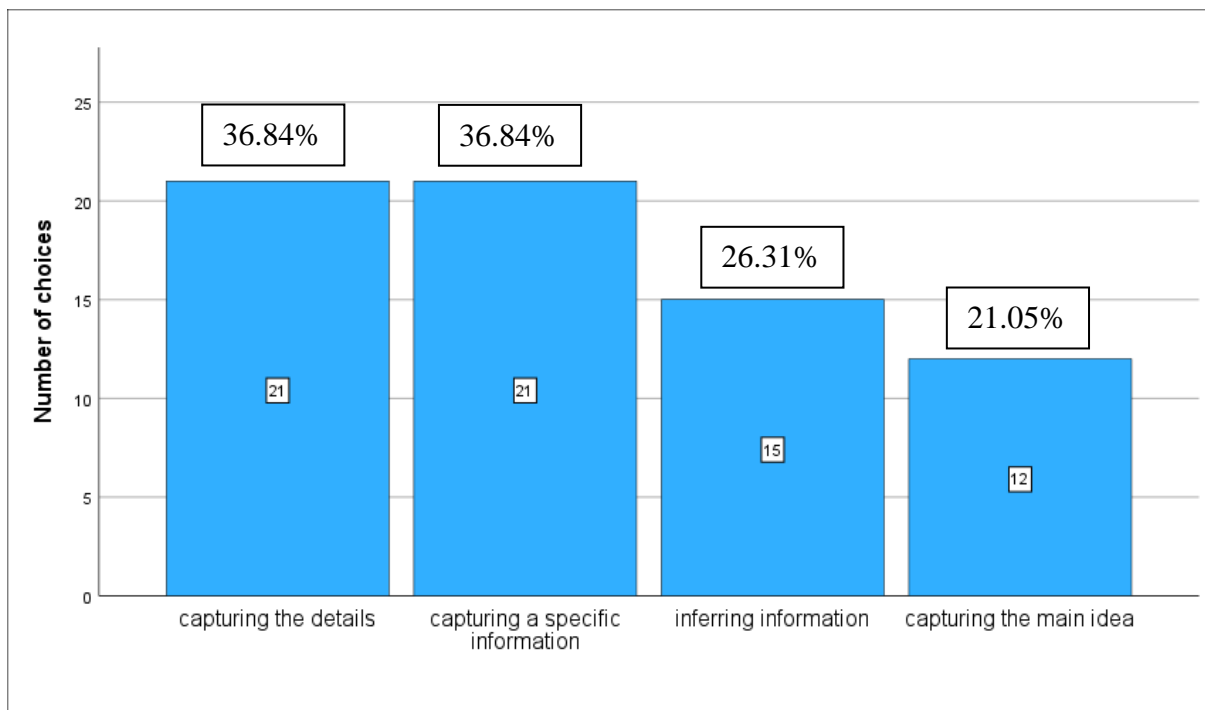
The result in figure 12 shows that the main difficulty students encounter in listening comprehension is misunderstanding the complex vocabularies with a rate of 59.64%. This suggests that many students struggle with a limited range of vocabulary. Therefore, they need to expand their repertoire of words and expressions in order to enhance their listening skills. Additionally, 38.59% of the respondents find difficulties in fast speaking speed. This highlights the importance of practicing listening comprehension at various speeds to improve their auditory and comprehension abilities. Furthermore, 21.05% of students lack the exposure to native speakers, primarily due to the lack of authenticity in language materials. This indicates the importance of incorporating authentic language resources and real-world contexts into learning materials to provide students with exposure to natural language

usage. Moreover, 19.29% of respondents refer to challenges in understanding idiomatic expressions and colloquialisms as well as limited opportunities for listening practice. These difficulties may arise from a lack of exposure to authentic language usage and insufficient practice in real-life communication scenarios.

Item 3: In your opinion, in which listening sub-skill(s) do you face challenges while trying to improve your listening skills?

Figure13

Sub skills-Specific Challenges in Improving Listening

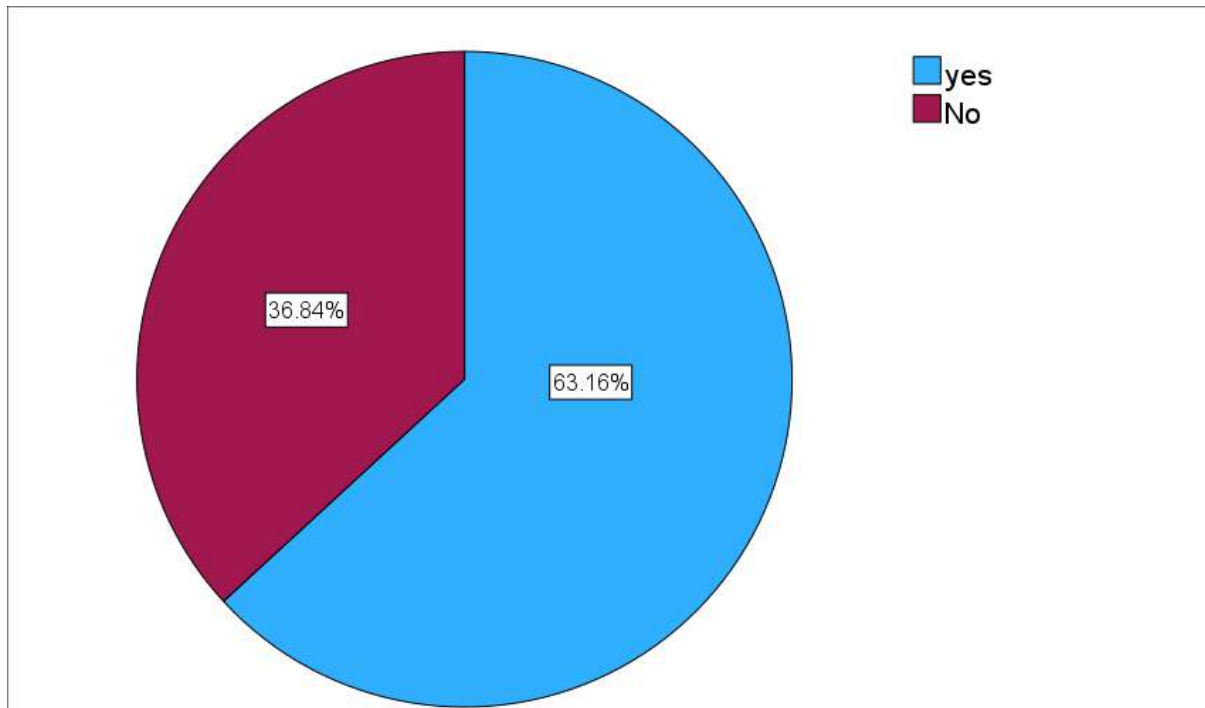


The graph presents in which listening subskills the students found difficulties while trying to improve listening. As shown in this graph, the majority of participants face challenges in capturing the details and specific information both at rate of 36.84%. However, 26.31% of the respondents find difficulty in inferring information, which is considered as one of the most important aspects in spoken language. Furthermore, only 21.05% cite difficulty in capturing the main idea which is one of fundamental abilities learners should acquire.

Item 04: Have you ever used a mobile application (s) to improve your listening skills?

Figure14

The Utilization of Mobile Applications to Improve Listening

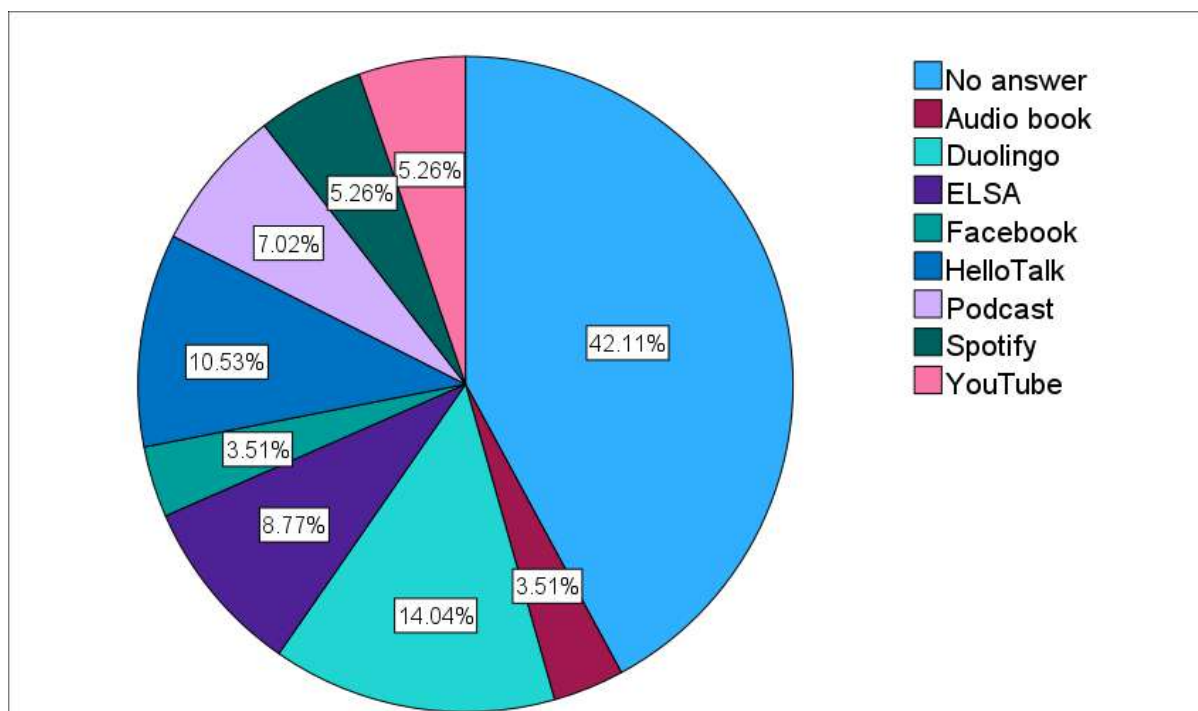


The purpose of this question is to see later if learners can distinguish between the classical language learning applications with AI-based ones, and to determine if they are incorporating this specific type of AI-driven application into their collection of learning tool. The graph presents the percentages of using smartphone applications (not specified to a particular kind) to improve listening skills. The pie chart reveals that 63.16% of learners use mobile learning tools to improve listening comprehension, while 36.84% respond negatively.

Item 05: If yes , please specify the application (s) you have used?

Figure 15

The Percentages of Specific Applications for Listening Improvement

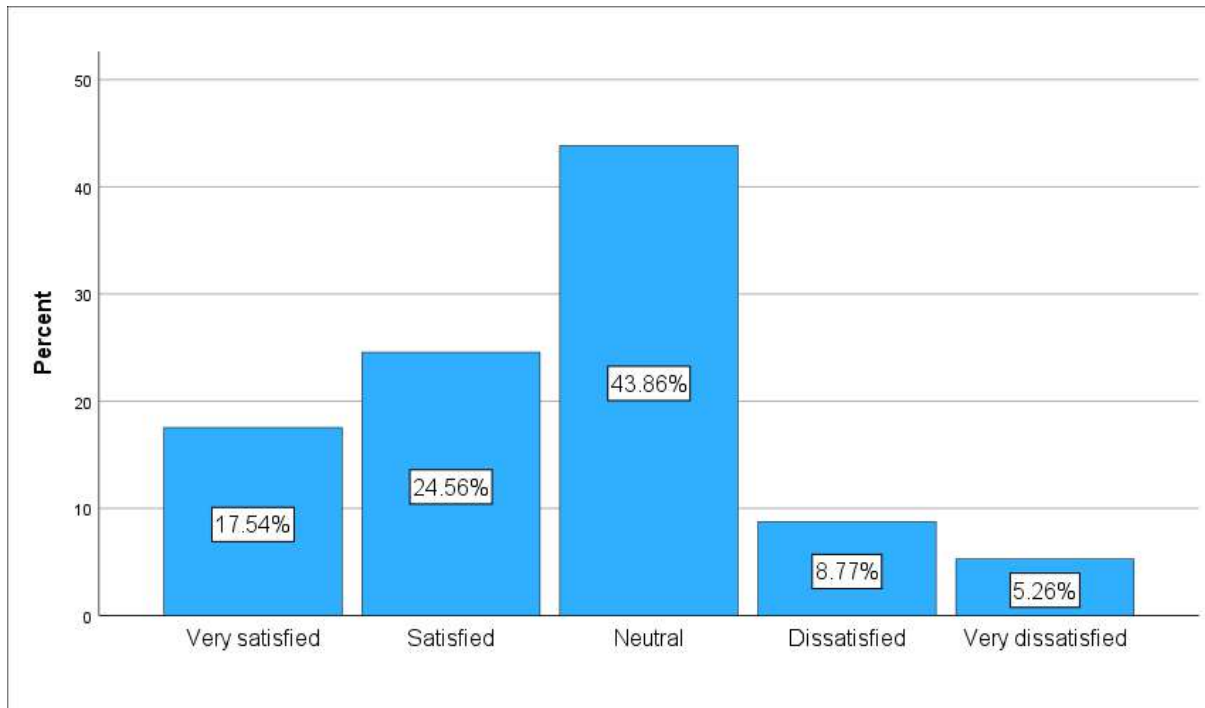


This pie chart reveals the percentages of the applications that are used to improve listening abilities. 42.11% of participants did not give answers, but the rest mentioned several applications. The participants provide a wide range of applications, varying from AI-based ones such as *ELSA* to ordinary ones such as audiobooks. As a result, learners use AI-driven applications (e.g., *ELSA*, *Spotify*, *Duolingo*, and *Hellotalk*) in improving their learning capabilities. They reported that the most used application for listening development are *Duolingo* (14.04%), *HelloTalk* (10.53%), *ELSA* (8.77%), *podcast* (7.02%), *Spotify* (5.26%), and *YouTube* (5.26%).

Item 06: How satisfied are you with the effectiveness of listening exercises and features in the application (s) you have used ?

Figure16

The Satisfaction Level of the Effectiveness of Listening Exercises and Features in Applications

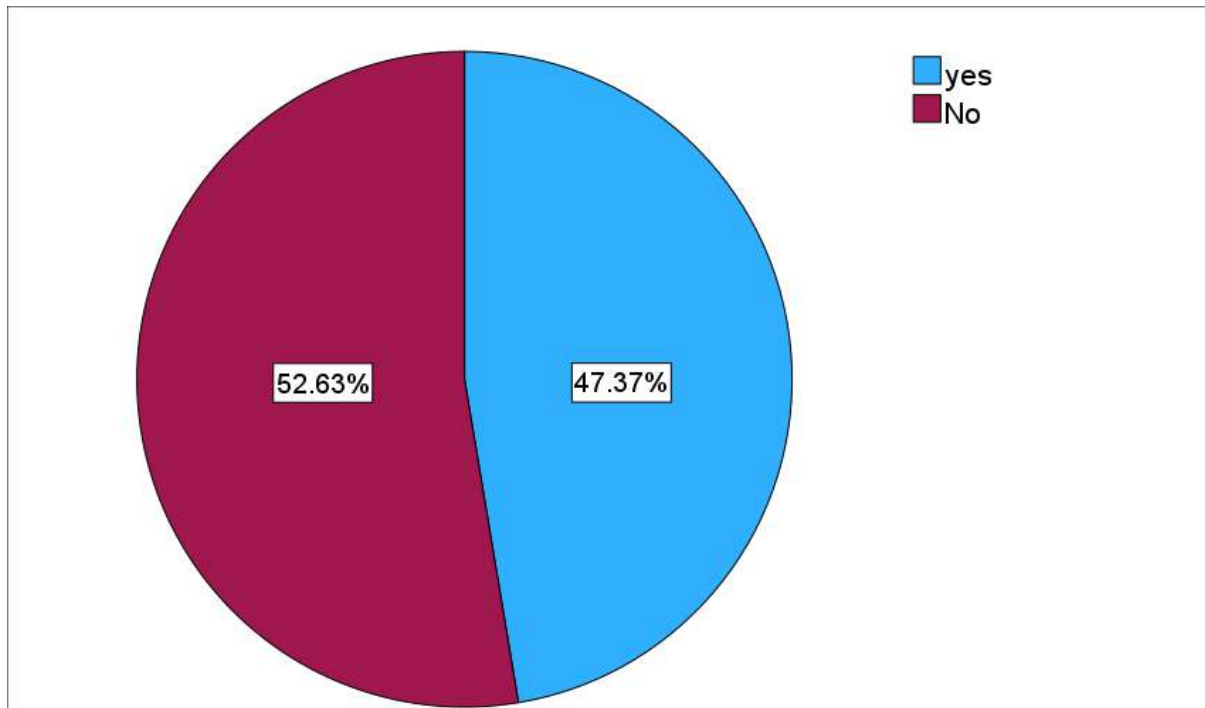


The graph describes the satisfaction level of the effectiveness of listening exercises and features in the applications. 17.54% of learners answer *very satisfied* and 24.56% report *satisfied* which indicate the favorable features in the applications. Moreover, 43.86% of participant express being *neutral* which is the largest percentage. Conversely, 8.77% of respondents claim to feel *dissatisfied*, and 5.26% report they are *very dissatisfied* which represent small percentages. The overall satisfaction level is at a moderate level.

Item 07: Have you ever used AI-based language learning app(s) to improve your listening skills?

Figure 17

The Utilization of AI-Based Mobile Applications to Improve Listening

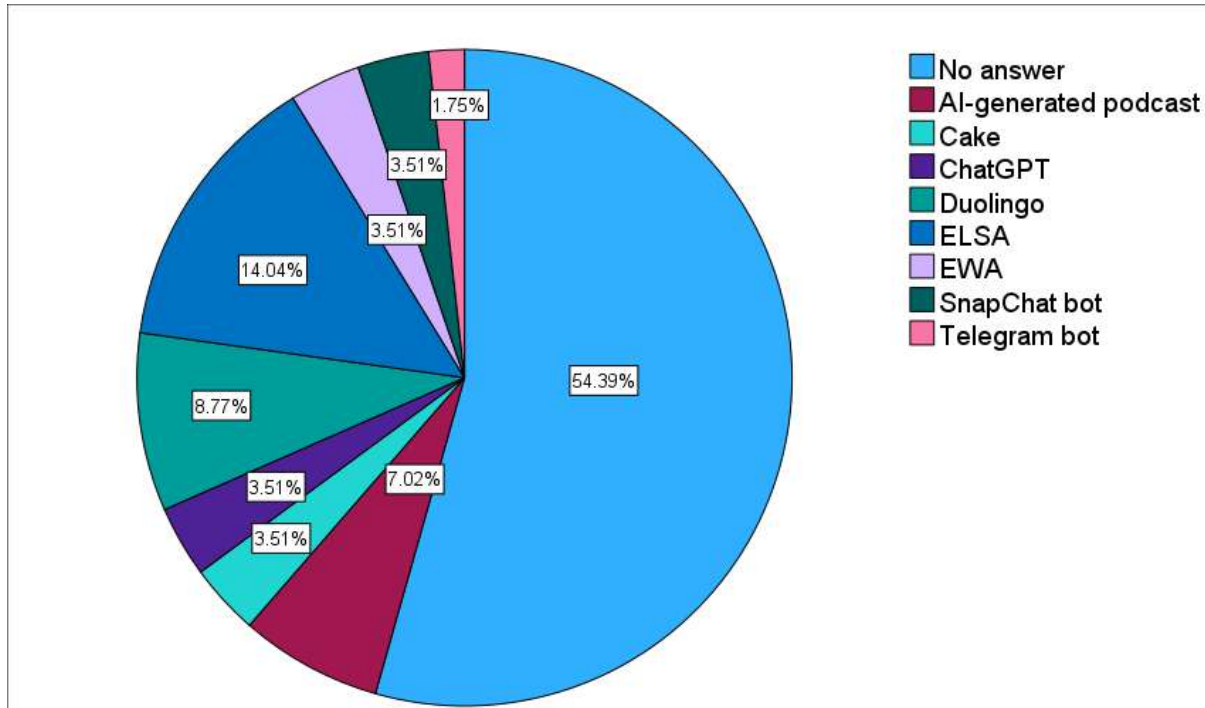


According to Figure 17, 47.37% of participants are using AI-based language applications, while 52.63% are not. The results of figure 17 reveal the underutilization of AI-based applications. Referring to figure 15, this underutilization can be attributed to two possible reasons: either the learners are already using AI-driven applications without realizing that, as many of the applications listed in Figure 15 incorporate AI, or they genuinely do not use these applications.

Item 08: If yes , please specify the app (s) you have used?

Figure 18

The Percentages of Specific AI based Applications to improve Listening

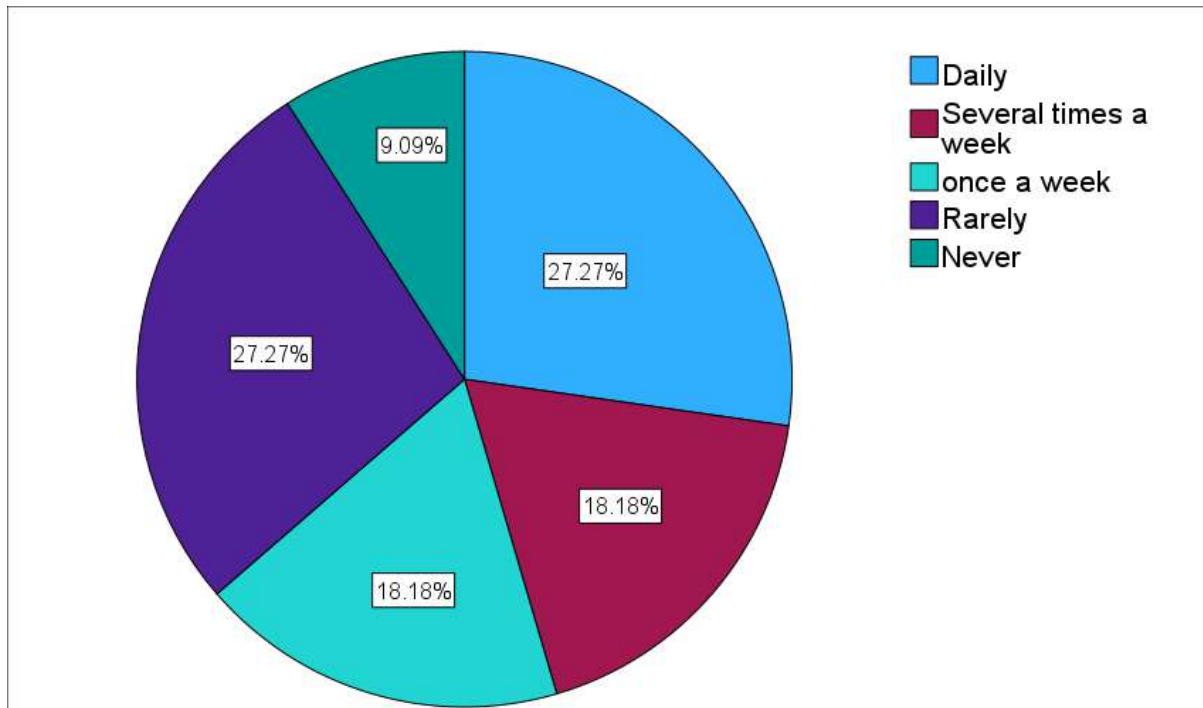


This figure reveals the percentages of the AI-based applications that are used to improve listening abilities. 54.39% of participants did not give answers, but the rest mentioned several applications. They reported that the most used AI- based applications for listening development are *ELSA*(14.04%),*Duolingo*(8.77%), and *AI-generated podcast* (8.77%).

Item 09:How often do you useAI-based language learning app (s) to improve your listening skills?

Figure19

The Frequency of Using AI-Based applications to improve Listening Skills

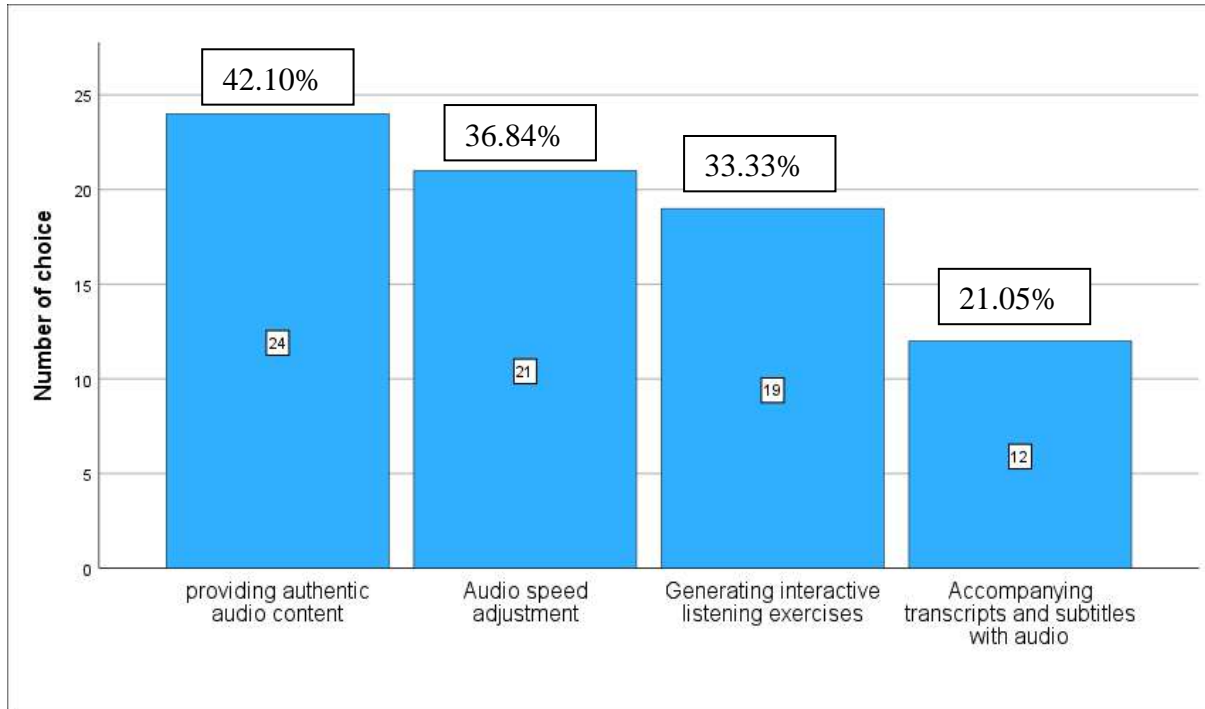


According to Figure 19,(19.27%) of students use AI-based applications to support their listening *daily*. With the same rate (27.27%), it was found that some students utilize these tools *rarely*. Meanwhile, 18.18% is the rate of both *several times and once a week*. In addition, only 9.09% of participants responded *never*.These results reveal students’ positive attitudes towards using AI-driven applications in supporting their listening, and this diversity is due to the inequality of the students’ levels and their listening capabilities. As seen from students’ responses, most of them face problems in listening due to several reasons. As a result, the use of the AI- supported applications helps them to improve their listening abilities in several ways.

Item 10 :In your opinion , what feature (s) in AI-based language learning apps do you find most helpful for listening practice?

Figure20

Key Features in AI-Based Language Learning Applications for Listening Practice

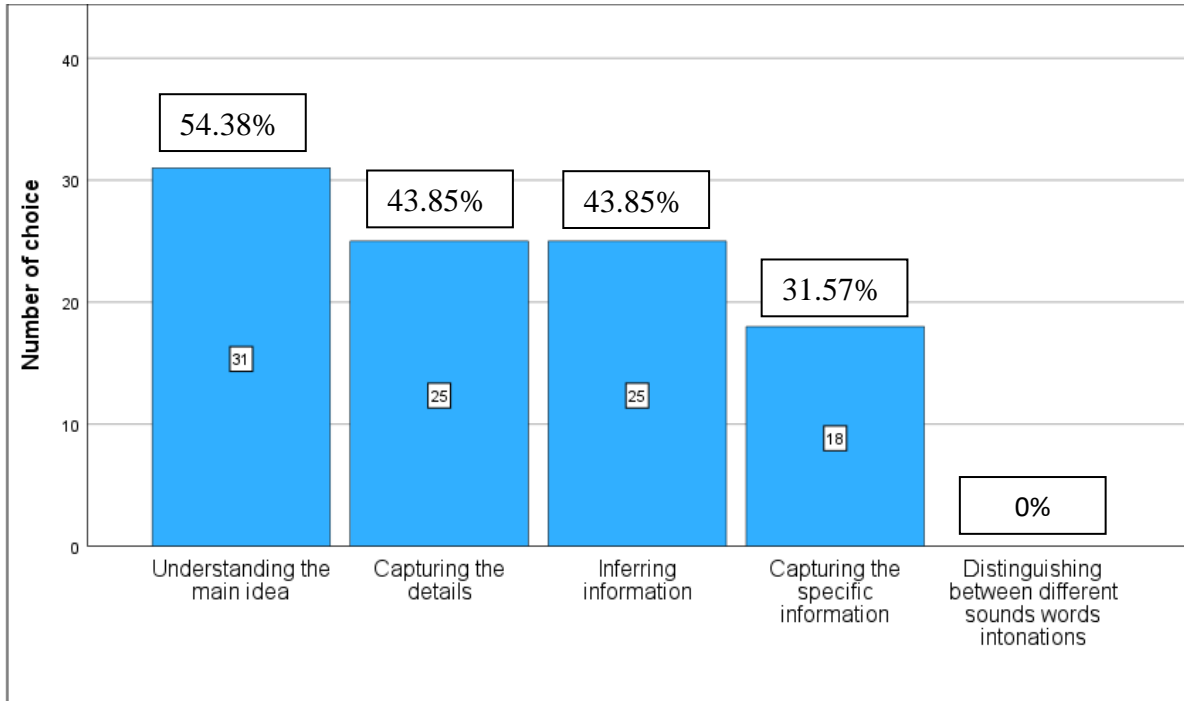


As shown in Figure20, 42.10% of learners found that the most significant feature in AI-driven applications to improve listening is providing authentic audio content, which reflects their awareness toward the deficiency in pragmatic abilities. In addition to that, with a 36.84% rate, audio speed adjustment is one of the favorable features since the previous results revealed that they find difficulties in fast speaking speed. After that, 33.33% of answers were generating interactive listening exercises, which can raise their motivation. Furthermore, 21.05% prefer the service of transcripts and subtitles. The diversity of choices is due to the different needs of students and their gaps in listening.

Item11: In your opinion , AI apps can help you to improve your ability(s) in :

Figure21

The Impact of AI applications on Listening sub- skills

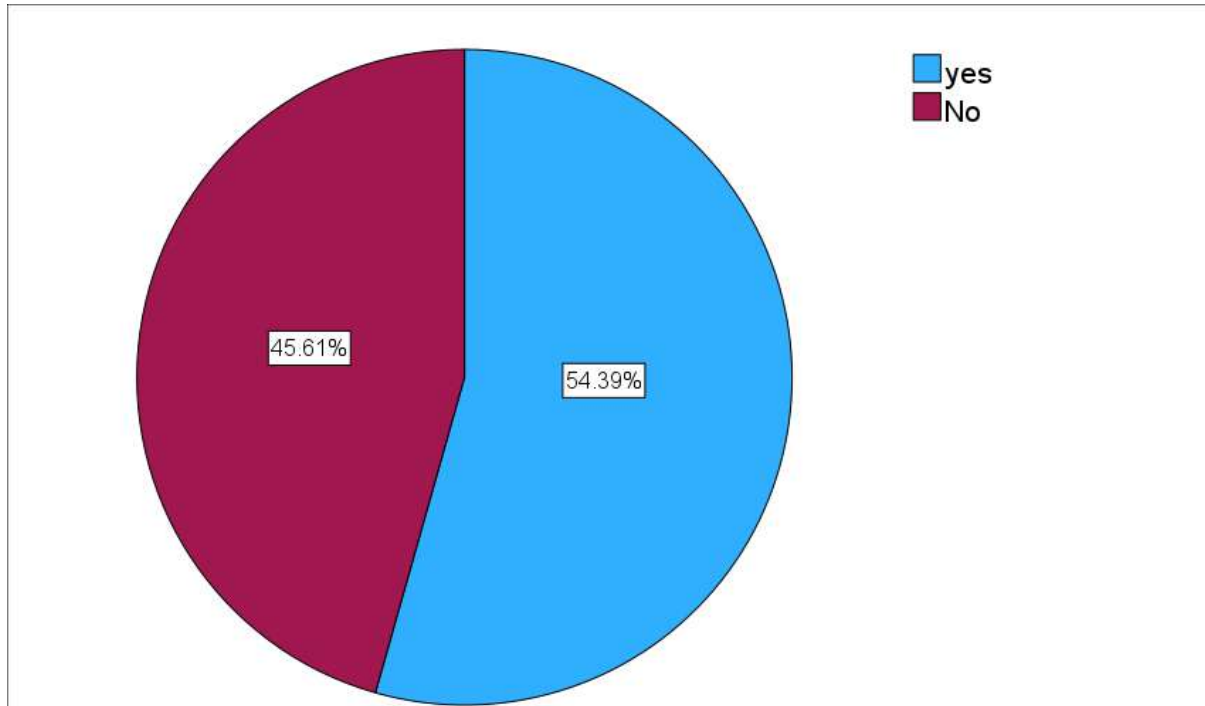


The data summarized in the figure above indicates that 54.38% of the students reported that AI applications could help them to support their ability of understanding the main idea. Meanwhile, capturing the details and inferring information is rated with 43.85%. After that, 31.57% of respondents cite "capturing specific information". Finally, no one chose "distinguishing between different sounds, words, intonations."

Item 12: Have you noticed any positive changes in your listening abilities through the use of AI in language applications?

Figure 22

The Observed Positive Changes in Listening Abilities through AI in Language Applications



The findings in the figure exhibit that 54.39% of the sample noticed positive changes in their listening abilities after using AI tools, while 45.61% does not notice any improvement. As a result, AI learning applications can help students to improve their listening.

Item 13: If yes, please justify ?

This question was designed to see how AI-based applications help learners in improving listening. The answers were as following:

Student 01: "chat bot helps me a lot"

Student 02: "it makes me learn quickly"

Student 03: "very helpful"

Student 04: “snapchat bot helps me a lot”

Student 05: “it helps to improve my levels”

Student 06: “it is very good”

Student 07: “I use Duolingo everyday”

Student 08: “because there is an AI teacher”

Student 09: “because it answers very fast”

Student 10: “because it gives me the audio according to my level”

Student 11: “I use *ELSA* app to make my listening advanced and I use it a lot”

Student 12: “it helps me a little bit”

Student 13: “it does not help me at all”

Based on the provided responses, students 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, and 11 expressed positive attitudes regarding the assistance provided by AI-based applications in improving listening skills. They appreciate the speed, assistance, personalized content, and effectiveness in learning provided by these applications. They highlighted the following significant features: the assistance provided by chatbots (students 01, 04), personalization of content based on proficiency level (student 10), the availability of AI teachers (student 08), the speed of learning (students 02, 09), consistency in usage (student 07). Certain students mentioned specific applications such as *ELSA*, *Duolingo*, and *Snapchat bot*, indicating a preference for specific tools that they find particularly effective. Conversely, student 12 mentioned that it helps "a little bit," indicating a moderate level of benefit. In addition, student 13 expressed dissatisfaction, stating that it does not help at all, suggesting a lack of effectiveness or relevance to their learning needs.

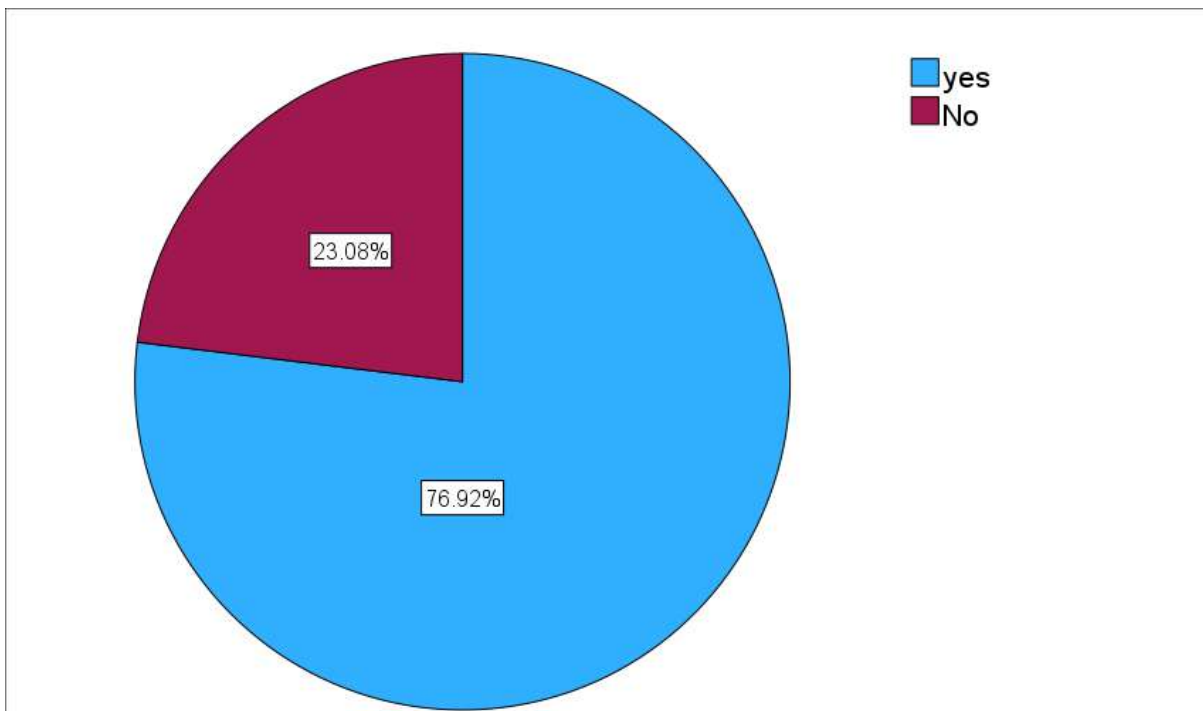
Overall, the majority of students find AI-based applications helpful in improving their listening skills, citing factors such as personalized content, real-time feedbacks, and access to

AI teachers. However, a few express varying levels of satisfaction or dissatisfaction with these tools.

Item 14: would you recommend an AI-based language learning app to friend for listening improvement?

Figure23

Recommendation of AI-Based Language Learning Applications for Listening Enhancement



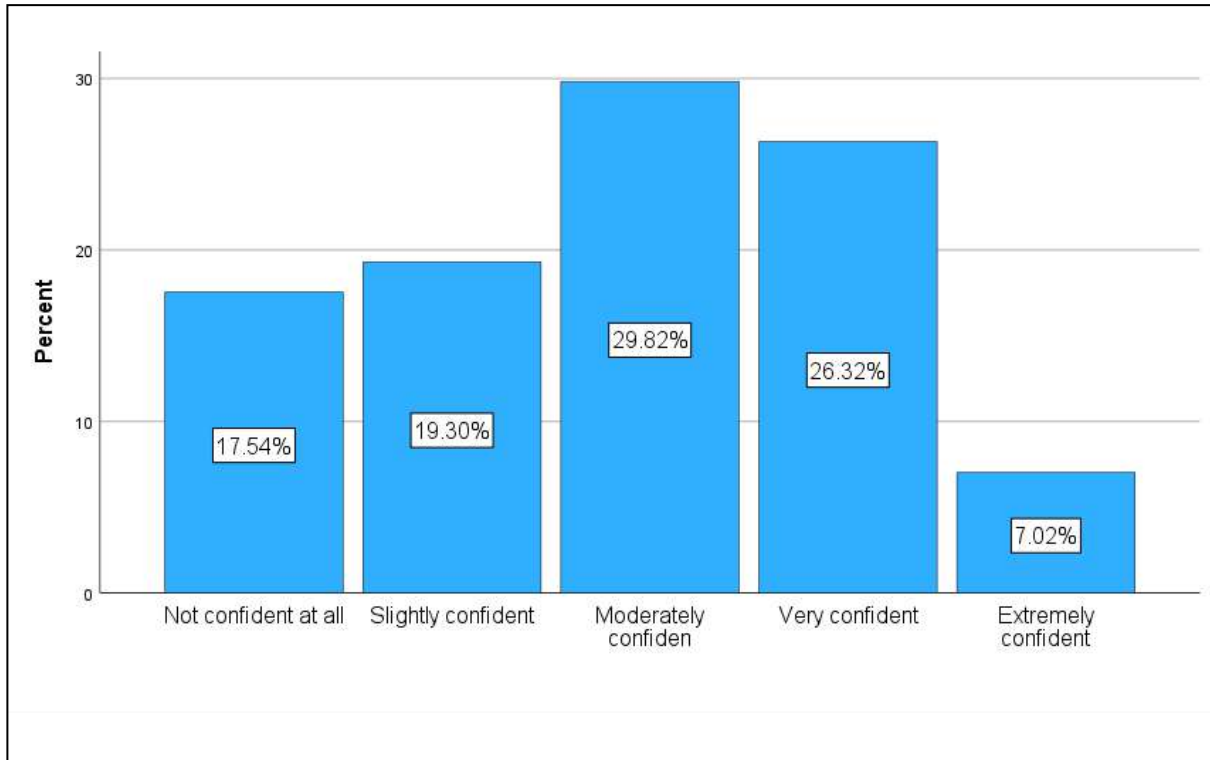
The purpose of this question is to perceive the participants' attitudes toward the use of AI-driven applications in improving listening. The results reveal that 76.92% of the sample would recommend an AI language learning application to a friend. However, only 23.08% cited "no". Therefore, the learners expressed positive attitude toward the use of AI applications for listening development.

Section 4: AI in enhancing speaking

Item 01: How confident do you feel when speaking in English?

Figure24

The Confidence Level of Speaking in English

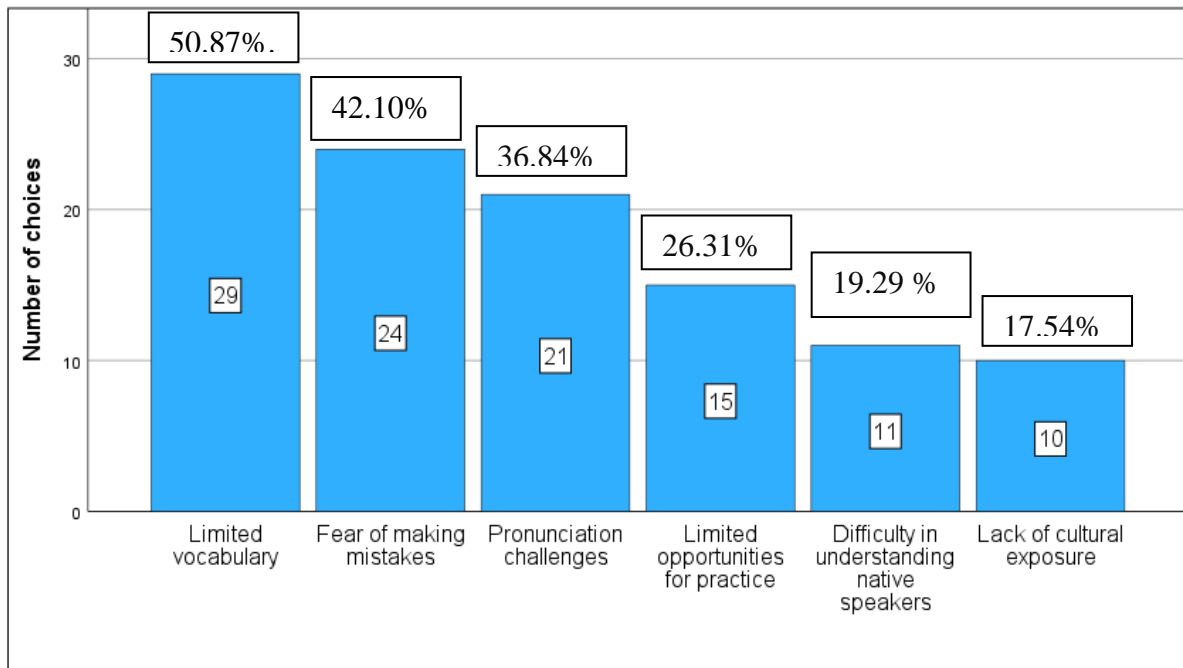


The figure describes the confidence level of speaking in English. 17.54% of learners answer *not confident at all*, and 19.30% report *slightly confident* which indicate a lower proficiency in speaking abilities. Additionally, 29.82% of participants express being *moderately confident* in speaking, indicating an intermediate level. Conversely, 26.32% of respondents claim to feel *very confident*, and 7.02% report they are *extremely confident*. These two percentages reflect an advanced proficiency level in speaking. In comparison with listening results, the level of students in speaking is closely similar.

Item02: In your opinion, what challenge (s) do you face while trying to improve your speaking skills?

Figure25

Challenges in Improving Speaking skills



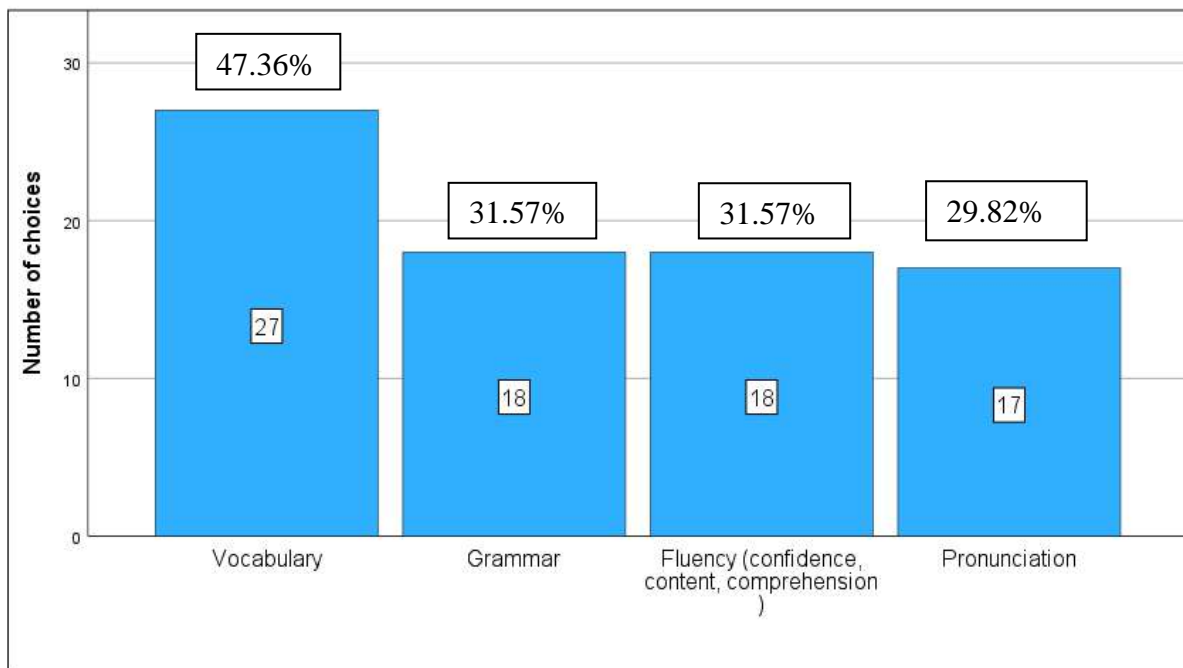
The result in this figure shows that the main difficulty students encounter in speaking is limited vocabulary with a rate of 50.87%. This suggests that many students struggle with a limited range of vocabulary, which is the same thing with listening. As a result, learners should to enlarge their repertoire of words and expressions to develop their speaking abilities. Additionally, 42.10% of the respondents find difficulties in fear of making mistakes. This highlights the importance of practicing speaking in various real-world scenarios to improve their fluency abilities. Moreover, 36.84% of respondents refer to challenges in pronunciation, which donates that learners give an importance to the accent (i.e., American and British), intonation, and word stress they use. Moreover, 26.31% of respondents cited limited opportunities for practice, 19.29% referred to challenges in understanding native speakers,

and 17.54% mentioned lack of culture exposure . These difficulties may arise from a lack of exposure to authentic language usage and insufficient practice in real-life communication scenarios. According to the results, the most of difficulties stem from lack of practice and pragmatic abilities which indicate the importance of incorporating authentic language resources and real-world contexts into language learning materials.

Item 03: In your opinion ,in which speaking sub-skill(s) do you face challenges while trying to improve your speaking ?

Figure 26

Subskills -Specific Challenges in Improving Speaking



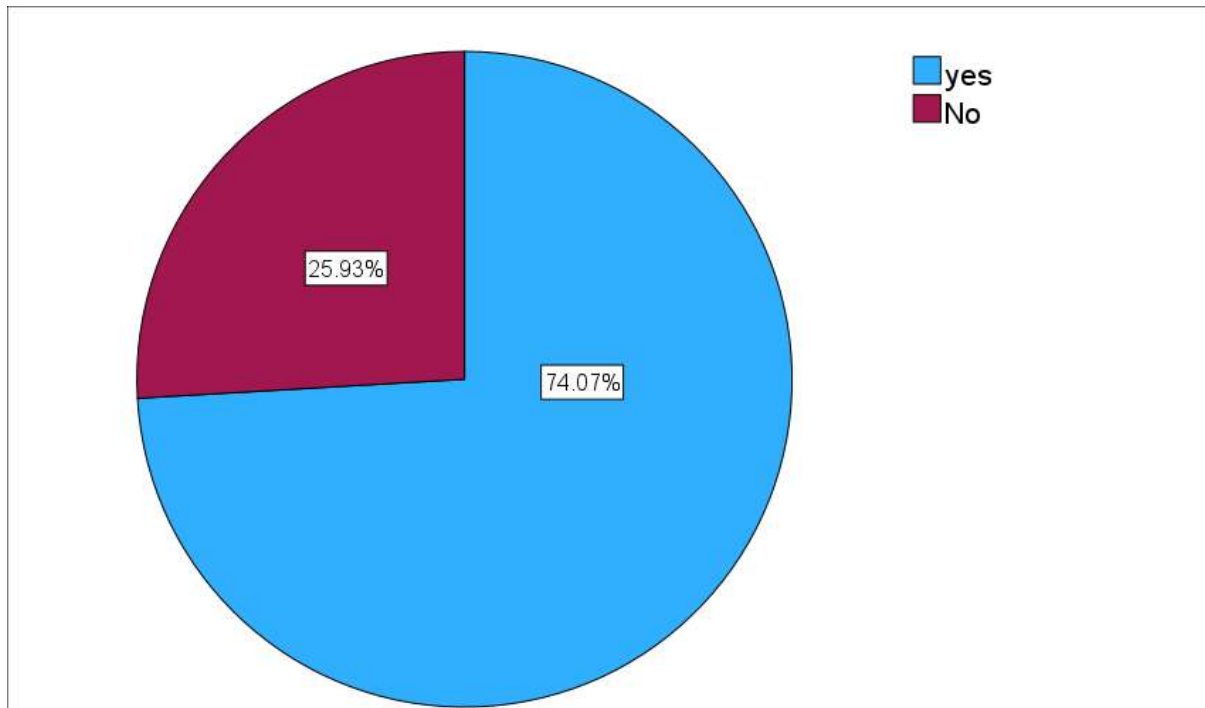
The figure presents in which speaking- subskill the students encounter difficulties while trying to improve speaking skills. As shown in this graph, the majority of participants face challenges in vocabulary with the rate of 47.36% which support the previous results in the figure 25. However, 31.57% of the respondents find difficulties in both grammar

and fluency. Furthermore, 29.82% cited pronunciation. Therefore, vocabulary has the highest percentage among the challenges in speaking subskills.

Item04: Have you ever used a mobile application(s) to improve your speaking skills?

Figure27

The Utilization of Mobile Applications to Improve Speaking

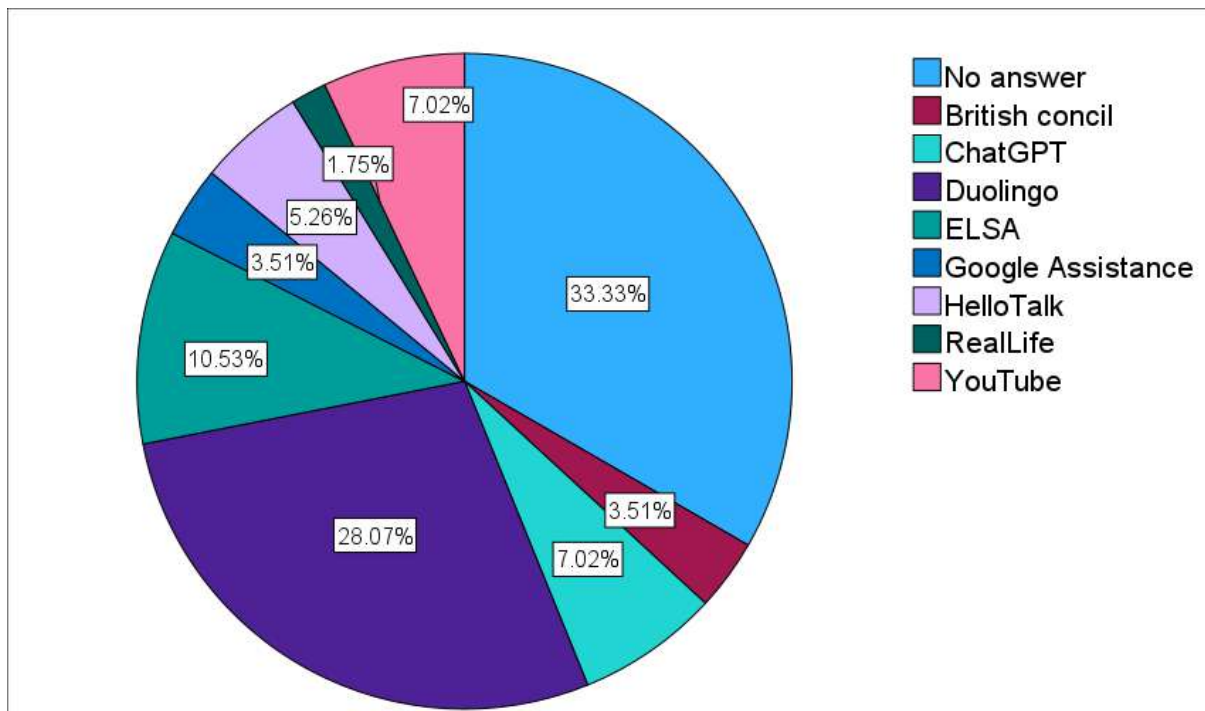


The purpose of this question is to later see if learners can distinguish between the classical language learning applications with AI-based ones, and to determine if they are incorporating this specific type of AI-driven application into their collection of learning tool. The graph presents the percentages of using smartphone applications (not specified to a particular kind) to improve speaking. The pie chart reveals that 74.07% of learners use mobile learning tools to improve their speaking abilities, while 25.93% respond negatively.

Item05: If yes , please specify the application (s) you have used ?

Figure 28

The percentage of Specific Applications for Speaking Improvement

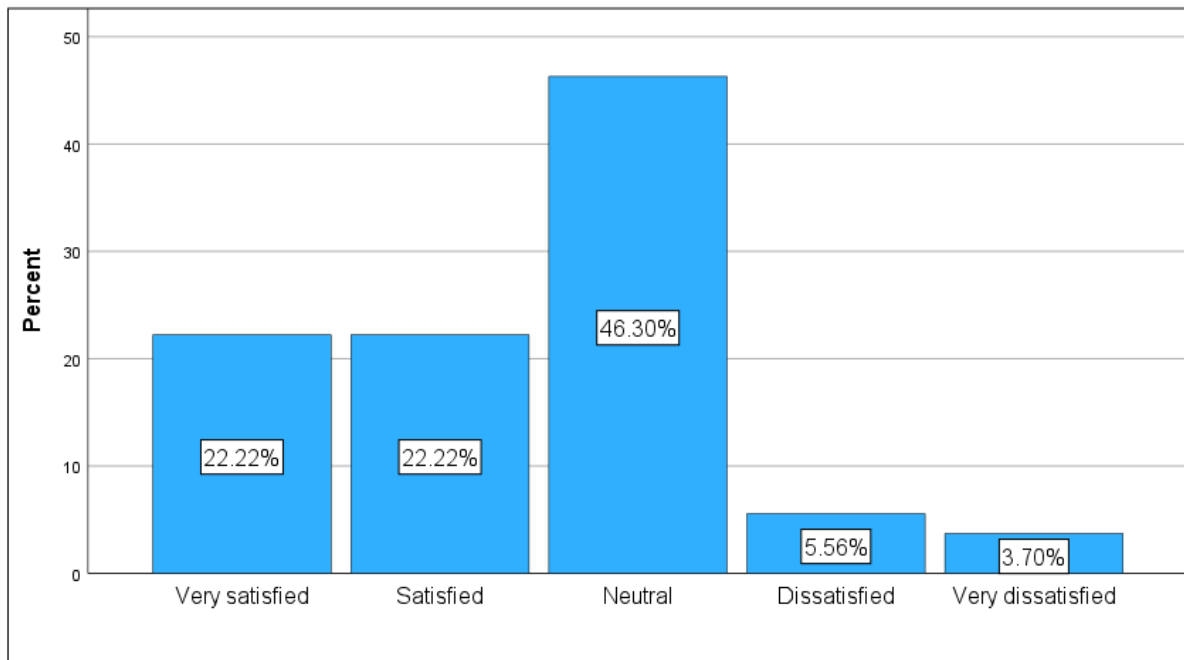


The figure reveals the percentages of the applications that are used to improve speaking. 33.33% of participants did not give answers, but the rest mentioned several applications. The most provided tools are AI-driven applications, but AI technologies may be visible such as virtual assistance or may not be such as recommendations to the users. As a result, learners use AI-driven applications (e.g., *ELSA*, *Duolingo*, and *Hellotalk*) in improving their speaking capabilities. They reported that the most used applications for speaking development are *Duolingo*(28.07%), *ELSA* (10.53%),*ChatGPT*(7.02%),*YouTube* (7.02%) and *HelloTalk*(5.26%).

Item06: How satisfied are you with the effectiveness of speaking exercises and features in the application (s) you have used ?

Figure29

The Satisfaction Level of the Effectiveness of Speaking Exercises and Features in Applications

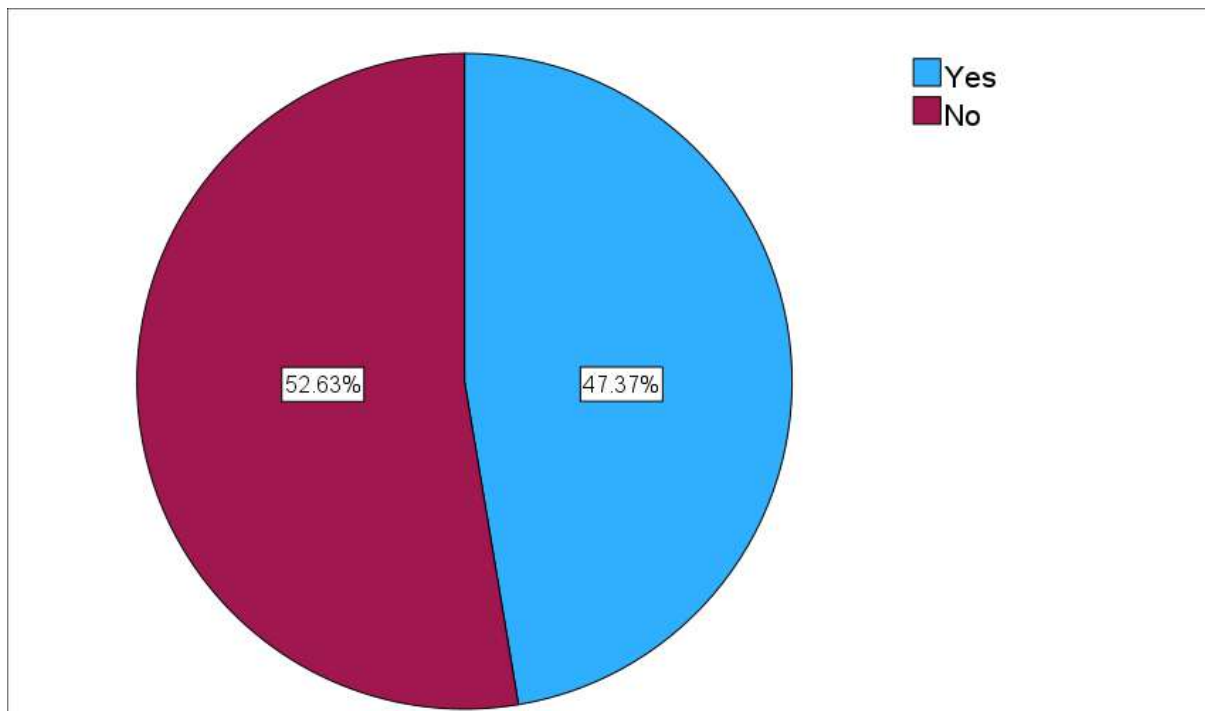


The figure describes the satisfaction level of the effectiveness of speaking exercises and features in the applications. 22.22% of learners cited for both *very satisfied* and *satisfied*. Moreover, 46.33% of participant express being *neutral* which is the largest percentage. Conversely, 5.56% of respondents claim to feel *dissatisfied*, and 3.70% report they are *very dissatisfied* which represent small percentages. The overall satisfaction level is at a moderate level.

Item07: Have you ever used AI-based language learning app(s) to improve your speaking skills?

Figure30

The Utilization of AI-Based Mobile Applications to Improve Speaking

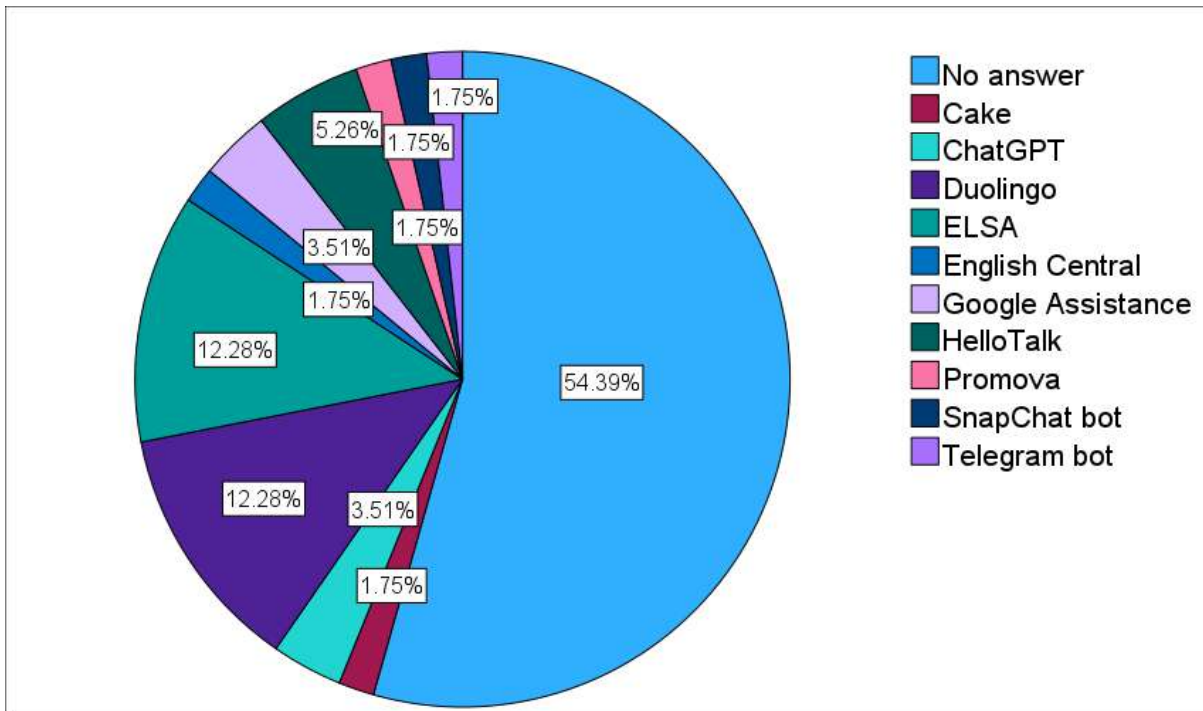


According to Figure 30, 47.37% of participants are using AI-based language applications, while 52.63% are not. The results of the figure reveal the underutilization of AI-based applications. Referring to figure 28, this underutilization can be attributed to two possible reasons: either the learners are already using AI-driven applications without realizing that, as many of the applications listed in Figure 28 incorporate AI, or they genuinely do not use these applications.

Item08: If yes , please specify the app (s) you have used?

Figure 31

The percentages of specific AI-based applications to Improve Speaking

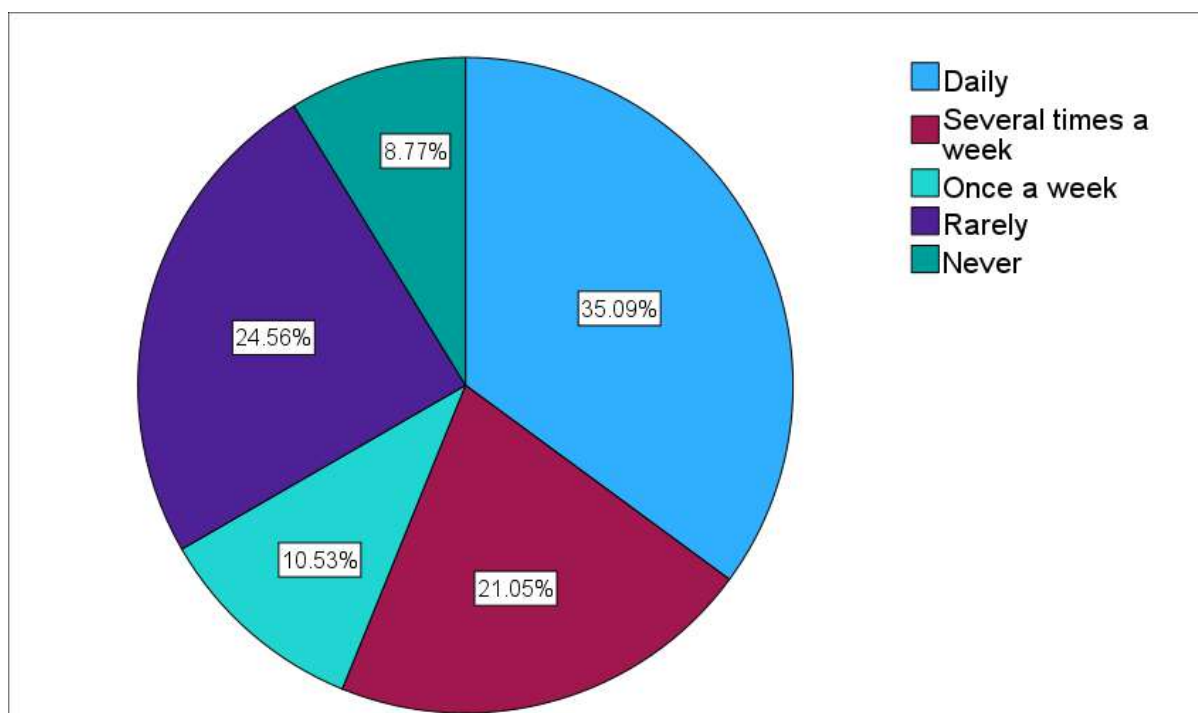


This figure reveals the percentages of AI-based applications used to improve speaking abilities. 54.39% of participants did not provide answers, but the rest mentioned several applications. They reported that the most used AI-based applications for speaking development are *ELSA* and *Duolingo*, with rates of 12.28%, *HelloTalk* (5.26%), and *ChatGPT* and *Google Assistant*, both at 3.51%.

Item 09: How often do you use AI-based language learning app (s) to improve your speaking skills?

Figure32

The Frequency of Using AI-Based applications to Improve Speaking

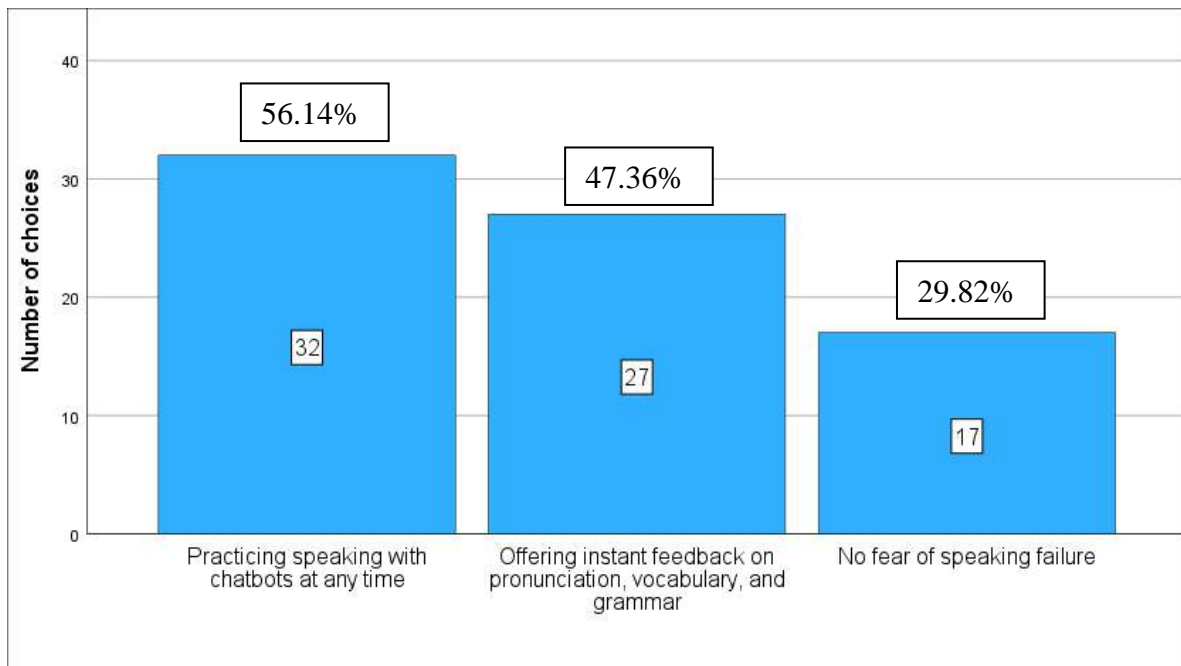


According to Figure 32, 35.09 % of students use AI-based applications to support their speaking *daily*. With the rate of 24.56%, it was found that some students utilize these tools *rarely*. Meanwhile, 21.05% is the rate of *several times a week*. In addition, 10.53% of participants responded *once a week*. However, 8.77% of learners *never* use them. These results reveal students' positive attitudes towards using AI-driven applications in supporting their speaking , and this diversity is due to the inequality of the students' levels and their speaking capabilities. As seen from students' responses, most of them face problems in speaking due to several reasons. As a result, the use of the AI- supported applications helps them to improve their speaking abilities in several ways.

Item 10: In your opinion, what feature (s) in AI-based language learning apps do you find most helpful for speaking practice?

Figure33

Key Features in AI-Based Language Learning Applications for Speaking Practice



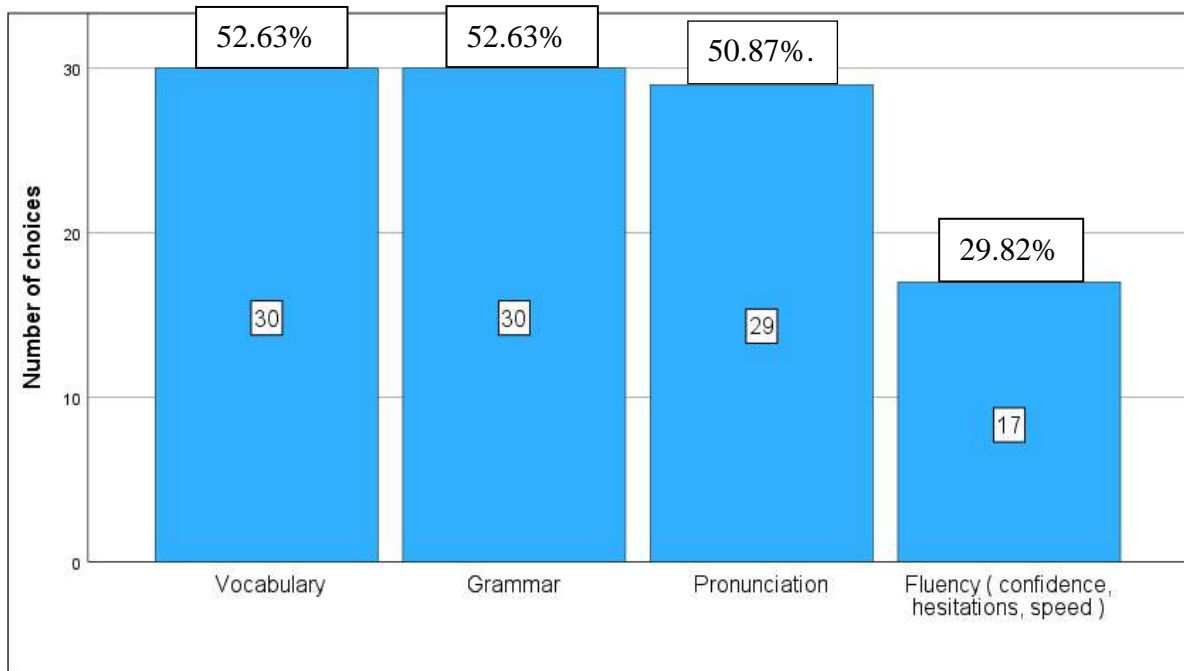
As shown in Figure 33, 56.14% of learners found that the most significant feature in AI-driven applications to improve speaking is practicing speaking with chatbots which reflects their awareness toward the necessary of increasing fluency. In addition to that, with a 47.36% rate, offering instant feedback on pronunciation, vocabulary, and grammar is one of the favorable feature since the previous results revealed that they find difficulties in these three aspect . After that, 29.82% of answers were no fear of speaking failure which can rise their confidence. The diversity of choices is due to the different needs of students and their gaps in speaking.

Item 11: In your opinion, AI apps can help you to improve your speaking abilities

(s) in :

Figure 34

The Impact of AI applications on Speaking Sub-Skills

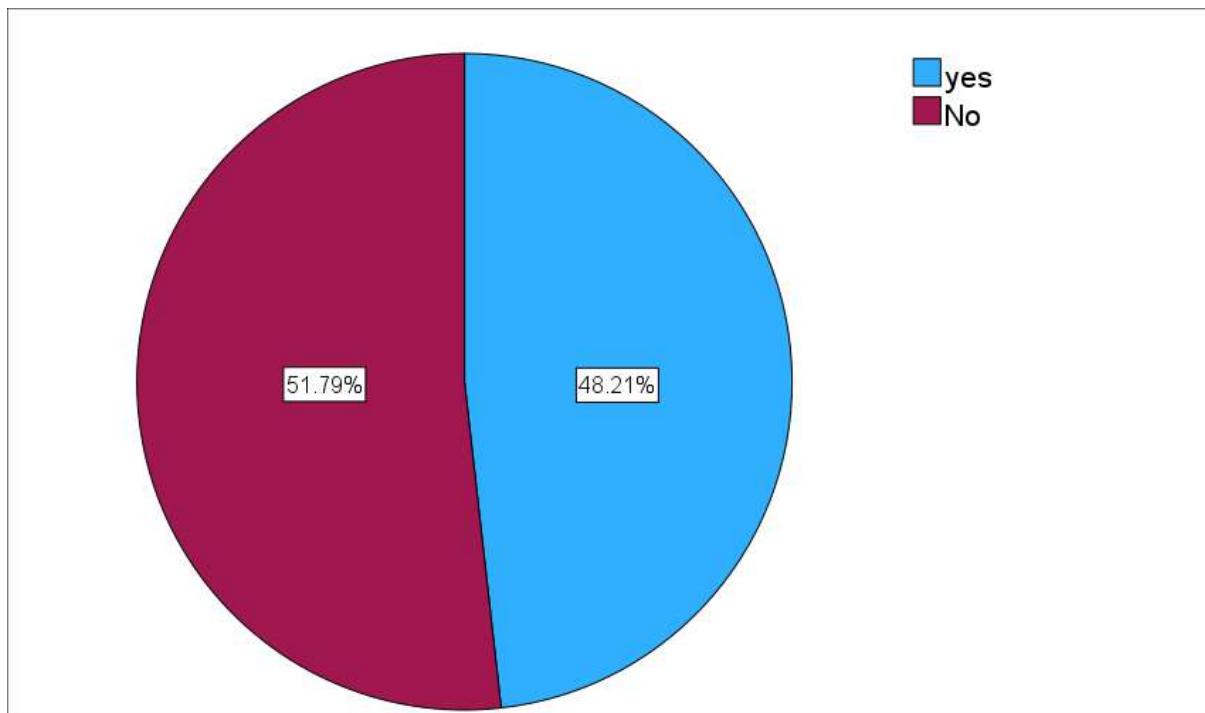


The data summarized in the figure above indicates that 52.63% of the students reported that AI applications help them in increasing their range of vocabulary and improve their grammar usage. Meanwhile, pronunciation is rated with 50.87%. After that, 29.82% of respondents cite "fluency". As seen in the previous results, the main challenge students face is lack of vocabulary.

Item 12 : Have you noticed any positive changes in your speaking abilities through the use of AI in language apps ?

Figure35:

The Observed Positive Changes in Speaking Abilities through AI in Language Applications



The findings in the figure 35 exhibit that 48.21% of the sample noticed positive changes in their speaking abilities after using AI tools, while 51.79% does not notice any improvement. As a result, AI learning applications can help students to improve their speaking.

Item 13: If yes , please justify?

This question was designed to see how AI-based applications help learners in improving speaking. The answers were as following:

Students 1: “because it helps me to discover my mistakes and correct them”

Student 2: “it helps me to improve my level”

Student 3: “I learnt English quickly”

Student 4: “I use it every day and a lot”

Student 5: “I use *ELSA* a lot”

Student 6: “I use it to improve my pronunciation”

Student 7: “because it helps me to reply fast”

Student 8: “it developed my pronunciation and I got new vocabulary”

Student 9: “because I use *ELSA* a lot”

Student 10: “I use it to learn grammar and words”

Student 11: “because I can learn whenever I want”

Student 12: “to get rid of my fear”

Student 13: “to be good public speaker”

Student 14: “to be confident”

Student 15: “I don’t use because it makes you lazy”

Based on the provided responses, students 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, and 14 expressed that AI-based applications play a significant role in enhancing their speaking skills. Student 01 highlighted the utility of AI applications in identifying their errors and mistakes, which contributes to overall improvement in their language proficiency. Others mentioned that these applications aid in advancing their language proficiency levels rapidly (student 02, 03). In addition, numerous participants emphasized the frequency of their usage (student 04, 05, and 09), indicating that they utilize these apps regularly, sometimes on a daily basis. Students 05 and 09 mentioned specific applications such as *ELSA*, indicating preference tools that they find particularly effective. Participants 06, 08, and 10 mentioned using these applications specifically to improve their pronunciation skills, vocabulary expansion, and grammar learning, suggesting that AI applications can enhance speaking accuracy. Concerning fluency, student 11 and 03 appreciated the convenience and flexibility

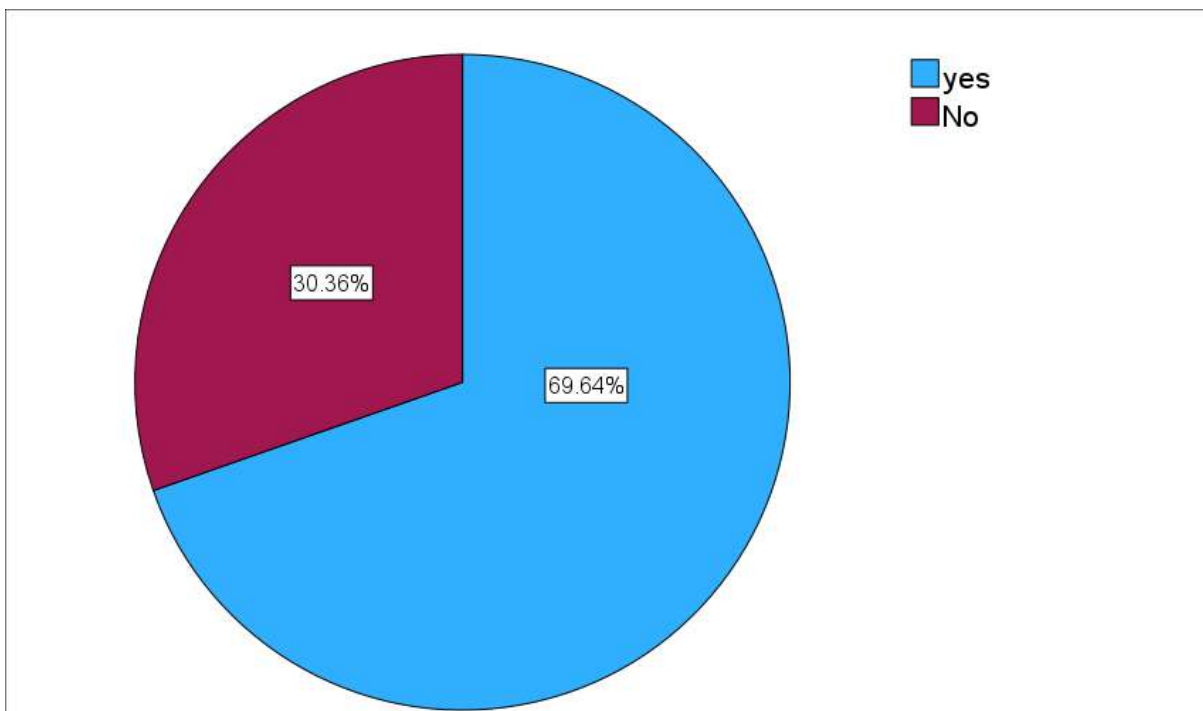
of using AI apps, highlighting features such as real-time feedbacks and the ability to learn at their own pace. In addition, learners 07,12, and13, and 14mentioned using AI apps to overcome fear and become more confident in their language abilities, particularly in public speaking scenarios. Conversely, student 15 expressed concerns about becoming dependent on AI applications and potentially becoming lazy as a result.

Overall, the data suggests that AI-based applications are valued in language learning for their ability to provide personalized feedback, convenience, motivation, and encouragement in overcoming speaking learning challenges.

Item14: Would you recommend an AI-based language learning app to friend for speaking improvement ?

Figure36

Recommendation of AI-Based Language Learning Applications for Speaking Enhancement



The purpose of this question is to perceive the participants' attitudes toward the use of AI-driven applications in improving speaking. The results reveal that 69.64% of the sample

would recommend an AI language learning application to a friend. However, only 30.36% cited "no". Therefore, the learners expressed positive attitude toward the use of AI applications for speaking development.

2.2. Discussion of the Questionnaire's Findings

After analyzing the student questionnaire, the results clearly indicate that the use of AI-driven language learning applications can improve listening and speaking skills. These findings provide researchers with the following valuable points for discussion. The Student Profile reveals that the predominant demographic of first-year Bachelor students of English Department at KasdiMerbah University are primarily females aged between 18 and 23, with an intermediate level of proficiency.

Additionally, the second section of the questionnaire focused more on the familiarity, advantages, and disadvantages of Artificial Intelligence. While students exhibit some degree of familiarity with Artificial Intelligence, their understanding remains somewhat limited, as it is still a new technology. Despite using AI-based applications in their learning journey, students are often unaware of that because they provided a wide range of AI applications, including *ChatGPT*, *Duolingo*, *ELSA*, and *HelloTalk*. For example, YouTube utilizes AI technologies to offer captions and recommendations. Moreover, the participants' attitudes toward incorporating AI in language learning mobile applications range from moderate to very comfortable levels. According to the findings, the most advantageous aspects of these tools are chatbots, instant feedback, studying from any place at any time, personalized learning, and tracking learning progress. Consequently, AI-driven applications can enhance learners' autonomy, motivation, and active engagement within interactive learning environments. However, despite the evident advantages, AI also presents notable limitations. These include complexity in use, providing poor and inaccurate responses, high prices for in-app purchases, lack of human interaction, and poor internet connection. Despite the progress

made in AI, it still lacks the innate cognitive abilities of humans and faces challenges in understanding nuanced cultural and contextual aspects. Additionally, Algeria's educational infrastructure currently did not meet the required level to reach the widespread access to AI technologies, primarily due to challenges such as inadequate internet connectivity. Addressing these challenges is essential for leveraging the full potential of AI in enhancing educational outcomes.

Moreover, the third section of the questionnaire focused on the impact of AI-based language learning applications on listening. The students reveal positive attitudes towards the use of AI-driven tools in improving listening skills. The results demonstrate that the comfort level of the students in understanding natives ranges from moderate to very comfortable, reflecting the good level of learners. Additionally, the main difficulty students encounter in listening comprehension is the misunderstanding of complex vocabularies, suggesting that many students struggle with a limited range of vocabulary. Moreover, students find difficulties in fast speaking speed, lack of exposure to native speakers, misunderstanding idiomatic expressions and colloquialisms, as well as limited opportunities for listening practice. All of these challenges stem from the lack of exposure to authentic language usage and insufficient practice in real-life communication scenarios. Consequently, this indicates the importance of incorporating authentic language resources and real-world contexts into learning materials. Furthermore, the results showed that students found problems in the four sub-skills of listening (i.e., main idea, specific information, details, inferring information) in approximate proportions. Furthermore, the participants use a wide range of AI-based language applications to improve listening, including *Duolingo*, *ELSA*, *HelloTalk*, *AI-generated podcasts*, *Spotify*, and *YouTube*. These applications assist students in improving the four sub-skills of listening, including grasping the main idea, details, specific information,

and inferring information by offering authentic audio content, audio speed adjustment, video subtitles and transcripts, as well as generating interactive listening exercises.

Furthermore, the fourth section of the questionnaire focused on the impact of AI-based language learning applications on speaking. The students reveal positive attitudes towards the use of AI-driven tools in improving speaking skills. The results demonstrate that the comfort level of the students in English speaking ranges from moderate to very comfortable, reflecting the good level of learners. Additionally, the main difficulty students' encounter in speaking is limited vocabulary. In comparison to listening, students struggle with the same issue, which is a limited range of vocabulary. Moreover, students find difficulties in the fear of making mistakes, pronunciation challenges, and limited opportunities for practice, understanding native speakers, and lack of cultural exposure. All of these challenges stem from the lack of exposure to authentic language usage and insufficient practice in real-life communication scenarios. Therefore, this indicates the importance of incorporating authentic language resources and real-world contexts into learning materials and improving their pragmatic abilities. Furthermore, the results showed that students found problems in the four sub-skills of speaking (i.e., fluency, vocabulary, pronunciation, grammar) in approximate proportions. Additionally, the participants use a wide range of AI-based language applications to improve speaking, including *Duolingo*, *ELSA*, *ChatGPT*, *YouTube*, and *HelloTalk*. These applications assist students in improving the four sub-skills of speaking, including fluency and accuracy by offering an opportunity to practice speaking with chatbots at any time, real-time feedback on pronunciation, vocabulary, and grammar, as well as overcoming the fear of judgment.

Finally, the overall interpretation of the results indicates that AI-mobile applications can enhance learners' speaking and listening. These tools can promote users' autonomy, motivation, and engagement via chatbots, instant feedback, accessibility, personalized

learning, and tracking learning progress. The most favorable AI-mobile applications among students are *ELSA*, *Duolingo*, *HelloTalk*, and *ChatGPT*. Additionally, according to the learners, the most effective features in these tools are chatbots, authenticity of materials, and instant feedback. Concerning speaking and listening deficiencies, learners have a limited vocabulary package. Therefore, it is high time for the Algerian Ministry of Higher Education and Scientific Research to incorporate AI technologies to keep abreast of innovation and enhance the quality of education and research.

2.3. T-Test Analysis and Interpretation

The t-test is important for identifying the current level of learners by conducting a pre-test, followed by training sessions, and then a post-test to verify the learners' outcomes through the use of the *ELSA* application to enhance listening and speaking . The sample consists of 19 first-year Bachelor students of English Department at KasdiMerbahUniversity in Ouargla.

2.3.1. Listening's T-Test

The listening test consists of 40 questions divided into four sections. Each question is scored 0.5 points, making the overall mark out of 20. Students are assessed based on four criteria: 04 questions focus on listening for gist, 09 specific information, 20 details, and 07 inferring information.

The Comparison between Listening's Pre-Test and Post-Tests.The pre-test and post-test are compared based on participants' performance, aiming to identify any advancements or differences between the two assessments. After the intervention, the Post-Test is administered. The results revealed significant improvements, reflected in enhanced grades, suggesting the positive impact of the *ELSA* application. Participants' answers vary from substandard to good on both pre- and post-tests. Furthermore, students' abilities in all four sub-skills are at an intermediate level. For instance, some students excel at inferring

information but struggle with capturing details, and vice versa. This diversity reflects the varying levels of student abilities.

The tables below demonstrate the results of pre-test.

Table 01

Listening's Pre-Test Marks

Students	Full mark (out of 20)	Listening for gist (out of 2)	Listening for specific information (out of 4.5)	Listening for details (out of 10)	Listening to infer information (out of 3.5)
01	11	1	3	04.50	2.50
02	09.50	1	2.50	05	1
03	10.50	0.50	2	07.50	0.50
04	11.50	1.50	3.50	04.50	2
05	12	1	2.50	06	2.50
06	10	0.5	3.50	05	1
07	10.50	0.5	3.50	05	1.50
08	12	1	2.50	07	1.50
09	09	0.5	2	05.50	1
10	08	0.5	2	05	0.50
11	15.5	0.5	4	09	2
12	08	1	3	03.5	0.50
13	11.50	0	3	07	1.50
14	11.50	1	3.50	04	3
15	11.5	1	4	04.50	2
16	09	1	2.50	05	0.50
17	10	1	2.50	06	0.50
18	10	1	3	05	1
19	07	0.50	1.50	04	1

According to the previous table, participants' answers varied from substandard to good. The highest score achieved is 15.50/20 by student 11, indicating a strong comprehension and response to the questions. The lowest score obtained is 07/20 by student 19, suggesting a significant gap in understanding or engagement with the material. Among the students, 13 attain the average mark, while the scores of the remaining 06 students are below 10. The students' aptitudes in listening for gist (highest mark: 1.50/2; lowest: 0/2), specific information (highest: 4/4.50; lowest: 2/4.50), details (highest: 09/10; lowest: 03.50/10), and inferring information (highest: 3/3.50; lowest: 0.50/3.50) are at the intermediate level.

Table 02*Listening's Post-Test Marks*

Students	Full mark (out of 20)	Listening for gist (out of 2)	Listening for specific information (out of 4.5)	Listening for details (out of 10)	Listening to infer information (out of 3.5)
01	12	1.50	2.50	06	2
02	09.50	1	3	03.50	2
03	12.50	1.50	2.50	07	1.50
04	13.50	1.50	3.50	07.50	1
05	12.50	1	3.50	06	1.50
06	12	1.50	4	04.50	1.50
07	15	1	4	08.50	1.50
08	12.50	1.50	4	05.50	1.50
09	12.50	1.50	3	06.50	1.50
10	12.50	1	2	07.50	2
11	17	2	3.50	09.50	2
12	12	1	3	07	1
13	13	1	2	08	2
14	16.50	2	4	08.50	2
15	17	2	4	08	3
16	14.50	1.50	3	09	1
17	10.50	1.50	3	04.50	1.50
18	12	1.50	4	05	1.50
19	10.50	1.50	2	05	3

According to the previous table, the highest score achieved is 17/20 by student 11, indicating a strong understanding of the material. The lowest score obtained is 09.50/20 by student 02, suggesting a notable gap in comprehension. Among the students, 18 attain scores above and equal the average mark, and only one student scored below 10. The students' aptitudes in listening for gist (highest mark: 2/2; lowest: 1/2), specific information (highest: 4/4.50; lowest: 2/4.50), details (highest: 09.50/10; lowest: 03.50/10), and inferring information (highest: 3/3.50; lowest: 1/3.50) are very good. Therefore, there is a significant progress in students' marks.

The third table reveals the difference between the pre- and post-test.

Table 03

The Difference between Listening Pre-Test and Post-Test Marks

Students	Pre-test listening (out of 20)	Post-test listening (out of 20)	The difference
01	11	12	01
02	09.50	9.50	00
03	10.50	12.50	02
04	11.50	13.50	02
05	12	12.50	00.50
06	10	12	02
07	10.50	15	04.50
08	12	12.50	00.50
09	09	12.50	03.50
10	08	12.50	04.50
11	15.50	17	03.50
12	08	12	04
13	11.50	13	01.50
14	11.50	16.50	05
15	11.5	17	05.50
16	09	14.50	05.50
17	10	10.50	0.50
18	10	12	02
19	07	10.50	03.50

Participants' answers varied from substandard to very good on both pre- and post-tests. In the pre-test, the students' aptitudes for capturing the general idea, specific information, details, and inferring information are intermediate. However, in post-test, the students' capabilities are increased. Notably, there is a significant progress in post-test scores. In pre-test, the highest mark is 15.50/20 and the lowest is 07/20. Conversely, in the post-test, the highest mark is 17/20 and the lowest is 9.50/20. In addition, in pre-test, there are 13 students scored around average, and 06 are marked low than 10. However, in post-test, there are 18 students scored around average, and only 01 is marked low than 10. Moreover, the difference between pre- and post-tests' scores ranges between 0.5 and 05.50. Therefore, *ELSA* application can improve students' listening abilities.

The Statistical Analysis of Listening's T-Test. The t-test employed in this research is a paired-sample one. In this study, it is anticipated that the treatment, particularly *ELSA*, will have a positive impact on the group. Hence, a one-tailed direction test is considered. The software utilized for calculating the t-value is SPSS.

Table 04

Paired Samples Statistics of Listening's T-Test

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-test	10.42	19	1.895	.435
	Post-test	13.03	19	2.118	.486

The table above presents the mean scores and standard deviation of the pre-test (M=10.42, SD=1.895) and post-test (M=13.03, SD=2.118). Notably, the post-test mean surpasses that of the pre-test, indicating the beneficial influence of *ELSA* on listening skills.

The table below describes the results of the paired-sample t-test. Referring to the t-distribution table, the required t-value is 1.734 at a significance level of 0.05, with 18 degrees

of freedom. In the table, the observed t-value is 6.231. However, since the test is specified as one-tailed (either an increase or a decrease, but not both), and there is no alternative to specify this in SPSS, the observed t-value will be divided by 2. Consequently, it becomes 3.115.

Table 05

Paired Samples Test of Listening's T-Test

		Paired Differences					Significance			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	One-Sided p	Two-Sided p
					Lower	Upper				
Pair 1	Pre-test - Post-test	-2.605	1.823	.418	-3.484	-1.727	-6.231	18	<.001	<.001

As mentioned previously, the obtained t-value is 6.231 for a two-tailed direction. However, the intended direction is one-tailed. Consequently, the t-value is divided by 2, resulting in 3.115, which is higher than 1.734. In addition, findings indicate that the p-value ($p=.001$) is less than .05. Therefore, the results of Paired Samples T-Test tablesupport the validity of the research hypotheses. In other words, the treatment phase (i.e., *ELSA* application) had a positive impact on the participants by enhancing their listening abilities.

2.3.2. Speaking's T-Test

The test is designed based on the topics covered in the listening test. It comprises (05) questions and (02) sections, with the overall mark being out of 20. Students are assessed on the following criteria: fluency, vocabulary, pronunciation, and grammar. Firstly, fluency encompasses the ease of speech, hesitation, repetition, and use of connectives. Secondly, vocabulary encompasses the use of a wide range of words, idiomatic expressions, collocations, and paraphrasing if a word is missed. Thirdly, pronunciation includes the ability

to be understood, word and sentence stress, as well as intonations. Fourthly, grammar includes the use of simple and complex sentences, and flexibility in applying grammar rules.

The Comparison between Speaking's Pre-Test and Post-Test. The Pre-test and post-test are compared based on participants' performance, aiming to identify any advancements or differences between the two assessments. After the intervention, the Post-Test is administered. The results revealed significant improvements, reflected in enhanced grades, suggesting the positive impact of the *ELSA* application. The answers provided by participants vary from substandard to very good on both pre- and post-tests. Additionally, students' abilities in all four sub-skills are at an intermediate level. For instance, there are students who excel in pronunciation, but struggle with flexibility in using grammar. This diversity reflects the different levels of student abilities. Notably, there was a significant progress in post-test scores.

The table below demonstrates the results pre-test.

Table06

Speaking's Pre-Test Marks

Students	Full Mark (out of 20)	Fluency (out of 05)	Vocabulary (out of 05)	Grammar (out of 05)	Pronunciation (out of 05)
01	09	2.50	2	2	2.50
02	08	2	2	2	2
03	10	2.50	2.50	2.50	2.50
04	12	3	3	3	3
05	10.50	3	2	2.50	3
06	11	2.75	2.75	2.75	2.75
07	08	2	2	2	2
08	11	2.75	2.75	2.75	2.75
09	10.25	2.75	2.5	2.50	2.50
10	10	2.75	2.75	2	2.50
11	14	3.50	3.50	3.50	3.50
12	09	2.50	2	2	2.50
13	12.50	3.50	3	3	3
14	12	3	3	3	3
15	16	4	4	4	4
16	12	3.50	3	3	2.50
17	12.50	3	3	3	3.50
18	10	2.50	2.50	2.50	2.50
19	10.25	2.50	2.75	2.50	2.50

According to the previous table, participants' speaking skills ranged from substandard to good. Student 15 achieved the highest score of 16/20, indicating strong communication abilities and a comprehensive understanding of the topics. Conversely, students 02, and 07 scored the lowest with 08/20, suggesting a notable struggle in conveying ideas effectively or engaging with the topic. Among students, 15 achieve scores above and equal the average mark in speaking, while the remaining 04 students scored below 10. The students' aptitudes in fluency (highest mark: 4/5; lowest: 2/5), vocabulary (highest: 4/5; lowest: 2/5), grammar (highest: 4/5; lowest: 2/5), and pronunciation (highest: 4/5; lowest: 2/5) are at the intermediate level.

The second table demonstrates the participants' grades of post-test.

Table 07

Speaking's Post-Test Marks

Students	Full Marks (out of 20)	Fluency (out of 05)	Vocabulary (out of 05)	Grammar (out of 05)	Pronunciation (out of 05)
01	11.75	3	3	3	2.75
02	10.75	2.75	2.75	2.75	2.50
03	12	3	3	3	3
04	14	3.50	3.50	3.50	3.50
05	15.75	4	4	4	3.75
06	11	2.75	2.75	2.75	2.75
07	10	2.25	2.50	2.25	3
08	11.75	3	3.25	3	2.50
09	11.75	3	3	3	2.75
10	14.25	3.50	4	3.50	3.25
11	16	4.50	4	3.50	4
12	10.5	3	2.50	2.50	3.25
13	15	3.75	3.75	3.75	3
14	13	3.50	3.50	3	3
15	18	4.50	4.50	4.50	4.50
16	14	3.50	3.50	3.50	3.50
17	14.25	3.50	3.50	3.50	3.75
18	11	3	3	2.75	2.25
19	11.50	3	3	3	2.50

According to the previous table, the highest score achieved is 18/20 by student 15, indicating strong ability to control speaking's accuracy and fluency. The lowest score obtained is 10/20 by student 07, suggesting a notable gap in comprehension. Therefore, all of students obtained the average mark. The students' aptitudes in fluency (highest mark: 4.5/5; lowest: 2.75/5), vocabulary (highest: 4.5/5; lowest: 2.5/), grammar (highest: 4.5/5; lowest: 2.25/5), and pronunciation (highest: 4.5/5; lowest: 2.25/5) are good. In comparison with pre-test marks, there is a significant progress in students' marks.

The third table reveals the difference between the pre- and post-test.

Table 08

The Difference between Speaking Pre-Test and Post-Test Marks

Students	Pre-Test mark (out of 20)	Post-Test mark (out of 20)	The difference
01	09	11.75	02.75
02	08	10.75	02.75
03	10	12	02
04	12	14	02
05	10.5	15.75	05.25
06	11	11	00
07	08	10	02
08	11	11.75	00.75
09	10.25	11.75	01.25
10	10	14.25	04.25
11	14	16	02
12	09	10.50	01.50
13	12.50	15	02.50
14	12	13	01
15	16	18	02
16	12	14	02
17	12.5	14.25	02
18	10	11	01
19	10.25	11.50	1.25

Participants' answers varied from substandard to excellent on both pre- and post-tests. In the pre-test, the students' aptitudes in fluency, vocabulary, grammar, and pronunciation are all intermediate. Notably, there is a significant progress in post-test scores. In pre-test, the highest mark is 16/20 and the lowest is 08/20. Conversely, in the post-test, the highest mark is 18/20 and the lowest is 10/20. In addition, in pre-test, there are 15 students scored around average, and 04 are marked low than 10. However, in post-test, all students obtained the average. Moreover, the difference between pre- and post-tests' scores ranges between 00 and 05.25. Therefore, *ELSA* application can improve students' speaking abilities.

The Statistical Analysis of the Speaking's T-Test. The t-test employed in this research is a paired-sample one. In this study, it is anticipated that the treatment, particularly *ELSA*, will have a positive impact on the group. Hence, a one-tailed direction test is considered. The software utilized for calculating the t-value is SPSS.

Table 09

Paired Samples Statistics of Speaking's T-Test

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-test	10.95	19	1.998	.458
	Post-test	12.96	19	2.197	.504

The table above presents the mean of the pre-test (M=10.95, SD=1.998) and post-test (M=12.96, SD=2.197). Notably, the post-test mean surpasses that of the pre-test, indicating the beneficial influence of *ELSA* on speaking skills.

The table below describes the results of the paired-sample t-test. Referring to the t-distribution table, the required t-value is 1.734 at a significance level of 0.05, with 18 degrees of freedom. In the table, the observed t-value is 7.346. However, since the test is specified as one-tailed (either an increase or a decrease, but not both), and there is no alternative to

specify this in SPSS, the observed t-value will be divided by 2. Consequently, it becomes 3.673 which is higher than the critical t-value (1.734).

Table 10

Paired Sample Test of Speaking's T-Test

		Paired Differences					Significance			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	One-Sided p	Two-Sided p
					Lower	Upper				
Pair 1	Pre-test - Post-test	-2.013	1.195	.274	-2.589	-1.437	-7.346	18	<.001	<.001

As mentioned previously, the obtained t-value is 7.346 for a two-tailed direction. However, the intended direction is one-tailed. Consequently, the t-value is divided by 2, resulting in 3.674, which is higher than 1.734. In addition, findings indicate that the p-value ($p=.001$) is less than .05. Therefore, the results of Paired Samples T-Test table support the validity of the research hypotheses. In other words, the treatment phase (i.e., *ELSA* application) had a positive impact on the participants by enhancing their speaking abilities.

2.4. Discussion of T-Test's Findings

On the other hand, the findings from the T-test indicate that the use of *ELSA* applications can promote learners' listening and speaking. Concerning speaking, the tool assists students in improving their fluency, vocabulary, grammar, and pronunciation. Regarding listening, *ELSA* helps learners to enhance their ability in capturing the main idea, specific information, details, and inferring information.

Conclusion

In conclusion, the main goal of this chapter was to analyze, interpret, and discuss the data gathered from the students' questionnaire and t-test. To recap, the questionnaire was administered to first year bachelor students of English department at KasdiMerbah University in Ouargla to explore the students' attitudes towards the use of AI applications to improve listening and speaking. Meanwhile, student's t-test was conducted with a sample size of 19 students to verify the effectiveness of these tools, particularly *ELSA*, in improving speaking and listening.

General Conclusion and Recommendations

The current study aims to highlight the effectiveness of using Artificial Intelligence-driven language learning applications in improving listening and speaking skills. The theoretical chapter presents literature concerning Artificial Intelligence-based applications, listening, and speaking, focusing on the impact of these tools in enhancing learners' performance in these areas. In the second chapter, the methodology, analysis, interpretation, and discussion of data were conducted. Two types of data-gathering instruments were employed to test the stated hypotheses: a questionnaire and a T-test consisting of pre-test, post-test, and intervention administered to first-year English language students at KasdiMerbah in Ouargla. Regarding the questionnaire, the obtained data were beneficial in revealing the learners' attitudes toward the use of AI-based applications in enhancing listening and speaking skills. The findings demonstrate that the most advantageous aspects of these tools for enhancing listening and speaking include chatbots, simulating real-world tasks, instant feedback, accessibility, adaptive learning, and tracking learning progress. Consequently, AI-driven applications can enhance learners' autonomy, motivation, and engagement. Moreover, t-test results reveal that the use of the *ELSA* application to enhance listening and speaking was positive. In essence, Artificial Intelligence has the potential to revolutionize education by making it more adaptive, efficient, and accessible.

The Suggestions and recommendations for future research are summarized as follows:

- Future research should focus on integrating AI technologies into language learning curricula to foster the blended teaching approach.
- Encourage collaboration between AI developers and language educators to ensure that AI applications align with pedagogical principles and address specific challenges in speaking and listening instruction.

- Investigate the potential of Virtual Reality technology in facilitating real-world language interactions to prepare learners for authentic communication scenarios and cultural immersion.

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Appendices

Appendix A

Questionnaire

Dear students,

You are kindly asked to answer the following questionnaire, which attempts to collect data for the accomplishment of a master dissertation under the title “Investigating the Effectiveness of Using Artificial Intelligence Mobile Applications to Improve Listening and Speaking”. Thank you in advance.

A. Students' Profile:

1. What is your age?

18-23

23-28

More than 28

2. What is your gender?

Male

Female

3. What is your level in English :

Beginner

Intermediate

Advanced

4. How often do you use mobile applications for language learning purposes?

Daily

Several times a week

Once a week

Rarely

Never

B. Artificial Intelligence (AI):

1. Are you familiar with the concept of *Artificial Intelligence* ?

Yes

No

2. How comfortable are you with the idea of incorporating (integrating) AI in language learning apps ?

Not comfortable at all

Slightly comfortable

Moderately comfortable

Very comfortable

Extremely comfortable

3. Have you ever used AI-based application(s) for educational purposes?

Yes

No

4. If yes , please specify the application (s) you have used?

.....

5. In your opinion , what specific AI feature(s) do you find most helpful in enhancing your language learning ?

(You can choose more than one answer)

instant (quick) feedback

chatbots

personalized learning (adapt and design the learning content according to your learning style and level)

analyzing and assessing the learning progress

study from any place at any time

6. In your opinion , what limitation(s) do you face while using AI-powered language learning apps?

(You can choose more than one answer)

lack of human interaction

complexity in use

providing poor and inaccurate responses

high prices

poor internet connection

C. AI in enhancing listening skills :

1. How comfortable are you with understanding native speakers in English ?

Not comfortable at all

Slightly comfortable

Moderately comfortable

Very comfortable

Extremely comfortable

2. In your opinion ,what challenge(s) do you face while trying to improve your listening skills?

(You can choose more than one answer)

limited listening practice

complex vocabulary

- lack of exposure to native speakers
- fast speaking speed
- challenges in understanding idiomatic expressions and colloquialism (local language)

3. In your opinion ,in which listening sub-skill(s) do you face challenges while trying to improve your listening skills?

(You can choose more than one answer)

- capturing the main idea
- capturing specific information
- capturing the details
- inferring information (e.g. infer the speaker's point view)

4. Have you ever used a mobile application (s) to improve your listening skills?

- Yes
- No

5. If yes , please specify the application (s) you have used?

.....

6. How satisfied are you with the effectiveness of listening exercises and features in the application (s) you have used ?

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

7. Have you ever used AI-based language learning app(s) to improve your listening skills?

Yes

No

8. If yes , please specify the app (s) you have used?

.....

9. How often do you use AI-based language learning app (s) to improve your listening skills?

Daily

Several times a week

Once a week

Rarely

Never

10. In your opinion , what feature (s) in AI-based language learning apps do you find most helpful for listening practice?

(You can choose more than one answer)

generating interactive listening exercises

providing authentic audio content

audio speed adjustment

accompanying transcripts and subtitles with audio

11. In your opinion , AI apps can help you improve your ability(s) in :

(You can choose more than one answer)

understanding the main idea

capturing the specific information

capturing the details

inferring information

distinguishing between different sounds , words , intonations

12. Have you noticed any positive changes in your listening abilities through the use of AI in language apps ?

Yes

No

13. If yes , please justify ?

.....

14. Would you recommend an AI-based language learning app to friend for listening improvement ?

Yes

No

D. AI in enhancing speaking skills:

1. How confident do you feel when speaking in English ?

Not confident at all

Slightly confident

Moderately confident

Very confident

Extremely confident

2. In your opinion ,what challenge (s) do you face while trying to improve your speaking skills?

(You can choose more than one answer)

Limited opportunities for practice

Fear of making mistakes

pronunciation challenges

limited vocabulary

difficulty understanding native speakers

lack of cultural exposure

3. In your opinion ,in which speaking sub-skill(s) do you face challenges while trying to improve your speaking skills?

(You can choose more than one answer)

Pronunciation

Grammar

Vocabulary

Fluency (confidence , content ,comprehension)

4. Have you ever used a mobile application(s) to improve your speaking skills?

Yes

No

5. If yes , please specify the application (s) you have used ?

.....

6. How satisfied are you with the effectiveness of speaking exercises and features in the application (s) you have used ?

Very satisfied

Satisfied

Neutral

Dissatisfied

Very dissatisfied

7. Have you ever used AI-based language learning app(s) to improve your speaking skills?

Yes

No

8. If yes , please specify the app (s) you have used?

.....

9. How often do you use AI-based language learning app (s) to improve your speaking skills?

Daily

Several times a week

Once a week

Rarely

Never

10. In your opinion , what feature (s) in AI-based language learning apps do you find most helpful for speaking practice ?

(You can choose more than one answer)

practicing speaking with chatbots at any time

offering instant feedback on pronunciation, vocabulary, and grammar usage

no fear of speaking failure

11. In your opinion , AI apps can help you improve your speaking ability (s) in :

(You can choose more than one answer)

Pronunciation

Grammar

Vocabulary

Fluency (confidence , content ,comprehension)

12. Have you noticed any positive changes in your speaking abilities through the use of AI in language apps ?

Yes

No

13. If yes , please justify?

.....

14. Would you recommend an AI-based language learning app to friend for speaking improvement ?

Yes

No

Appendix B

Section 1 Questions 1-10

Complete the notes below:

Write one word and/ or number for each answer:

Hotel Reservation
Example Location: north from the coast
Four-bed room available in (1).....
Roomprice: - In high season: (2)..... - Cheaper if you booked (3)..... in advance Meal included in price: (4)..... Meal bring your own: (5).....
Hotel facilities: - A lounge with a variety of (6)..... - (7).....room - (8).....
Activitiesavailable - Collect (9)..... - Hire (10).....

Section 2: Questions 11-20

Questions 11-16

Question 11. What is the purpose of the talk?

Choose the correct letter, A, B, or C

A to welcome its new members.

B to communicate its 10th anniversary.

C to celebrate the award it received recently.

Question12. What's the audience of this speech?

A journalists.

B local residents.

C school children.

Question13. Why is the speaker most proud of the skating rink?

A because two world champions have been trained there.

B because people in this area are fitter than the rest of our country.

C because they have encouraged local school children to participate more in sports.

Question14. The complex has recently opened a new venue for

A the unemployed.

B mothers and babies.

C pensioners.

Question15. What does the complex plan to do next year?

A extend opening hours.

B expands the space.

C sells fitness equipment

Question16. What does the complex encourage people to do?

A because a coach.

B is on the committee.

C work as volunteers.

Questions 17-20

What are the features of the following sports facilities?

Choose **four** answers from the box and write the correct letter, **A-G** next to questions

Features

- Aa one-on-one coach is bookable.
- B it is featured in a TV drama.
- C it is beneficial for young people.
- D it is only available for women sometimes.
- E it is the largest in the country.
- F it can be booked for parties.
- G it is a place to hold courses for school children.

Sports facilities

- Question17. Swimming pool
- Question18. Climbing wall
- Question19. Skating rink
- Question20. Gym

Section3 Questions21-30

Questions21-23

Complete the table below:

Write one word only for each answer:

Research about different energy-saving innovations

Kites in Germany	Used in different (21)..... conditions to reduce the emission of toxic gas.
Vehicles in America	Powered by (22).....
Gas canister in South Africa	Invented to reduce its chance to (23).....

Questions 24 and 25

Choose **two letters, A-E**

Which two types of interviews do Greg and Syria choose to do the survey?

- A staff on campus.
- B professors.
- C local residents.
- D Companies.
- E University students.

Questions 26-30

Choose the correct letter, A, B, or C

Question 26. What does Syria think about renewable energy?

- A most people know very little about renewable energy.
- B the general public can distinguish different kinds of renewable energy.
- C the majority of people feel the need to replace fossil fuels with renewable energy.

Question 27. What do the speakers say about modern windmills?

- A They can be used to pump water from wells.
- B the location to build them should be carefully chosen.
- C farmers use them to grind grain.

Question 28. What aspect of traditional fuels are they going to address?

- A how to avoid fossil fuels from being depleted.
- B the possible future of traditional resources.
- C how to prevent pollution of traditional resources.

Questions 29. What does Greg say about nuclear plants?

- A they are cleaner and less expensive than fossil fuel.
- B it is the best way to fight climate change.
- C few people think they are safe.

Question30.What does Syria think of hydrogen fuel?

A The price of it will drop eventually.

B it entails environmental problems.

C the benefits of it overweigh its high cost.

Section4 Questions31-40

Complete the notes below

Write one word only for each answer:

Fish Farming

Local fish farmers are afraid that genetically modified fish will (31).....into the sea.

- Like to breed fish with special features, like (32).....

Other solutions:

- To build some cages to prevent the fish from (33).....
- To use (34)..... nets to support the frames of the cages.

Problems facing the local fisherman:

- Lack of land on the (35).....
- Lack of (36).....fish.

Initiatives taken by the government:

- Encourages fish farmers to (37).....local fish farming business.

Helps fish farmers to sell seaweed and oyster:

- Seaweed can be used to make (38).....
- Oyster is a source of seafood which can supply local (39).....
- Saves local fishing business by encouraging aquaculture recreation and (40).....

Appendix C

Audio Transcription of Listening Test

Section one.

Student will hear a telephone conversation between a hotel receptionist and a customer.

Question 1-10

Hotel receptionist asked, "Good morning, Sunset Hotel. How may I help you?"
Customer replied, "Good morning. I just saw an advert in the paper about your" then she asked, "Where exactly is it located?"

Hotel receptionist replied, "We are situated on Sunset Avenue, north of the beach, close to many scenic spots. It is an ideal choice for travellers interested in sightseeing."

Customer asked, "That's great. Is there a vacant four-bedroom? We'll be travelling with our two sons, age nine and eleven. So it's best that we are able to stay in one room."

Hotel receptionist replied, "Let me check. Just a moment. Um, we only have a few four-bedrooms and I'm afraid they are fully booked at the moment. The earliest time available is August, but there might be some left in July if a previous customer cancels the reservation."

Customer asked, "Oh, that'll do. How much would the room cost made?"

Hotel receptionist replied, "It's €77.50 during peak time, but the price would be much lower during off-peak season. Only €50."

Customer asked, "So, if I book a room right now is there any discount?"

Hotel receptionist replied, "Yes, we do offer a 30% discount for any reservation made one month ahead of schedule. It is a very reasonable price."

Customer asked, "That does sound tempting. Does the price include anything?"

Hotel receptionist replied, “The price includes two breakfast vouchers per room per day. You can use them at two different restaurants in our hotel. There's also a 20-minute spa trial available, but you have to book it beforehand at the concierge or directly at the spa centre.”

Customer asked, “Um, I'm wondering if there is a hairdryer in the room. It takes ages to dry my hair without one. Do I have to bring one.”

Hotel receptionist replied, “No, there is absolutely no need to bring that, for each room is equipped with a hairdryer. But I have to inform you that towels are not provided. You'll have to bring your own or hire some at the front desk.”

Customer asked, “Oh, I see. Before making reservation can you tell me a little bit more about your hotel.”

Hotel receptionist replied, “Sure, no problem. We aim to please our guests by providing impeccable service at all the modern amenities, trying to make them feel at home. In the lounge, there are a list of books, ranging from contemporary literature to classic poetry, free for any guest to choose from. There is also a games room, offering a number of indoor games, including popular board games like Monopoly, as well as the beloved table soccer. A nice place to go on rainy days.”

Customer asked, “Are there computers available in the hotel? I might have few emails to respond to during my stay there .”

Hotel receptionist replied, “I'm afraid we currently do not provide any for our customers. However, internet is available within our hotel premises. Just use the room number and the guest name to log in.”

Customer asked, “That means I have to bring my own laptop then. Alright, because I'm travelling with my two sons, is there anything that they might be interested in .”

Hotel receptionist replied, “Yes, a popular activity here for children is collecting shells on the beach. Our hotel has a private beach. When there are very few visitors, you can take a stroll down the beach with your children and enjoy some quality family time, undisturbed.”

Customer asked, “That sounds nice, but my boys really like adventure. Is there something more exciting for them to participate in.”

Hotel receptionist replied, “We do have bicycles ready for hire. You can cycle with the boys along the bush track by the hotel, which is an ideal place to explore the wonders of nature. But, because there is only a limited number of bicycles, we apply a first-come, first served rule.”

Customer asked, “Got it. I think my boys would love it. How can I arrange the payment then, can I pay by credit card?”

Hotel receptionist replied, “Of course. We take credit cards. Thank you.”

Customer asked, “You've been a great help.”

Hotel receptionist replied, “My pleasure, ma'am.”

Section 2.

Student will hear a speech given by a man called George Dyson about Northfield Sports Complex.

Questions 11 to 16.

George Dyson said, “On behalf of Northfield Sports Complex, I'd like to extend our warmest welcome to you all here this evening. I'm George Dyson, founder of Northfield Sports Complex. I'm giving this speech today to celebrate a special occasion. We started the business exactly a decade ago, and today we have developed into a large firm with a sizable group of members. We've also been nominated the most valuable company by Greentown at the yearly business awards, which will be held next week. As experienced and qualified

reporters, you are invited here to experience and witness this historical moment of Northfield Sports Complex together with us. Situated within the campus of Greentown University, Northfield Sports Complex is a modern, refreshing and fully equipped facility for sports of all kinds. As part of its commitment to the local community, Northfield Sports Complex is available not only to school children but also to local residents. It offers a wide range of facilities including a 25-metre swimming pool, paved walking and jogging paths, a well-equipped fitness gym, all-weather pitches, indoor courts for table tennis, tennis and other sports, as well as a renowned skating rink. Different age groups can all find the right sports to participate in. That's why local residents enjoy working out here. As a result, natives here are healthier than most of the people within our nation. The whole town is very proud of having nurtured two world champions, who were once both trained right here in our skating rink. Thus, it has become the ideal venue to learn to skate and have fun. But what I take pride in most of all is the skating rink that has stirred the interest of boys and girls here in local schools to skate. Since opening, an increasing number of pupils have been paying regular visits to the skating rink. A new yoga classroom with trainers will be open next month for mothers with babies. They can bring their own yoga mat and work out together with their babies. This will be a great way for them to get healthy and meet other mums. There will also be a brand new gym open to the pensioners in the near future. Just this month, a new swimming pool is open to all fitness levels with special offers for those without a job. Our complex is open daily from 8am to 9pm, except on Thanksgiving and Christmas. We intend to extend our business in the coming year. A list of equipment will be put up for sale, ranging from exercising equipment like cardio machines to sports recovery and injury prevention facilities. Within our complex, we try our best to avoid injuries of any kind. We train knowledgeable staff to guide our clients through correct workout regimens. For those who want to further ensure workout

safety, they are welcome to apply to be a member of our standing committee. They are responsible for revising the safety guidelines and supervising its enforcement.”

Questions 17 to 20.

George Dyson completed, “Now I would like to introduce some of our most popular sports facilities here at NorthfieldSports Complex. Our 25-metre swimming pool is the centrepiece of the complex, combining modern, bright and airy surroundings with fully up-to-date changing facilities. The pool is excellent for learning how to swim, improving techniques and, of course, competing in school competitions. It is also bookable for private functions, including pool parties where lifeguards are available. Next, we have the only climbing wall throughout the whole town. Many would see rock climbing as a type of extreme sport, exposing great risk to those who participate. But actually, under proper guidance and with close supervision by the coach here, it is a perfect sport for the youth to increase their flexibility and strengthen their muscles. I have to mention our skating rink once again. As our most popular facility, it has been prominently featured in a TV commercial we have released recently. There is no other skating rink larger than ours within the whole nation. Also, our state-of-the-art gym is an inspiring place to train and keep fit in relaxed and friendly surroundings. The techno-gym equipment enables our clients to measure their performance. If you book a one-on-one trainer, he or she might suggest a future training plan and help you train more systematically.”

Section 3.

The students will hear two students called Siria and Greg talking about some research on renewable energy.

Questions 21 to 23.

Siria asked, “Hi, Greg. How did it go with the research on renewable energy? Have you found anything?”

Greg replied, "Yes, but I think it's about time we exchange our findings and discuss our next move."

Siria said, "You read my mind. Right, I'll start first. Germany is the very first country I dug into in order to find innovative means of creating lean energy because 15% of its national electricity supply comes from renewable sources. I found that apart from the traditional fossil fuel industry, there's a German firm that has initiated a project using kites to generate power."

Greg asked "Really? I've never heard of it before. How does it work?"

Siria replied, "As a substitution for traditional fossil fuels that release toxic gas into the atmosphere, the power-generating kites can function in any weather. Compared to conventional wind turbines, such kites can produce twice as much energy because the overall power density is proportional to altitude."

Greg said, "Sounds like an efficient way of producing power. OK, now let me tell you what I have found. There is an American company manufacturing school buses and city buses depending solely on electricity instead of gasoline. The all-electric vehicles can save up to 20 gallons of fuel on a daily basis. This could reduce transport budgets by over \$10,000 each year, not to mention maintenance savings."

Siria said, "Wow, impressive. If only there were more of these electric vehicles around."

Greg said, "Well, over the years, South Africa has attached great importance to clean energy. The nation encourages using propane gas, which can either be extracted from natural deposits or be produced organically. It is normally stored in gas canisters as a type of cooking gas. To reduce the number of kitchen accidents, a new type of composite gas canister made of fiber was introduced. It is much safer and less likely to explode, even when engulfed in fire."

Questions 24 -30

Greg asked, “Now, about the survey, do you have any clues as to what kind of interviewees we should include?”

Siria replied, “How about local companies doing business on clean energy products?”

Greg said, “Probably not the best choice of respondents. Remember the last time we asked” corporate employees to do the questionnaire? Only about 5% of them were actually willing to participate.”

Siria said, “That wouldn't be enough then. It seems we have to drop that idea. Then maybe we can ask the professors and administrative staff here to help us. They could provide their insights and understanding on energy production.”

Greg said, “It would be ideal if they would, but I'm afraid most of them are too busy to respond to the list of questions we've prepared. I guess the students here at the university would be more suitable.”

Siria said, “You're right, and it is a much bigger sample pool too. Also, I think we should include the locals. Their opinion is key to the promotion of renewable energy here in the town.”

Greg said, “But wouldn't it be difficult to collect data? There's no way the two of us could go from door to door to interview all the residents.”

Siria said, “There's no need to worry about that. We'll make it telephone interviews. That way we'll have enough time to get sufficient data.”

Greg said, “Good idea. What should we present in our speech? “

Siria said, “Due to lack of media coverage, the majority of people actually have a limited understanding on renewable energy. Most of them aren't able to identify various types of renewable sources. So I feel we could start by clarifying what it is and the benefit of it compared to fossil fuels.”

Greg said, “That makes sense. We could start with wind energy. For centuries, wind has been used to do work. With the help of windmills, farmers used to pump water from wells or turn large grinding stones to grind wheat or corn. The windmills today generate electricity. The only problem is that it might not be windy all the time. So it is crucial to choose the appropriate site for wind farms.”

Siria said, “Well, I think we can also include comparisons between clean energy and traditional energy resources like coal, oil and natural gas.”

Greg said, “Maybe we can look into the prospect of these conventional sources of energy. The rising cost of fossil fuels and the threat of climate change is a concern to many.

Siria said, “Totally. These traditional resources will deplete eventually. Renewable energy currently makes up less than 2% of the world's primary energy supply and although growing very rapidly, it is not on course to fill the fossil fuel gap.”

Greg said, “Nuclear energy is another type of energy we ought to mention. Nuclear power plants can produce dependent power constantly and release far less greenhouse gases than other traditional power plants. But most people feel that this type of energy is unsafe because radiation isn't easily dealt with, especially in nuclear waste and maintenance materials.”

Siria said, “What should we end the speech with?”

Greg said, “Have you heard about a new type of energy called hydrogen fuel? It is an infinitely renewable fuel that doesn't have detrimental environmental effects. The only problem is that it is so expensive that only wealthy individuals can afford it.”

Siria said, “ But I think overall the benefits overshadow its high cost. I think that even though this new type of renewable energy is too expensive to use at the moment, in the long run its price will go down and become more accessible.”

Section 4.

Student will hear part of a lecture about aquaculture and the fishing business.

Questions 31 to 40

Lecturer said, "So, what I'm going to talk about to you today is something called aquaculture. It has been responsible for the impressive growth in the supply of fish for human consumption. There's also been a slight improvement in the state of certain fish stocks due to improved fishery management. Aquatic food production has transitioned from being primarily based on the capturing of wild fish to the culture of increasing numbers of farmed species. In recent years, a type of genetically modified salmon has been farmed in the New England region. Produced by a Massachusetts-based biotech firm, this type of fish is engineered to grow twice as fast as its conventional farm-raised counterpart. As a result, this increases the speed of the local aquaculture industry development and thus reduces the fishing pressure on wild stock. But local residents have expressed their concerns on the potential negative effects on the ecosystem should those GM fish ever escape into the sea. Stronger, healthier and faster growing, these fish might cannibalise others or out-compete wild-type fish for food. Local decision makers and regulators have thus pushed forward a number of measures, making it impossible for most GM fish to mate. A small percentage is able to breed only within confined pools. Despite the economic boom of genetically engineered fish, culturing traditional types of fish is still mainstream among fish farmers. Most of them prefer fish with special features, such as tuna. It is a source of high-quality protein with almost no fat. It also contains all essential amino acids required by the body for growth and maintenance of lean muscle tissue. With high nutritional value, this kind of fish will always be popular in the fish market. For the fish farming industry, incidents of fish escaping the farms has been a troubling issue over the years. Due to bad weather, nets that used to hold the fish were often destroyed. Thousands of salmon worth nearly 220,000 euros

escaped from a fish farm in the Norwegian region in July, raising fear that they would breed with wild fish stocks. Cages were thus built to withstand storms. The frames of the cages are made of PE, which is dedicated to marine use. This material has trustable strength, resilience and tenacity. To further strengthen it, strong nets without knots are used to support the cylindrical frame. A group of small villages on the island of Zanzibar off the coast of East Africa have been trying to develop a local aquaculture industry sustainably. They use a land based production system that is both economically and ecologically sound. Land-based recirculation can control ocean temperature and optimize growth for the fish that are used to warmer water. All organic waste from the fish is held on land, with incoming water sterilized to avoid disease, which has historically plagued ocean-based farms. The lack of disease means that no drugs are administered to the fish. However, one problem facing the villagers is lack of suitable land on the coast for this system. Hotels and beaches open to tourists take up most of the coastal area. Another problem facing local fishermen is the scarcity of young fish used to breed the species. This predicament stems from overfishing during the previous decades. The local commercial fishing industry has been reduced by 50% for this reason, and the aquaculture industry has yet to thrive. The government has taken a set of initiatives to safeguard native aquaculture and the fishing industry. An open-air seafood market has been launched. Residents are encouraged to support local fish farming businesses by purchasing marine products. As it turns out, there is a public demand for access to locally produced, sustainable sources of fresh seafood. Moreover, local fish farmers are aided to market seaweed and oysters, both of which have additional economic values. Seaweed is used in various ways in cosmetics. Seaweed extract is often found on the list of ingredients constituting creams, soaps, shampoos, powders, and sprays. It is said to be useful in various ways, including the relief of rheumatic pain and the removal of cellulite. Oyster is a source of seafood popular among the local hospitality industry. Served with caviar and champagne, it is

one of the world's ultimate luxury foods, appealing to gourmets with its succulent and delicate flavor. It thus appears to have the greatest potential for commercial culture. Even though the national and international market has shown demand for marine products in Zanzibar, it is still challenging to survive in the competitive modern fishing industry. The government ought to restore the business by encouraging aquaculture, recreation, and shipping. First, it could utilize modern fish farming technology to supply more high-quality marine products. Tourism is an effective stimulus to boost its sales, and with better shipping capability, more products can be delivered abroad.”

Appendix D
Speaking Test

Section 1

- Question (01): do you like sport?
- Question (02): what kind of sport do you enjoy?
- Question (03): why do you enjoy this specific sport more than the other kinds?

Section 2

- Question (01): Imagine the following situation: you are planning a holiday in Tunisia and you need to make a hotel reservation. As a customer, you want to ask a hotel receptionist about the available services and facilities. What kind of questions would you ask?
- Question (02): Imagine you heard people in Tunisia consume genetically modified food. Is this a good reason to cancel your reservation? And why?

المخلص

تهدف الدراسة الحالية إلى معرفة مدى فاعلية ونجاعة استخدام تطبيقات الذكاء الاصطناعي للهاتف المحمول في تنمية مهارتي الاستماع والتحدث، لدى طلبة السنة أولى ليسانس بقسم اللغة الانجليزية بجامعة قاصدي مرباح ورقلة. وتهدف أهمية هذا البحث في اكتشاف مدى فعالية هذه الأدوات والتطبيقات في تعزيز هاتين مهارتين، والتي يمكن أن يكون لها دور كبير في المساهمة في تحسين طريقة التدريس والتعليم بالنسبة للغة، ومن أجل الإجابة على الأسئلة المذكورة واختبار فرضيات البحث، تم استخدام منهج الطريقة المختلطة ، وذلك من خلال استخدام أداتين تمثلتا في الاستبيان واختبارت لجمع البيانات المطلوبة. بعد الحصول عليها، تشير نتائج الاستبيان إلى أن استعمال تطبيقات الهاتف المحمول التي تعتمد على الذكاء الاصطناعي يمكن أن تساعد المتعلمين على تحسين قدراتهم في مهارتي الاستماع والتحدث، في حين تشير نتائج اختبار إلى أن استخدام تطبيقات الهاتف المحمول لمتعلمي اللغة والتي تعتمد دائما على الذكاء الاصطناعي، أيضا تسعى إلى تحسين دائما مهارتي الاستماع والتحدث.

الكلمات المفتاحية : الذكاء الاصطناعي، الاستماع، التحدث، تطبيق السا، تطبيقات الهاتف المحمول.

Resumé

La présente étude vise à étudier l'efficacité de l'utilisation d'applications mobiles d'intelligence artificielle (IA) pour développer les compétences d'écoute et d'expression orale des étudiants de première année de licence du département d'anglais de l'université Kasdi Merbah de Ouargla. L'importance de la recherche est d'explorer l'efficacité de ces outils pour améliorer l'écoute et la parole, ce qui peut contribuer de manière significative à la méthode d'enseignement des langues. Afin de répondre aux questions posées et de tester les hypothèses de recherche, une approche de méthode mixte est utilisée. Par conséquent, un questionnaire et un test t sont effectués pour recueillir les données requises. Après l'analyse des données obtenues, les résultats du questionnaire suggèrent que l'utilisation d'applications mobiles basées sur l'IA peut aider les apprenants à améliorer leurs capacités d'écoute et d'expression orale, tandis que les résultats du test t suggèrent que l'utilisation d'applications mobiles basées sur l'IA pour les apprenants en langues, en particulier *ELSA*, ont tendance à améliorer les compétences d'écoute et d'expression orale.

Mots clés : intelligence artificielle, l'écoute, expression orale, *ELSA* et les applications