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The Role of Visualizing Texts Through Napkin AI Platfrom in Enhancing EFL Learners' Communicative Skills: The Case of 2nd Year Licence Students at the University of Ghardaia

Dissertation Submitted to the University of Ghardaia as a Partial Fulfillment of the Requirements for the Master's Degree in Didactics

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Dedication

First of all, I am thankful to Allah for giving me this opportunity and for guiding me all the way through this journey.

This work is dedicated to my parents for their love and support and to my brother for his constant encouragement.

This journey wouldn't be possible without their marks.

Mokhtar

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Abstract

This research has been conducted to investigate the effects of using artificial intelligence-based platform (Napkin AI) on enhancing the oral proficiency of EFL learners. The experiment was carried out, during the academic year 2024–2025, on 56second-year university students at the university of Ghardaia, via applying Napkin AI in teaching speaking skills: through observation and performance rubric, the learners' oral performance was assessed in this case. The data were collected using a questionnaire, prepared for the purpose of the present study, which assessed the students' perceptions of the use of the platform and its contribution to their oral performance. The survey was divided into four major parts: demographic information, using the Napkin AI platform, words spoken-related problems, observations and comments. Statistical analysis was descriptive and results were accompanied by relative frequencies and explanatory tables. Most students felt that using Napkin AI helped them order their thoughts, build fluency and reduced their speaking anxiety. The learners also explained that the platform's visualization contributed to their expression in English. But there were some drawbacks, including the initial digital training they had to conduct, and finding it hard to use the tool in classes with little time. The research suggests that in oral expression classes, it is better to incorporate intelligent visualization tools like Napkin AI, and it gives students some training beforehand so that it can be used well and integrated.

Keywords: Artificial Intelligence, (AI) Napkin AI platform, speaking, communication, EFL learners.

List of Abbreviations

AI: Artificial Intelligence

CLT: Communicative Language Teaching

EFL: English as a Foreign Language

L2: Second Language

Napkin AI: Napkin Artificial Intelligence (Visualization-based planning platform)

ZPD: Zone of Proximal Development

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General Introduction

1. Background of the Study

Possessing a high level of proficiency in communicating effectively and creating meaningful oral interactions, whether in academics, professional settings, or everyday life, has become a focus of interest for our globalized generation. Learners of English as a foreign language are no exception, as they have reached a point on which they all agree: "Possessing knowledge, vocabulary, and grammar does not necessarily guarantee high levels of fluency and ability to express ideas easily." Richard and Schmidt see communication as having acquired additional importance in its skills: "The ability to convey and interpret messages and negotiate meaning between people in specific contexts" (Richard and Schmidt, 2010, p. 101). Speaking has emerged as one of the most important and challenging skills for learners of English and its mastery as a foreign language.

When we talk about limited speaking proficiencies, we can mention Algerian students or Algerian universities, especially in regions that have not yet experienced this type of modernization. They are the ones who face difficulties despite many years of formal instruction. While they perform well in writing, whether on tests or other similar subjects, fluency in speaking is considered. A gap created between them and oral communication in English. This gap is either a weakness in organizing ideas or hesitation. The causes of these shortcomings include teacher-centered teaching, students' limited exposure to speaking situations, or the lack of use of support technologies in oral tasks (Ben Rabah, 2007, p. 229). Students are often expected to engage in speaking activities without being provided with the necessary tools to structure, plan, or visualize what they want to say.

The importance of pre-planning communication and better oral performance has been confirmed by numerous studies in educational psychology. This was highlighted when Meyer argued that providing learners with verbal and visual input allows for in-depth processing of ideas and

vocabulary (Meyer, 2021, p. 118). This theory of dual encoding and visualization is particularly important in speaking to address what learners often encounter: difficulty retrieving ideas and vocabulary under pressure by visually reviving them. Among the tools created in this era of development are artificial intelligence-powered platforms designed to play a key role in text visualization. One of the most prominent platforms to emerge is Napkin AI, which was developed specifically to organize concepts and ideas and automatically convert written content into various forms, diagrams, maps, and visual representations to facilitate and train students to acquire good oral proficiency. Yang and Evans believe that Napkin AI and other artificial intelligence tools have the potential to enhance learner autonomy and increase self-confidence by providing visual frameworks to easily guide oral production (Yang and Evans ,2023, p. 6).

This platform provides support and guidance before speaking, bridging the gap between the generated idea and verbal communication. In addition to all of the above, this platform is considered a key gateway to learning in our time, that is, for twenty-first-century students immersed in all forms of technology. As Golonka et al confirmed, learners who rely on interactive and visual tools supported by artificial intelligence have better engagement levels and lower levels of hesitation and anxiety, two outcomes that are essential for improving communication in English as a foreign language (Golonka *et al* ,2019, p. 52).

Everyone agreed that Napkin AI is not just a platform, but rather a tool for emotional support and encouragement for developing oral communication skills. Despite this great interest in the digital boom in language education, there remains a gap between empirical research linking text visualization to improved communication skills and oral communication. Most studies currently focus on reading, vocabulary acquisition, and the impact of technology on these skills, enabling Algerian students to transition from text comprehension to fluent oral production, as technological integration remains limited and underdeveloped as it should be. So, we focused our study on how Napkin AI, the platform we talked about, could facilitate and develop oral

communication for second-year undergraduate students at Ghardaia University, by providing them with visual support before speaking, with the aim of improving their speaking level and making it effective and fluent.

2. Rationale

The motivation behind choosing this research stems from the observable gap between EFL learners' theoretical knowledge and their practical communication skills. Many students are able to comprehend written texts but are unable to reproduce or discuss them effectively. This gap suggests a disconnect between input and output. The rise of AI in education presents an opportunity to rethink teaching strategies. The researcher is particularly motivated by the potential of Napkin AI to reshape the learning experience by making content more accessible and interactive, thus contributing to more engaging and effective language instruction.

3. Statement of the Problem

Despite the growing use of digital tools in education, many EFL students still struggle to express themselves fluently and coherently in English. Traditional teaching methods often rely heavily on text-based explanations, which may not cater to learners with visual or interactive learning preferences. As such, there is a need to evaluate whether AI-assisted text visualization tools like Napkin AI platform can effectively support learners in decoding and communicating complex ideas in English, particularly in oral and written contexts.

In the light of this, we raise the following question: to what extent can Napkin AI platform play an effective role in developing EFL learners' communicative skills?

4. Research Questions

The following sub-questions can be developed:

1. How does using Napkin AI affect learners' fluency, coherence, and organization in oral communication contexts?
2. What is the nature of EFL students' perceptions of Napkin AI, as a pre-speaking

visualization tool for improving communication?

3. Can the use of Napkin AI reduce learners' speaking anxiety and increase their confidence during oral interaction?

5. Hypotheses

For the research main question, we hypothesize that learning communicative skills can be developed more by integrating Napkin AI platform into the EFL classroom

Concerning the research questions, it is hypothesized that:

1. Learners who use Napkin AI to visualize texts before speaking will demonstrate more fluency, coherence, and organization in oral communication than those who do not.
2. EFL learners would perceive Napkin AI as an effective and supportive tool for improving their speaking-based communication skills.
3. The use of Napkin AI can reduce learners' speaking anxiety and increase their confidence during oral tasks.

6. Research Objectives

This study aims to achieve the following objectives: (1) to investigate the impact of text visualization through Napkin AI on the communication skills of EFL learners, focusing specifically on their spoken performance.(2) To assess how visual pre-speaking tools influence learners' fluency, coherence, and idea organization during oral communication.(3) To explore learners' perceptions regarding the usefulness and effectiveness of Napkin AI in enhancing their speaking-based communication.(4) To determine whether Napkin AI contributes to reducing learners' speaking anxiety and increasing their oral confidence. (5) To provide pedagogical recommendations for the integration of AI-based text visualization tools into EFL speaking instruction.

7. Methodology

A. Research Design

This study adopts the quantitative approach for data collection to explore the impact of text visualization through Napkin AI on learners' communication skills, specifically in speaking. The design includes an experimental component to measure improvement in oral performance, and an exploratory component to analyze learners' perceptions and experiences with the tool.

B. Population and Sample

The target population consists of second-year Licence students enrolled in the English Department at the University of Ghardaia during the 2024–2025 academic year. A purposive sample of 56 students is selected based on availability, willingness to participate, and comparable oral proficiency levels.

C. Research Instruments

The following tools are used for data collection:

- *Speaking Performance Rubric:* Developed to assess oral communication in terms of fluency, coherence, lexical accuracy, and confidence.
- *Observation Grid:* Used to document students' behavior, participation, and communication strategies during speaking tasks.
- *A questionnaire:* designed for a subset of learners to gather quantitative insights on their experience using Napkin AI.

D. Procedure

The study will be conducted in four main phases:

- *Pre-test Session:* Students perform a baseline speaking task without any visualization aid. Their performance is recorded and evaluated.
- *Training and Intervention:* Students are introduced to Napkin AI and trained in how to use it to visualize texts before speaking.
- *Post-test Session:* Students complete a similar speaking task, this time using Napkin AI to prepare. Their oral output is again recorded and evaluated using the same

rubric.

- *Questionnaire Phase:* It was administered to the selected students to provide feedback on the perceived benefits or challenges of using Napkin AI.

E. Data Analysis

Quantitative data from pre- and post-test scores will be analyzed using paired samples t-tests via SPSS to determine statistical significance. Qualitative data from observations will be coded thematically to uncover common patterns regarding learners' perceptions of Napkin AI and its impact on communication.

8. Structure of the Dissertation

This dissertation is divided into three chapters. The first chapter provides a detailed theoretical overview of communicative competence in EFL learning. It defines the concept, outlines its main components, and explains its importance in language acquisition. The chapter also discusses the common difficulties that EFL learners, especially university students, face in developing speaking and writing skills. In addition, it highlights the impact of instructional methods and learner-centered approaches on communicative skill development.

The second chapter sheds light on the use of Artificial Intelligence in language education. It focuses on the concept of text visualization as a pedagogical strategy and introduces Napkin AI as a tool for enhancing communicative skills. The chapter further reviews previous studies related to digital learning and visual supports, with emphasis on their impact on learners' motivation, comprehension, and productive abilities.

The third chapter is devoted to the practical part of this research. It presents a full description of the population and sampling, as well as the data collection tools and procedures. The students' responses to observation sessions are analyzed using SPSS, followed by a detailed discussion of the findings. In addition, pedagogical recommendations are proposed based on the results.

9. Limitation of the Study

This study is limited to second-year Licence students at the University of Ghardaia and focuses on the use of Napkin AI in enhancing communicative skills of speaking. Time constraints and limited access to the full features of the Napkin AI platform may also affect the depth of experimentation and generalizability. Additionally, learner familiarity with digital tools varies, which may influence their engagement with the platform.

10. Definition of Terms

- **Communication Skills:** Communication skills refer to the ability to convey and interpret messages clearly and appropriately in different contexts, both verbally and non-verbally. According to Richards and Schmidt, they are defined as "The ability to convey and interpret messages and to negotiate meaning interpersonally within specific contexts." (Richards and Schmidt, 2010,p. 101)**.** In this study, the focus is on the oral dimension of communication, particularly learners' ability to interact fluently and coherently in English.
- **Napkin AI:** Napkin AI is an artificial intelligence-based tool designed to convert textual input into structured visual representations. Yang and Evans describe it as a "Graphical organizer platform that facilitates idea mapping and conceptual clarity for educational purposes." (Yang and Evans, 2023, p. 6). In this study, it is used to help EFL learners visualize and organize their ideas before engaging in speaking tasks.
- **Speaking:** Speaking is the productive skill of using spoken language to express ideas, opinions, or feelings effectively. Brown defines speaking as "an interactive process of constructing meaning that involves producing and receiving and processing information" (Brown, 2004, p. 141). In this study, speaking is viewed as the core productive activity through which communication skills are practiced and assessed.
- **Text Visualization:** Text visualization is the transformation of written or verbal content

into visual formats such as diagrams, concept maps, or flowcharts to enhance cognitive processing. Mayer explains that text visualization "reduces cognitive overload by distributing verbal and visual information across dual channels of learning" (Mayer , 2021, p. 118), thus supporting learners' ability to retrieve and organize spoken content more efficiently.

- **Pre-speaking Scaffolding:** Pre-speaking scaffolding refers to any form of cognitive or instructional support provided to learners before they engage in a speaking task. Thornbury emphasizes that scaffolding includes planning, idea organization, and rehearsal, all of which prepare learners for effective oral communication (Thornbury, 2005,p.63).

Chapter one

Chapter One

Communication Skills in EFL Learning

1.1. Introduction

Communication has long been considered both a goal and a tool for effective learning in language education (Richard and Schmidt, 2010, p. 101). Developing communicative competence is not just an academic requirement for English as a Foreign Language (EFL) learners; it is also crucial in a globalized world where English is a lingua franca (Crystal, 2003, p. 2). Despite the oral dimension of English communication in many contexts, such as Algeria, most learners suffer from poor fluency, poor discourse management, anxiety, and even hesitation. These difficulties often result from rigid pedagogical methods and limited exposure to authentic oral interaction (Ben Rabah, 2007; Ur, 1996)**.** Given this prevailing situation, we have focused in this chapter on establishing the theoretical foundation for the study by exploring the components and nature of communication skills, and the needs that learners lack to help them speak and develop oral competencies.

1.2. Definition of Communicative skills

Grammatical accuracy and enriching one's personal vocabulary with vocabulary knowledge are not the only skills that govern the field of language education in terms of communication skills with basic competencies that enable learners to interact in a useful and purposeful manner socially, academically, or even professionally. Rather, there is something much more important: the ability to convey ideas, interpret their meaning, and conduct oral interactions fluently without any difficulty. As Richard and Schmidt agree, communication skills refer to "the ability to convey and interpret messages, and negotiate meaning between people in specific contexts" (Richard and Schmidt 2010, p. 101). This definition is not only under the term informational language use, but also demonstrates the importance of social and pragmatic appropriateness.

Speaking is the most important of the two primary areas of communication in English as a foreign language context. The other two, listening and reading, are also important, but not as important or significant as production, i.e., speaking, which is the most direct and effective means of verbal communication. Brown emphasized that speaking is "an interactive process of constructing meaning, involving the production, reception, and processing of information" (Brown 2004, p. 141)**.** Speaking requires learners to draw on linguistic, cognitive, and social resources simultaneously, which is precisely what makes it the most complex skill to develop. This is because it requires the production of precise, linguistically and logically appropriate speech, as well as fluency and coherence under pressure. Managing linguistic features such as intonation, facial expressions, gestures, and turn-taking are among the components of successful and effective oral communication. This is exactly what our universities and environments lack, despite teaching English as a foreign language. Students are expected to answer questions only when participating in academic discussions and giving presentations, but many of them face great difficulties in doing so. These challenges often result from limited exposure to authentic speaking situations, reliance on teacher-centered teaching, and a lack of training in communication strategies (Ben Rabah, 2007, p. 229).

1.3. Components of Oral Communication

The ramifications of oral communication skills are numerous and combine components and knowledge, but they do not depend solely on them in order to obtain the context for learning English as a foreign language. As we mentioned previously, it is not only grammar and vocabulary that are the basis of communication. Rather, there are other more important things, such as the ability to speak and adapt to the communication situation, whatever it may be, and to provide all the necessary vocabulary and ideas and convey them.

Hedge also reached an important point, which is that speaking proficiency means ″the ability to express oneself clearly, accurately, and fluently, and to adapt the language according to the

context and the interlocutor″ (Hedge, 2000, p. 261). Fluency in speaking is one of the essential components of oral communication. It refers to the smooth, continuous flow of speech without any unnatural hesitation or pauses. Nation and Newton found that developing fluency "requires access to a large number of known language elements and the ability to process language quickly" (Nation and Newton, 2009, p. 151). Fluency is often the surest indicator of speaking proficiency and is closely linked to learners' confidence and spontaneity in using language. Other components include the logical organization of speech and coherence. Learners must clearly connect their ideas using relevant tools such as conjunctions, discourse markers, and pronouns. There is no good oral communication without coherence, even if all the grammar is correct. Celce-Murcia and Olshtain argue that "discourse proficiency involves knowing how to integrate language structures into a coherent and coherent spoken or written text" (Celce Murcia and Olshtain, 2000, p. 5). Proficiency is particularly important in activities such as presentations, summaries, and even storytelling or giving a speech, all of which require a well-developed organization of ideas. Pronunciation and intonation are also essential factors in oral communication. While poor pronunciation can impede speech clarity, intonation enhances the meaning and even the speaker's emotion and behavior. Underhill notes, "Pronunciation is not just about producing sounds; it also includes understanding meaning" (Underhill, 2005, p. 3).

Any learner who understands patterns of stress, rhythm, and pitch is more likely to express themselves fluently and naturally. Interaction skills, such as taking turns, asking for explanations and clarifications, and showing a reaction or response, are another cornerstone of oral communication. These skills are extremely important in conversations, discussions, and debates, a situation that EFL learners face due to their limited exposure to conversations and the lack of direct verbal interaction in the classroom. From here, we can conclude that effective oral communication is linked to several factors: interactive competence, coherence, pronunciation, and accuracy. All of these factors require continuous and renewed development through

education and practice supported by tools that support knowledge and language, such as the Napkin AI platform, which may be considered an effective means of helping learners enhance and facilitate these components during oral communication tasks.

1.4. Importance of Speaking in EFL Contexts

After all the studies conducted, the idea was confirmed that there are four language skills: listening, speaking, reading, and writing. However, speaking remains the most important in enabling learners to interact in real-life situations because it is the most closely linked to fluency, and learners see it as a primary goal to be achieved in studying a foreign language. As Nunan points out on the subject of speaking, "Mastering the art of speaking is the most important aspect of learning English as a second or foreign language" (Nunan, 2003, p. 48). Speaking has become both a challenge and a practical and educational priority, as English is not used outside the classroom. Learners in Algeria tend to develop a passive knowledge of English without gaining the confidence to speak fluently spontaneously because it remains a foreign language with little use in everyday life.

Ben Rabah points out that students in Algeria face methodological constraints in verbal practice due to the teacher-centered methods applied, as well as the examination-oriented curricula, and the lack of interaction between learners and the English language, which hinders communicative competence, particularly in the area of speaking (Ben Rabah, 2007, p. 231). Regardless of classroom performance, oral communication is essential in all settings, including academic and professional settings, and in many aspects, from giving presentations, participating in seminars, defending opinions, and collaborating on group projects. Brown (Brown, 2007, p. 322) emphasized that speaking "carries the burden of interactive language use, including negotiation of meaning, turn-taking, and feedback mechanisms." Therefore, learners' success in academic or future careers is linked to the ability to speak with confidence, fluency, and coherence.

In the digital age, speaking has become increasingly important, given the increasing demand for

oral communication in English, thanks to the global rise of video conferencing, international academic exchange, and online collaboration. Therefore, speaking is no longer considered merely a scholarly and academic goal, but rather a practical necessity. Yet, many overseas English learners remain unprepared to achieve this goal due to limited training opportunities and a lack of support. In light of these facts, enhancing speaking skills has become an essential priority that cannot be ignored in the English language teaching methodology. Learners need all the practical support necessary to help them organize their thoughts, reduce their stress and anxiety, and, most importantly, improve their fluency before speaking. This study also proposed an idea worth experimenting with: providing visual support tools such as Napkin AI, which helps transform abstract content into organized and interactive speech. This leads to the development of oral communication skills and achieves the goal of having learners participate in a variety of activities using English as a language of communication.

1.5. Challenges Faced by EFL Learners in Oral Communication

Although speaking is the core element of EFL studies, most students have remained unsuccessful in terms of acquiring effective oral communication skills. These issues are linguistic and attitudinal, and have their origins in the kinds of classrooms whose conditions governing the control and transmission of language are sitting in traditional language classrooms, where communication is barely occurring and is not occurring of the learners' own accord. (Refer to the findings on speaking in Chapter III) Speak of the four skills "seems to be the most obviously important skill, but also the most difficult kind of skill to develop in the classroom setting" (Ur, 1996, p. 120). This paradox speaks to the challenge of teaching and learning to speak in contexts where English is not an everyday language.

Speech anxiety is one of the most frequently cited challenges. Learner's concerns are generally about making mistakes, being laughed at, or embarrassed in public or classmates. This fear may also make them less willing to get involved, especially in activities involving "hot-chair

speaking". Horwitz et al see speaking anxiety as one of the significant affective factors that can have negative consequences on language learning, particularly when students are placed in anxiety-ridden environments without the appropriate level of support (Horwitz et al., 1986, p. 128).

Apart from anxiety, students have problems in developing ideas and being coherent throughout their essays. A lot of students don't know how to put their answer together and link their answer and utilise discourse markers to take their listener through what they are trying to say. When they aren't planning or seeing inspiration before they speak, there's no flow, they appear fragmented or redundant and their output is incoherent and convolved. As Thornbury points out, for Generative Linguistics, "speakers need not simply 'know' the linguistic forms of their language(s), but how to apply them".

To compute this resultant in real-time, and this puts great pressure on the cognitive resources available to the speaker" (Thornbury, 2005, p. 6).

In addition, the lack of opportunities for exposure to real English input is also a major obstacle. In EFL context specifically Algeria, students come across over-rehearsed dialogues and exercises which unfortunately fails to convey the impromptu nature of natural communication. As Ben Rabah argues, EFL teaching in Algeria is exam-driven, focusing on the written exams and the grammar drills to the neglect of spoken fluency and interaction (Ben Rabah, 2007, p. 232). This discrepancy makes the distance between what learners learn and what they actually require in face-to-face and practical communication.

There is also an issue of personalized feedback. Teachers in large classrooms are often limited to whole-group instruction, with little available time for providing personalized feedback or oversight. Learners do not know what his/her weaknesses are in fluency, coherence and pronunciation (shipping of the mouth, intonation, etc.) to improve them. In addition, cultural aspects (e.g. shyness to talk in public or to question authorities) may even prevent learners from

active participation in speaking activities.

Due to such challenges, we urgently need pedagogical methods that both intellectually and emotionally assist the learners. Resources that provide learners with visual scaffolding (e.g. Napkin AI, which helps learners organize their speech using a concept map) have the potential to make a difference in all three areas by decreasing anxiety, increasing clarity and improving idea organization. While this has not necessarily changed (students are still required to think before they speak), these tools offer students a clearer trajectory of where they are going instead of getting hung up on what they are trying to say. This paper will investigate how text visualization can be applied in the pre-speaking procedures to reduce the aforementioned common challenges and encourage effective oral expression in the EFL classroom.

1.6. Theoretical Approaches to Communicative Language Teaching (CLT)

Communicative Language Teaching (CLT) was developed in the late 1970s as an alternative to traditional methods, which mainly focused on language form which inhibit use in meaning making. CLT moved the emphasis of language teaching away from (merely) learning grammar to the effective use of language in real-life where learners need to communicate, articulate and read into context. As defined by Richards and Rodgers (2014), "CLT is based on developing communicative competence, that is, the idiosyncratic ability to use a language according to content area" Richards & Rodgers (Richards & Rodgers, 2014, p. 85).

Hymes (1971) laid the theoretical basis of CLT by developing the idea of the communicative competence, which he posited broader and more dynamic than grammatical competence. Hymes contended that learners in a language should be prepared to know not only what is grammatically correct and what is not but what is socially and contextually suitable (Hymes, 1972, p. 281)**.** This notion was subsequently refined by Canale and Swain to produce a four-component model which posits that the learners' needs can be categorized into four types: in grammatical

competence, sociolinguistic competence, discourse/proficiency competence, and strategic competence (Canale & Swain, 1980, p. 5).

In the classroom, CLT calls for "real-life" tasks and interactive classroom activities, and for use of the students' target language and for creative language practice. Speaking tasks and activities within CLT generally consist of pair or group discussions, role-plays, problem-solving activities, and presentation tasks which are to model actual communication and provoke spontaneous language use. Larsen-Freeman and Anderson (Larsen-Freeman and Anderson, 2011, p. 121) maintain that in a communicative class "the teacher creates the conditions for communication to occur, and the learners act internally and externally to make the task a meaningful experience".

But this is a straw man, as CLT dovetails nicely with the use of technology in language teaching. The interactive, personalized and meaningful input and output digital tools are in line with principles of communicative language teaching. For instance, pre-speaking visualization with Napkin AI could help learners more easily access concepts and thus provide cognitive scaffolding, which could lead to confident participation in communication tasks. Therefore, this work is framed around the CLT (Communicative Language Teaching) framework, with digital support to help structure speaking-oriented communication.

Furthermore, CLT has developed to include task-based TBL, CBI, and project-based instruction, which focus on learner autonomy, authentic input, and the utilization of language for a reason. Such developments confirm that, in the end, communicative competence is effectively nurtured by involving learners in the practice of language to achieve tangible purposes.

In conclusion, CLT is one of the most influential approaches to date in EFL pedagogy, and its focus on interaction, fluency and meaningful communication are particularly relevant for this study. By incorporating AI-based visualization tools, the study aims to increase learners' oral production in a communicative, learner-centered way.

1.7. Role of Digital Tools in Enhancing Communication

The use of digital technology in the language class has reshaped teaching and acquiring of communication skills in EFL environments. There are many different learning styles and cognitive needs among students, and these are not conducive to traditional classroom approaches in oral communication. Digital technologies, on the other hand, create interactive and multimedia environments which can grant learner's higher degrees of autonomy and engagement as well as more personal support. As Golonka et al. said: "Technology enhanced, learning environments afford opportunities for real, time communication, immediate feedback and learner control over pace and content." (Golonka *et al.*, 2019, p. 49). These characteristics make ICTs particularly useful for speaking performance and communicative competence development.

The most effective interventions are tools that promote pre-task planning and visual scaffolding aimed especially at encouraging the development of spoken fluency and coherence. For instance, tools enabling learners to prepare or organize ideas in graphs or images prior to speaking have been found to result in improved spoken fluency and lexical richness. When content is processed on both a verbal and a visual channel a better comprehension and retention is achieved, as this prevents cognitive overload and supports dual channel search for meaning (Mayer, 2021, p. 121).

Innovation like this is AI-driven Napkin AI is an example. These features automatically convert written or abstract ideas into visual maps or diagrams, allowing learners to organize their thoughts and express them more clearly. Yang and Evans stress the role of AI tools in cognitive planning and learner confidence through individualized, dynamic visualizations (Yang & Evans, 2023, p. 5). This type of support is important in speaking activities where language learners are frequently anxious to communicate and may also be hesitant about responding in an immediate and natural manner.

Moreover, digital tools support learner-directed learning by enabling learners to plan, review and assess their speaking. Engaging with voice recording, visual mapping, speech analytics, and

collaborative environments makes interaction more realistic and learners are able to practice as if they were in the real world when they are using these tools. Digital environments "facilitate interaction" in "rich and meaningful contexts and extend opportunities for language use among learners." (Warschauer & Healey, 1998, p. 58). Such tools act as important local input factors in environments with no or very limited English input.

Crucially the effectiveness of electronic tools in improving communication is not

Restricted to the tools themselves, but relies on how they are pedagogically incorporated. Yet educators need training to make meaningful use of such platforms, and to connect them to instructional goals. In this work, Napkin AI has been used as a pre-speaking visualization tool to aid leaners in planning and delivering scripted, fluent and confidence speaking.

1.8. Conclusion

In the posited independently on its behalf in multilevel model analyses, effective use of English at the core of foreign language instruction, especially speaking. This chapter has established the theoretical foundation of communication skills in EFL contexts from a focus on linguistic, cognitive, and affective aspects of speech. This has indicated that speaking, as a productive and interactive skill, is one of the most challenging skills of language learning especially in the case of students learning language in non-English-speaking environment like Algeria.

Through analyzing the elements of oral interaction, the particular problems which learners face, and the affordances of digital tools for communicative development, this chapter has, at a fundamental level, indicated the pressing need for pedagogical change. For instance, AI-driven platforms such as Napkin AI represent a promising proposal with visual scaffolding for supporting learner fluency, coherence and speaking confidence.

The chapter has confirmed the validity of CLT as approach and framework to guide both interaction and authenticity, and, learner autonomy. These principles inform the second stage of this study, wherein the principle of text visualization is introduced and how the utilization of

tools such as Napkin AI, can become part of pre-speaking instruction in a way that promotes communication skill acquisition.

Chapter two

Chapter Two

Text Visualisations via AI (Napkin Platform) and EFL Communication

2.1. Introduction

In recent years, in a rapidly developing field of FL education, the penetration of digital technologies has opened up new opportunities to improve learners' communicative competence especially speaking. Whereas conventional instructional models may lead to accuracy and repetition, recent theories of teaching and learning in the second language classroom are designed to enable learners as multimodal, live, and interactive users of language who benefit from the possibilities of fluency, confidence, and agency. Among such strategies, text visualization has become an efficient weapon allowing learners to think, structure ideas, and to articulate them more efficiently in oral tasks.

As Mayer notes, visual representations provide an effective complement to verbal information as they prevent cognitive overload and facilitate dual-channel processing of information (Mayer, 2021). Going beyond practical considerations, this chapter discusses the theoretical and pedagogical rationale for text visualization in language learning, and proposes how it might be especially useful in pre-speaking preparation. Emphasized is given to Napkin AI, an AI platform intended to transform written input into visual structures. Through the exploration of cognitive and instructional aspects of such tools and their classroom implementation, the chapter puts forward the conceptual underpinnings of why and how AI-driven visualization supports better speaking in English, in terms of clarity, fluency, and confidence.

2.2 Definitions and Foundations Text Visualization

Text visualization includes conversion of text (or ideas represented in text) to visual forms (e.g., diagrams, flow charts, concept maps). In educational practice, this approach is to facilitate

learner's ability to assimilate complex information, to help the course of thought to be lucidly arranged, and to increase both the students' comprehension and remembering. "Visual representations take the load off of working memory and aid learning by marrying the verbal with the visual on the dual coding model," Mayer claims (Mayer, 2021, p. 121). In the field of language learning, this is especially significant when learners prepare for verbal tasks, which they often face difficulties retrieving and organizing ideas on the spot.

Theoretical background the theory behind text visualization is based on cognitive load theory (Sweller, 2012) and multimedia learning theory (Mayer & Moreno, 2003). These models state that when information is presented to learners via both verbal and non-verbal media they are more likely to form integrated schemata, to connect knowledge to meaningful networks and to store it in a way that is retrievable at a later time (Sweller, 2010, p. 133; Mayer, 2021, p. 118). Visual scaffolding, hence, doesn't supplant language reasoning process, but it works as an auxiliary aid and lead to increase the learners' capacity of self-expression.

In language teaching, especially in the EFL contexts, text visualization is more commonly being employed as pre-productive activity prior to speaking or writing. Learners frequently have difficulty producing well-formed and coherent speech on the fly. They can cure the anxiety that accompanies a time-taking process on mind, while also making oral task easier to do (Al-Serhan & Alzubi, 2021, p. 211). This makes visualization a potent cognitive tool to aid learners in the planning stage of communication.

In addition, text visualization fits well with the learner-orientation teaching and learning strategies as it promotes active learning, self-management & autonomy. Students are reconstituting input to make it into something speak able; they're not merely consuming it. It gets even easier and more dynamic when combined with tech tools—particularly AI-driven platforms such as Napkin AI.

In conclusion, the text visualization is a visible tool to externalize and internalize knowledge of

learners. Seeing things mapped out helps students feel a little less in the dark and more in control of what they are saying. How it applies to EFL classrooms the discussion which follows will show how this approach, as realized through Napkin AI, can support oral expression in EFL classrooms.

2.3. Visual Learning and Cognitive Scaffolding in Communication Perception

Is a mediator between sensing the world and interpreting it and is used as a constructive process, together with capacity for coding information corresponding, of managing the phenomenological complexity of the world (Bianchini & Vichi, 2003).

Visual learning has received attention in language education because it can facilitate cognitive processing, particularly in tasks that call for planning, organization and production in real time such as speaking. Visual adjuncts in the EFL classroom Learners in EFL situations often struggle to generate ideas and organize what they have to say and so visual prompts are a vital source of cognitive scaffolding. This scaffold is only a temporary mental support, which serves to over-stepping their present ability level and, ultimately helping them on the way to autonomous communicative competence.

Based on Vygotsky's sociocultural theory, learners are able to form higher-order psychological functions by means of mediated assistance in their ZPD. For this purpose, visual tools, such as concept maps and diagrams, intervene as mediators in order to decrease the cognitive load for speaking tasks. "Visual props enable students to externalize and order their thoughts, thereby freeing up working memory in real-time spoken production, (O'Malley and Chamot, 1990, p. 101). This ordering is especially important before students engage in controlled discourse activities such as storytelling, summarizing, or arguing.

Cognitive psychologists have also proven that visual aids increase retention and retrieval of information, because they allow information to be processed in both channels. In the vein of

multimedia learning theory as promoted by Mayer information is best comprehended and remembered when it is presented visually supported by verbal expressions (Mayer, 2021, p. 121). This is further compounded in speaking tasks as learners need to process information quickly and deal with grammar, pronunciation and content all at once. Mind Maps and VOs help to unburden the resources of time, mental effort and time when people are thinking about language production and clothesline organization.

"Additionally, visual scaffolding also supports learners' autonomy and metacognition. When students use visual planning tools prior to speaking, they not only structure their ideas, they learn from their own learning. This self-knowledge promotes more autonomy and control in the possession of the communication. As Novak & Cañas observe that "concept mapping enhances meaningful learning in that learners become consciously aware of new relationships and connections to their own knowledge" (Novak & Cañas, 2008, p. 3). In oral language, this entails preparing learners to produce coherent text, frame discourse for communicative effectiveness, monitor messages, and repair breakdowns in communication.

Visual learning strategies can be a subject of the integration effort because it can help to scale penetration in those high number and limited speaking practice environment in EFL classrooms. It allows students to be prepared on a personal level without having to depend on the teacher. Most significantly, it enables the weaker students, or the quieter students, who may not be able to compete with the more outgoing ones, to be involved and engage meaningfully in spoken activities. When paired with technology platforms such as Napkin AI, these benefits are enhanced and learners have immediate access to personalized and dynamic visualization tools to aid in pre-speaking preparation.

2.4. From Text To Speech : How to Visualize Ideas to Enhance Oral Output

One of the most difficult tasks for learners is to convert input, written or conceived, in a

spontaneous manner into verbal language. The production of speech in a foreign language involves not only lexis and grammatical usage, but also a rapidly retrieving of organized thoughts and the delivery of these under pressures of communication. One of the major problems learners face is that fluency and coherence break down, not because they have no ideas but because they cannot retrieve those ideas, or have problems in putting their ideas in a sensible order in spoken language. The differential between input (reading/comprehension) and output (speaking), by contrast, is where text visualization can be such an effective pedagogical added-value.

Text papers, meanwhile, function as cognitive bridges across knowledge as such and spoken performance. As Goh and Burns put it, "pre-speaking activities that involve both planning and conceptual organization help learners to decrease processing demands and to enhance real time performance." (Goh & Burns, 2012, p. 95). When learners can externalize their thought processes in visual forms—such as mind maps or flow charts—they are ideally able to skate along the surface of their speaking content, eliminate redundancy, and keep the language flowing.

Concept direct/invent in concrete terms, seeing a visual image before you speak helps learners to activate their schema, organize their talking, and/or move to another point. Learners can witness the logical order of what tales they want to tell, making retrieval and coherence in their spoken discourse much simpler. The use of graphic organizers is such an effective technique in that learners who were given graphic organizers before ready to speak are better and clearer in their spoken language – specifically with task-based speaking activities such as giving opinion, telling story or presenting summary (Al-Serhan and Alzubi, 2021, p. 213).

This is especially useful for students who have a hard time with spontaneous speaking. Students are likely to produce clumsy generalizations or groups of words that are not actually sentences. When they see what they will say, learners can try to visualize ideas and practice through "silent

running", reducing anxiety and increasing confidence. This is particularly crucial in test situations, speaking in public, and classroom situations in which performance pressure is higher. Furthermore, text-to-speech visualization provides differentiated instruction which can be adapted to the needs of students with varying proficiency and cognitive preferences. Visual learners, specifically, find it easier to visualize relationships and classifications between information, leading to an improved understanding and expression of this knowledge. Visualization, when utilized in speaking, turns abstract thinking into articulate language.

Tools like Napkin AI, which uses AI to help product developers visualize what they are creating, have taken this approach to the next level by automating visualization. Linked representations are also of value to students, who can use such programs to generate concept maps that allow users to draw maps freehand but provide the ability to enter their notes / readings and then generate instant visual representations of the key ideas and interrelationships. It's a big-time saver, and it also encourages students to engage with the information on a deeper level. The comfort of the immediacy of these tools highlights the potential for integrating tools suitable for habitual use in pre-speaking preparation.

After all, there's more to transforming text to speech through visualization than a mechanical process – this is strategic and metacognitive way of allowing learners to think their way through language before it hits their lips. It enables them to be intentional communicators and not just language users.

2.5. Napkin AI: Features and Pedagogical Potential.

Napkin AI is an AI-powered platform that allows for the conversion of written content into visual documents, such as mind maps, flowcharts and conceptual maps. Although Napkin AI was initially designed for idea mapping and digital note-taking, it is increasingly used in education for its ability to scaffold learning with visual structure. Given the learners' difficulties of fluency and coherency in EFL, the platform proposes a new way of pre-speaking planning by

creating the visual representation of the ideas that the learners are supposed to share orally.

Central to Napkin AI is the ability to understand the conceptual relationships in text, and translate these into interactive, editable graphics. What it implies is that students will be able to enter their notes, summaries or other academic texts into the system and get structured diagrams which explain the key points, supporting elements and relationships shared among them. In the case of tools like Napkin AI, according to Yang and Evans, they are "designed to support idea generation and conceptual clarity; they are especially useful in contexts demanding cognitive effort, such as for speaking or academic discussion" (Yang & Evans, 2023, p. 5). When external studying, students have more control over how they vocalize and articulate information.

Pedagogically, Napkin AI is consistent with the principles of multimodal learning and learner autonomy. The platform allows the manipulation of nodes, editing of concepts, and restructuring of structures in users' personalized workspace, making it conducive to active learning and self-regulation. When used prior to oral tasks, this interaction can assist students in rehearsing speech, forming an argument, and thinking through transitions. It even scaffolds that spontaneous speaking so that learners could focus on delivery and pronunciation. Further support for this approach is reflected in Mayer's theory of multimedia learning which claims that "compared with verbal representations, pictorial representation help students learn when tasks are complex" (Mayer, 2021, p. 121).

One more selling point of Napkin AI is how it remains accessible at different language competencies. For low-level EFL students, the tool can help to scaffold difficult texts, identify key vocabulary and main ideas. For higher-level students it provides a means to structure advanced discourse, construct arguments and formulate ideas. This flexibility makes Napkin AI suitable for various oral tasks — from chitchats to academic presentations.

Crucially, the visual interface of the platform itself provides a low-stakes rehearsal space for students to rehearse their ideas without the production-demand of instant oral output. It helps

learners with speaking anxiety to feel more relaxed and more confident speaking to others. According to Alzubi and Al-Serhan, the students who had access to visual prompts before speaking tasks had increased fluency, greater lexical variety and better overall speaking performance (Alzubi and Al-Serhan, 2021, p. 213).

And Napkin AI has promise beyond the solitary student. In classrooms, teachers can use the platform to co-construct visual plans with students, demonstrate speaking structures, or differentiate instruction. Its collaborative features also have potential for pair and group speaking tasks, with shared visual plans forming the basis of discussion. Such integration is conducive to interaction, scaffolding, and peer-feedback, all of which are the essential elements for the Communicative Language Teaching (CLT).

To conclude, Napkin AI is more than just a visualization tool, and has the prospect of becoming a cognitive and pedagogical support for EFL users who wish to develop their oral language in an organized and safe environment. Its talent for projecting abstract ideas, for lessening the sense of effort, and for securing fluency renders it a valuable agent in modern speaking instruction.

2.6. Incorporating Napkin AI into Pre-Speaking Activities

The pre-speaking process is considered an important stage in oral communication tasks, particularly for EFL learners who may find it difficult to start speaking and to speak fluently. The presentation phase this encompass ideas formulation, wording choices and mental rehearsal of the lines of the speech. Incorporating Napkin AI to this stage gives a dynamic, supportive space for students to plan their speech visually, quieting anxiety and increasing fluency. Pre-speaking, it gives from passive mental preparation to an active and reflective learning experience.

Though it is possible to support traditional pre-speaking exercises, i.e. the out-lining, note-taking, etc., with visual support and heavily-controlled output activities, such support is often insufficient for visual or lower-proficiency learners. Instead, AI-driven visualization tools such

as Napkin AI create personalized, organized "maps" of learners' thoughts, allowing them to view the flow of ideas and key concepts and how these ideas are connected. Goh and Burns propose that pre-speaking activities need to assist "learners in accessing content knowledge, developing discourse structures in preparation, and making lexical choices ahead of time" (Goh & Burns, 2012, p. 93). Napkin AI fulfills these requirements by letting the learners see how discourse is organized before they get to speak in real time.

In practice, Napkin AI can be implemented in the classroom across several phases. Isolating L1 and L2 Knowledge: Subtraction Task Learners are given a text (e.g., an article, a prompt or a discussion question) first. They type in central concepts or summaries to the platform, and it crushes the concept into a visual concept map. Then students cut up the shape to group like ideas and organize in a logical order. And third, they employ the visual outcome as a blueprint for speaking sought either in monologic (e.g., individual presentations) or dialogic production (e.g., discussions or interviews).

This kind of integration favors scaffold effects on various levels: cognitive (idea generation, sequencing), linguistic (vocabulary activation), affective (anxiety reduction, increasing confidence). Students can practice saying their speech in their head, using the visual as a guide, which is helpful for learners who have difficulty retrieving ideas or connecting the concepts. As Thornbury points out, "preparation serves to increase the fluency of speech not so much by reducing hesitation but by acting as a means for displacing cognitive energy' (Thornbury, 2005, p. 39).

Furthermore, Napkin AI might be employed for formative assessment, as teachers can examine learners' maps and have an insight into their planning process, providing them with specific feedback prior to the completion of the speaking task. In this case, not only does this help to increase the overall quality of oral output, but also serves to raise the learners' level of metacognitive awareness for the purpose of enabling learners to assess their own strengths and

weaknesses with respect to speech organization.

Lastly, the visual, editable nature of the platform lends itself well to more interactive, pre-speaking activities. Students can also co-create a visual plan on a shared presentation or role play in pairs or groups. It promotes the negotiation of meaning, the sharing of decisions, and the training of interactional language—all of them a core of communicative ability."

In summary, the use of Napkin AI in addition to, or instead of pre-speaking preparation revolutionizes the manner in which communicators prepare for oral communication. It provides scaffolded, responsive, learner-centered support for speaking that not only is designed to lead to improved speaking performance, but encourages the types of best practices in language teaching that characterize much contemporary language pedagogy.

2.7. Advantages and Challenges of Integrating Napkin AI into EFL Speaking Activities

2.7.1. Advantages of Napkin AI Integration

Integrating Napkin AI into EFL speaking activities has brought several notable benefits that align with contemporary pedagogical frameworks and learner needs. First, many learners reported an improvement in idea organization as the visual structure provided by Napkin AI allowed them to sequence their speech logically. This aligns with Mayer's multimedia learning theory which suggests that dual-channel processing visual and verbal reduces cognitive overload and enhances performance (Mayer, 2021, p. 121).

Second, the platform played a key role in reducing speaking anxiety. The visual planning phase served as a mental rehearsal, helping students feel more prepared and less hesitant. As Horwitz et al noted, providing cognitive support reduces the psychological stress associated with oral communication (Horwitz et al., 1986, p. 128).

Third, learners demonstrated greater fluency and fewer pauses after using Napkin AI. This is consistent with Al-Serhan and Alzubi, who found that using graphic organizers prior to speaking

enhances lexical access and fluency (Al-Serhan and Alzubi, 2021, p. 213).

Fourth, the use of Napkin AI led to increased engagement and motivation, particularly among visual and tech-oriented learners. According to Golonka et al., interactive digital tools foster learner autonomy and improve attention and satisfaction with language tasks (Golonka *et al* 2019, p. 53).

Moreover, the platform encouraged self-regulated learning, allowing students to plan independently and reflect on their structure and language. Novak and Cañas emphasize that concept maps promote metacognitive awareness by making abstract ideas visible and traceable (Novak and Cañas, 2008, p. 3).

2.7.2. Challenges of Napkin AI Integration

Despite these advantages, the integration of Napkin AI also presented several pedagogical and logistical challenges. First, some students faced difficulties in digital literacy, especially during initial use. Yang and Evans underline that AI-assisted tools demand a certain level of technological competence, which may not be equally distributed among learners (Yang and Evans, 2023, p. 7).

Second, a few learners showed overreliance on visuals, treating the generated diagram as a script rather than a support. This may undermine spontaneous communication and limit language flexibility. Sweller warns that excessive cognitive scaffolding can inhibit the development of independent processing skills (Sweller, 2010, p. 133).

Third, in classrooms with limited time, planning with Napkin AI adds pressure on speaking session duration. Teachers must find a balance between using the tool and allowing enough time for practice. Richards and Rodgers caution that technology-based methods require thoughtful integration into class structures to avoid instructional overload (Richards and Rodgers, 2014, p. 85).

Lastly, both teachers and learners expressed the need for initial training to fully benefit from the

platform. Without guidance, some students failed to use the diagrams effectively or skipped key steps in planning.

2.8. Conclusion

In this chapter, the theoretical background and the pedagogical significance of text visualization as a cognitive aid to facilitate the EFL speakers' speaking skills were reviewed. Embedded within theories derived from multimedia learning and cognitive load theory, visualization helps to learner's process, organize and retrieve ideas prior to oral expression. The chapter has illustrated how visualizing conceptual content can help decrease feelings of speaking anxiety, enhance fluency, and increase coherence—all of which are integral to communicative competence.

At the heart of this debate lies the AI-based tool Napkin AI, a visualization platform which offers learners immediate well-structured visualizations of textual input. With concept map and diagram support, Napkin AI provides both personalized and group support for pre-speaking tasks. It assists learners in organizing speech, practicing it, and easing the cognitive load of instant language production. With its focus on increasing learner independence and metacognitive reflection, the program is in line with communicative and learner-centered approaches and broadens the technology repertoire of language educators.

Now, referring to the pre-speaking stage, it has been discussed in this chapter that this integrative work utilizing Napkin AI could be a better approach for the widespread oral communication problem in EFL classrooms. The next chapter will shift from theory to application, describing the chapter study's purpose, as well as the research design, instruments, and procedures employed to explore the impact of Napkin AI on speaking performance of second-year students in the University of Ghardaia.

Chapter three

Chapter Three

Field Investigation

2.1. Introduction

From the practical point of view, text visualization tool as incorporated in Napkin AI will be used to improve second year EFL students speaking skill at the University of Ghardaia. It includes the description of the methodology, the population, and the instruments used for collecting and analyzing data. More particularly, the aim of this chapter is to address the research questions.

The findings were statistically analyzed based on the data collected through 56 learners using visual graphs and descriptive interpretation. Which enabled the researcher to infer implications about the operationalization of AI writing strategies and student responses to the platform.

3.2. Research Method

This study depends on a mixed design, with an experimental component (measuring oral performance gains) and an exploratory component (analyzing the perceptions and experiences of the users with the tool). of text visualization using Napkin AI on the speaking skill of learners. The design is This research also uses the quantitative method for data gathering to analyze the influence

3.3. Population and Sampling

The population of the study is the second-year license Students at the department of English in the University of Ghardaia during 2024/2025. A smaller sample was initially viewed making this comprise number of the sample to be 56 students taken from purposeful sampling to guarantee more representative and dependable results. They were selected randomly.

These students are of various ages and both genders. As represented in the table and the graph, the participants were majority female (82.1%) and male (17.9%) which correspond to the

normal gender distribution with respect to the department. Regarding age, most (66.1%) were 18 to 20 years old, 28.6% were 21–23, and the remainder were older than 24. This demographic information is relevant for interpreting the participants' digital literacy levels and potential acceptance for AI applications.

3.4. Data Collection Tools

In order to capture meaningful and content-rich data, the research used three primary instruments:

- Questionnaire: All 56 participants answered a specific set of predesigned open and closed questions about their activities when using Napkin AI in addition to their attitudes towards Visual Text Aids and the effect both had on improving speaking performance and vocabulary acquisition. These questions yielded quantitative findings.
- Observation grid: Students performance in number of speaking was observed and grid ticked for fluency, pronunciation, lexical items, coherence, and confidence that focused on speaking sessions practice involving visual texts of Napkin AI. This provided an opportunity for immediate evaluation of oral progress.
- Speaking Rubric: The speaking performances of students (clarity, fluency, interaction and vocabulary) were evaluated in a pre-and post-test through a standardized rubric. This helped identify any gain, if any, due to the AI-aided visual content.

3.5. Procedure

The applied aspect of the study consisted of a sequence of in-class speaking workshops where students were first introduced to the Napkin AI platform and given an explanation on the steps to follow to visualize their text. Before delivering the intervention, a brief orientation was delivered to ensure all students had a basic familiarity regarding how they should access and work with the platform’s visual outputs (e.g., mind maps, diagrams and illustrated prompts).

Students were then given short speaking tasks to perform alone or with a partner, using the eye-

tracked stimuli created by Napkin AI. These texts were in the form of story maps, vocabulary webs and dialogue planning and focused on developing fluency in speech and its organisation. Each session was divided as follows:

- **Phase 1:** Pre-Activity Discussion: Students generated ideas on a topic without structured support of AI.
- **Phase 2:** The interaction with AI-Support — the students viewed specific visualizations generated by Napkin AI and were required to explain or rephrase it orally.
- **Phase 3:** Controlled Oral Production – Students gave brief oral presentations or role-plays based on the AI visuals as prompts or support.
- **Phase 4:** Peer and Instructor Feedback – Peers wrote short comments and the instructor gave formative feedback based on the speaking rubric.

During these sessions, the researcher (as a teacher) applied an observation grid to note down the participants' oral behavior (hesitation, fluency, lexical selection, pronunciation, etc.), as well as students' responses to the visual aids. A post-course surveys were also administrated to review learners' feelings, problems, and satisfaction on the platform.

This multi-step approach enabled structured deployment of Napkin AI in a controlled classroom environment with systematic coverage, while addressing performance-like and perceptive data acquisition.

3.6. Data Analysis

3.6.1. Performance Rubric

Criterion	Score (1–5)
Fluency	3
Coherence	2
Pronunciation	4
Lexical Resource	3
Grammatical Accuracy	2
Interaction &Response	3
Confidence	2
Shyness / Anxiety	1

Use of Visual Planning	4

The table above outlines the performance rubric used in this study to assess students' oral production before and after the integration of Napkin AI. The rubric consists of nine detailed criteria, each targeting a specific component of effective spoken communication in EFL contexts. It combines both linguistic elements (such as grammar and vocabulary) and affective-behavioral aspects (such as confidence and anxiety), which reflects a comprehensive, learner-centered approach to evaluating speaking.

Fluency and Coherence represent the foundational components of speech delivery. Fluency refers to the smoothness and flow of speech, while coherence captures the logical connection and organization of ideas. Both are essential indicators of communicative competence and were prioritized in this study, as Napkin AI was introduced primarily as a pre-speaking visualization tool to improve content organization and flow.

Pronunciation, Lexical Resource, and Grammatical Accuracy address the linguistic accuracy and expressiveness of learners. Including these criteria ensures that students are not only speaking with confidence but also using correct and varied language.

Interaction & Response assesses the learner's ability to engage in real-time communication, such as turn-taking or responding in dialogue. This dimension reflects the interactive nature of speaking, especially in pair or group contexts. It is central to Communicative Language Teaching (CLT).

The rubric also innovatively incorporates affective criteria, such as Confidence and Shyness/Anxiety. These elements are often overlooked in traditional rubrics but are crucial in EFL contexts, particularly where students may feel inhibited when speaking in front of others.

Finally, Use of Visual Planning was added to measure students' engagement with Napkin AI. It evaluates whether learners were able to meaningfully utilize the visual diagrams to structure their

speech. This criterion is directly tied to the study's core intervention and enables observation of how visual scaffolding impacted oral performance.

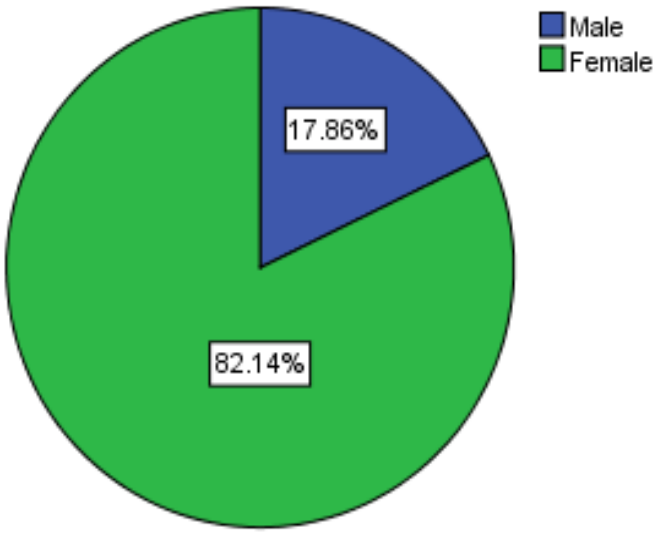
Altogether, the rubric provides a holistic evaluation framework that captures cognitive, linguistic, and affective dimensions of oral communication. Its multi-criteria structure allowed for rich, nuanced analysis of learners' development during the experimental phase and offered measurable insights into the pedagogical value of Napkin AI in EFL speaking instruction.

3.6.2. Students Questionnaire

Data from the questionnaire were analysed quantitatively. The responses of all participants were code grouped, and counted and percentages produced using SPSS software. The results are shown with the help of frequency tables along with respective relative pie diagrams. A description is included with the question for interpretation of the result, included from both the table and the graph.

Table 3.1: Gender of Respondents

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	10	17.9	17.9	17.9
	Female	46	82.1	82.1	100.0
	Total	56	100.0	100.0	

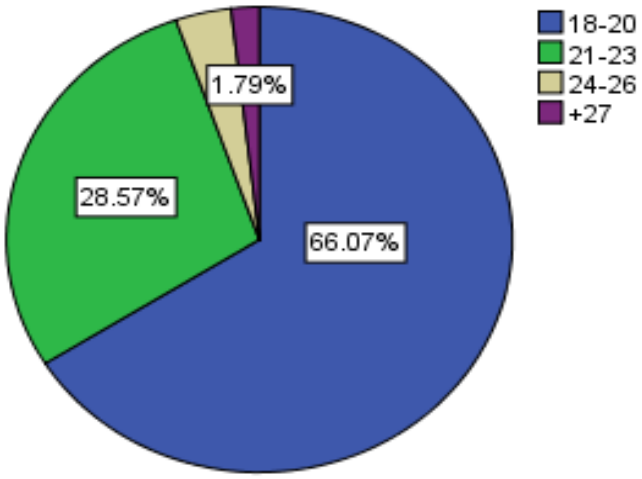


Pie Chart 3.1: Gender of Respondents

In the table and the graph, the highest number of participants were of female (82.1%) compared to male (17.9%). This distribution is representative of the gender ratio within the English Department at the University of Ghardaia. The gender composition of students may affect classroom interaction form and the using attitude to learning approach and also the acceptance to AI in the future teaching process.

Table 3.2: Age of Respondents.

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-20	37	66.1	66.1	66.1
	21-23	16	28.6	28.6	94.6
	24-26	2	3.6	3.6	98.2
	+27	1	1.8	1.8	100.0
	Total	56	100.0	100.0	

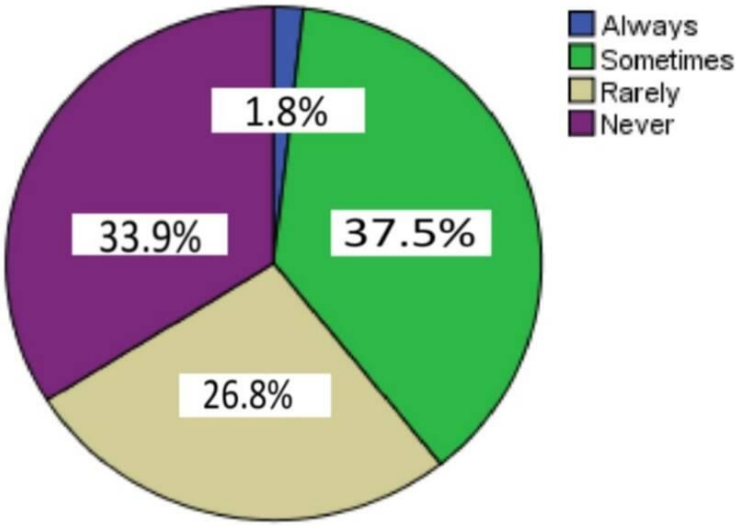


Pie chart 3.2: Age of Respondents.

The table and the graph show that 66.1% of the students were between 18 and 20 years old, followed by 28.6% in the 21–23 age group. Only a small portion (5.4%) were older than 24. This age distribution suggests that the vast majority of participants belong to the "digital-native" generation, who are generally more comfortable with technological tools, including AI platforms. Their age also indicates that they are likely still in the early stages of academic development, where support in speaking skills is highly beneficial.

Table 3.3: Students' Prior Experience with AI Tools.

q3					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	1	1.8	1.8	1.8
	Sometimes	21	37.5	37.5	39.3
	Rarely	15	26.8	26.8	66.1
	Never	19	33.9	33.9	100.0
	Total	56	100.0	100.0	

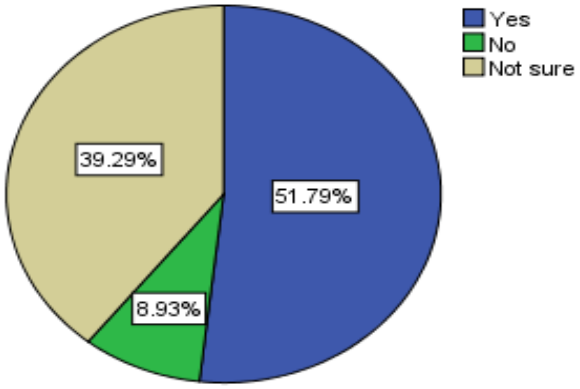


Pie chart 3.3: Students' Prior Experience with AI Tools.

As reported in the table and the graph, only 1.8% of students always used AIs for learning language before the study was conducted. Of the remaining, in total 37.5% had use of them sometimes, 26.8% rarely used them and 33.9% never used them. These findings suggest a relatively new phenomenon, in that a large percentage of students had little to no prior exposure to AI-mediated learning tools, underscoring the novelty of introducing Napkin AI in their learning landscape. It also highlights the importance of scaffolding and orientation when applying such tools.

Table 3.4: Students'Awareness of the Purpose behind Visual Texts.

q4					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	29	51.8	51.8	51.8
	No	5	8.9	8.9	60.7
	Not sure	22	39.3	39.3	100.0
	Total	56	100.0	100.0	



Pie chart 3.4: Students' Awareness of the Purpose behind Visual Texts.

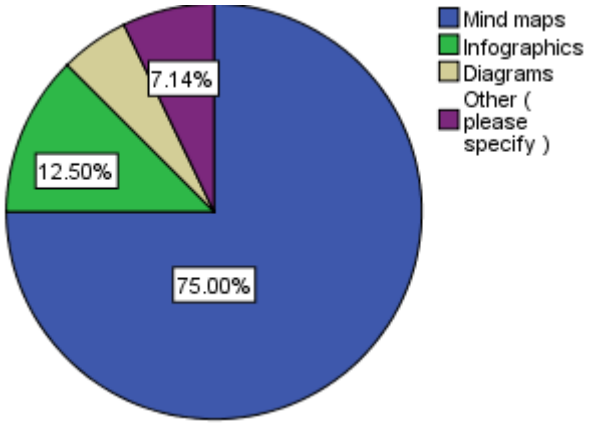
Table and figure mentioned that 51.8% of students reported “Yes”, they understand why visual text is used in their learning. But you may as well say "Not sure" (39.3%) if you don’t have the evidence in front of you, however, also 8.9% said “No”. These results indicate that while over half the students knew what the purpose of using visuals was, a significant number did not have a clear idea or felt unsure of why they were being used.

This distribution indicates a discrepancy between tool usage and conceptual knowledge. Though students have access to visual materials, the students are largely unaware how visual aids can help them to improve their speaking skills. Thus, how to use such tools and devices and why they are used (in other words, learning to exploit them consciously and purposively) should be emphasized by educators, so that learners may actually take advantage of them.

Table 3.5: Types of Visual Aids Used by Students.

q5					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mindmaps	42	75.0	75.0	75.0
	Infographics	7	12.5	12.5	87.5
	Diagrams	3	5.4	5.4	92.9

	Other(pleasespecify)	4	7.1	7.1	100.0
	Total	56	100.0	100.0	



Pie chart 3.5: Types of Visual Aids Used by Students.

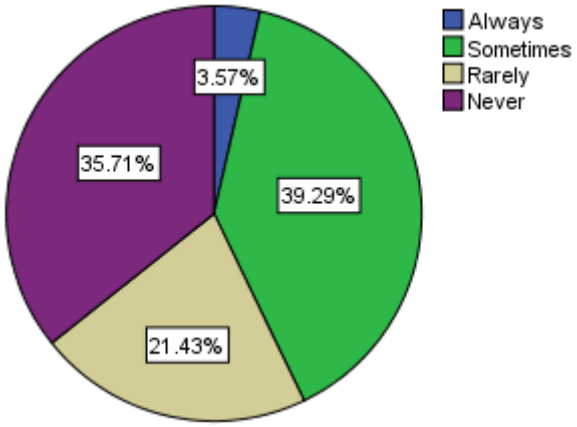
Based on the table and figure, 75% of the respondents indicated that a mind map is the most visual aid that they use. A much smaller number, 12.5%, cited infographics, while 5.4% preferred diagrams. Options "Other" were chosen by 7.1%, thus representing tools like charts or concept sketches not specifically stated in the options.

That's such a shame because students seem to prefer mind maps as a way of making sense and communicating information visually far more than any other way. Mind maps are for learners to associate ideas structurally, and that's how to visualize logic flow of a topic -which is crucial in oral production (speaking coherence).

The low usage of infographics and diagrams may reflect little knowledge than familiarity or understood complexity of those data formats. The data, therefore, suggests that there is a need to not only train students in using AI tools but also the different formats they present in so that learning is optimised for the different learning styles.

Table 3.6 : Students' Use of Smart Visuals in Speaking Situations.

q6					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	2	3.6	3.6	3.6
	Sometimes	22	39.3	39.3	42.9
	Rarely	12	21.4	21.4	64.3
	Never	20	35.7	35.7	100.0
	Total	56	100.0	100.0	



Pie chart 3.6: Students' Use of Smart Visuals in Speaking Situations.

As the table and the chart show, 39.3 per cent of the students stated they sometimes used visual aids during speaking tasks (such as diagrams, maps), 35.7 per cent said never. Furthermore, 21.4% responded that they rarely utilized the visuals, and 3.6% responded that they always used them.

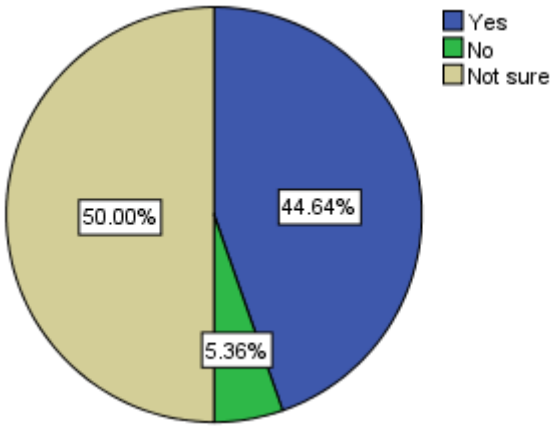
These results exhibit a relatively low to moderate degree of visual tools being integrated in speaking environments before the introduction of Napkin AI. We thus conclude that the minority of students who used visual tools on a regular basis had not integrated them in their oral

communication practices in a systematic way.

This finding further emphasizes the importance of incorporating structured visual support, like that provided by Napkin AI, into the classroom. The use of visuals strategically incorporated into speaking tasks can act as a powerful scaffold to decrease cognitive load and increase fluency and coherence when implemented purposefully. The extent that 35.6% of these participants had never used visuals in speaking also supports the claim that exposing the learners to a visual-based AI platform is, indeed, meeting a need identified in their practices.

Table 3.7: Students' Awareness of AI Use in Educational Tools

q7					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	25	44.6	44.6	44.6
	No	3	5.4	5.4	50.0
	Not sure	28	50.0	50.0	100.0
	Total	56	100.0	100.0	



Pie chart 3.7: Students' Awareness of AI Use in Educational Tools

Given the table and chart, 50% of students answered "Not sure" to the question of whether they know that some of the tools they use are based on AI. There were 5.4% (33 of 61) who

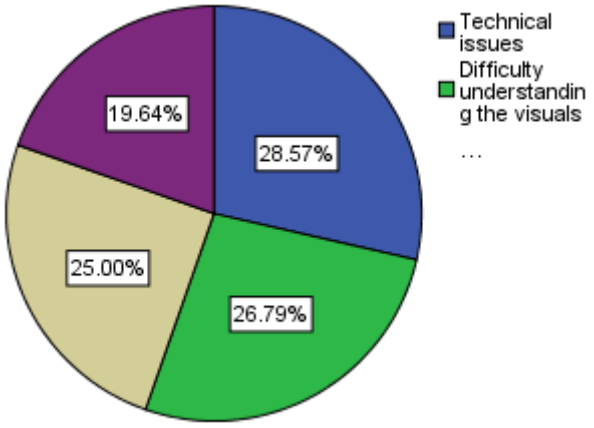
responded "No", and 44.6% (273 of 61) who responded "Yes".

This spread suggests that, while about half the participants know AI is being used in educational platforms, another half (the sample size) is unsure how or where AI is used in their learning tools. The uncertainty might be because AI is relatively silent or hidden in mainstream apps, websites and more, where the technology often works behind the scenes and rarely announces itself by name.

These findings suggest the need for digital literacy and transparency in educational technology. Teachers and schools need to purposely develop students' ability to notice these tools, and to think critically and skillfully about them. Bringing attention to how AI works can encourage more responsible and informed use, ultimately better positioning students to wield these tools in the service of skill development, especially in writing and speaking tasks that carry scaffolder guidance.

Table 3.8: Challenges Faced by Students When Using Visual Tools.

q8					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Technical issues	16	28.6	28.6	28.6
	Difficultyunderstanding the visuals	15	26.8	26.8	55.4
	Limited features	14	25.0	25.0	80.4
	Other	11	19.6	19.6	100.0
	Total	56	100.0	100.0	



Pie chart 3.8: Challenges Faced by Students When Using Visual Tools.

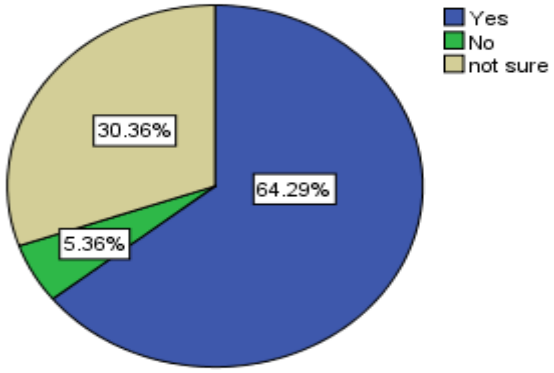
From the table and figure, the highest complaining reason was ‘technical problems’ (28.6%) and the second reason of complaining was ‘hard to understand the visualized information’s’ (26.8%) and the third position ‘Limited function’ (25%). 19.6% of the students also chose "Other" citing problems like slow internet, a lack of training or difficulty in using an English-language interface.

These results reveal the wide spread of technical and cognitive obstacles that could prevent using AI-generated visuals in speaking activities. Outages are a reminder that not only infrastructure (devices, connectivity), but the platforms we build around the infrastructure should be robust and as accessible as possible. Also, not to be underestimated is the cognitive lift required of students to understand visuals—if they are not used to a particular type of graphic such as flowcharts or concept diagrams.

The relatively large proportion of students who report that the features are limited might indicate that students want more flexibility and customizability in the tools and that these do not fit their personal learning. These challenges have to be taken into consideration by both educators and developers, who integrate AI platforms in their teaching, in order for such tools to be available as well as intuitive, inclusive and user-centered.

Table 3.9: Students’ Beliefs about AI Helping Them Improve Speaking Skills.

q9					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	36	64.3	64.3	64.3
	No	3	5.4	5.4	69.6
	not sure	17	30.4	30.4	100.0
	Total	56	100.0	100.0	



Pie chart 3.9: Students' Beliefs about AI Helping Them Improve Speaking Skills.

Refer from Table and Graph, 64.3% of the students said "Yes" and believed that AI tools can enhance their speaking skill. Among the Stance instances.30.4% of the participants opted for "Not sure", and only 5.4% chose "No".

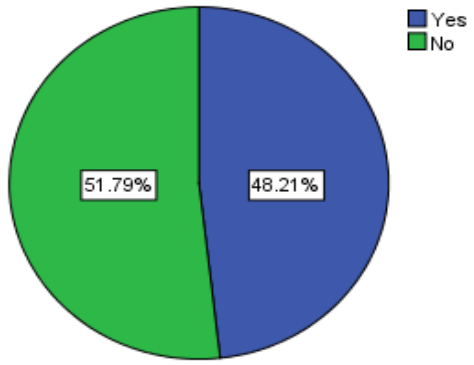
This distribution also suggests that most of the learners consider AI to be a helping factor in enhancing their conversational capabilities. The fact that nearly a third is unsure suggests that greater clarification and guidance may be necessary for some students to appropriately understand and experience the promised benefits.

These findings are promising with respect to learner receptiveness to the inclusion of AI. They mark a growing understanding that AI can surface structured prompts, personalized feedback, and a visual structure of content – all of which can deliver more effective speaking practice. However, the substantial proportion of undecided students at the same time indicates that more direct instruction and reflective feedback during AI-informed speaking tasks might be required

in order to foster involvement and processing for perception of the progress.

Table 3.10: Students' Perception of the Usefulness of AI Tools in the Classroom.

q10					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	27	48.2	48.2	48.2
	No	29	51.8	51.8	100.0
	Total	56	100.0	100.0	



Pie chart 3.10: Students' Perception of the Usefulness of AI Tools in the Classroom.

Referring to the table and graph, 51.8% of students replied as "No" and they are saying that AI-based techniques are not very useful for them at the time they are in their class activities. However, a similar amount (48.2%) answered "yes", so students seemed to be evenly split 50/50.

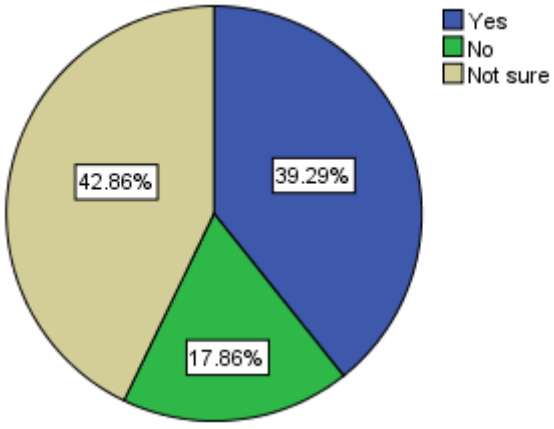
This finding is even more important, as it shows a certain skepticism or dissatisfaction of a slim majority of the participants about the usefulness or the integration of AI tools in their speaking activities. There could be different interpretations: some students may have believed that the tools were not sufficiently customized to their needs or that they were not given the time and support they needed to use them in a meaningful way during the lessons.

Conversely, the 48.2% that did enjoy the tools probably found a sense of structure or more visual prompts to have perhaps decreased fear or increased fluency in such wall-speaking. The

almost equal response rates suggest a recognition of the potential of AI, where its use in classrooms needs to be carefully planned, constrained, supported and contextualized to get students to not just use the tools but realize their implications.

Table 3.11: Students' Views on AI Tools as a Means to Improve Speaking.

q11					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	22	39.3	39.3	39.3
	No	10	17.9	17.9	57.1
	Not sure	24	42.9	42.9	100.0
	Total	56	100.0	100.0	



Pie chart 3.11: Students' Views on AI Tools as a Means to Improve Speaking.

From the table and bar chart, "Not sure" was answered by 42.9% of the pupils, "Yes" by 39.3% and "No" by 17.9%. This distribution indicates that a considerable number of learners are still

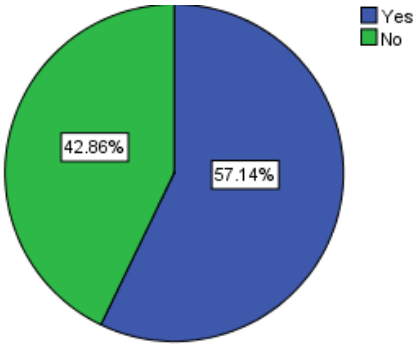
ambivalent regarding the effective action of AI tools on improving the oral proficiency skill.

That less than half of the participants unequivocally agree with these statements indicates that the relationship of tool use to value and perceptibly improving one's skills is not yet sufficiently clear for a significant number of students. It might also be due to variation in how the tools into class work or how learners judged their performance after working with the tools.

Additionally, the low number of no responses (17.9%) suggest that rejection is not the phenomenon at play but rather some form of uncertainty and lack of visible product. These finding reinforce the need to include with AI support guided reflection follow-up activities and performance monitoring, that would help students to be more aware of the progress done. Confidence in value When students can link use to outcome, they will probably be more confident about the value of the tool.

Table 3.13: Students' Willingness to Use AI Tools in the Future.

q12					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	32	57.1	57.1	57.1
	No	24	42.9	42.9	100.0
	Total	56	100.0	100.0	



Pie chart 3.12: Students' Willingness to Use AI Tools in the Future.

Based on the table and the graph, 57.1% of the students indicated that they would yes use AI

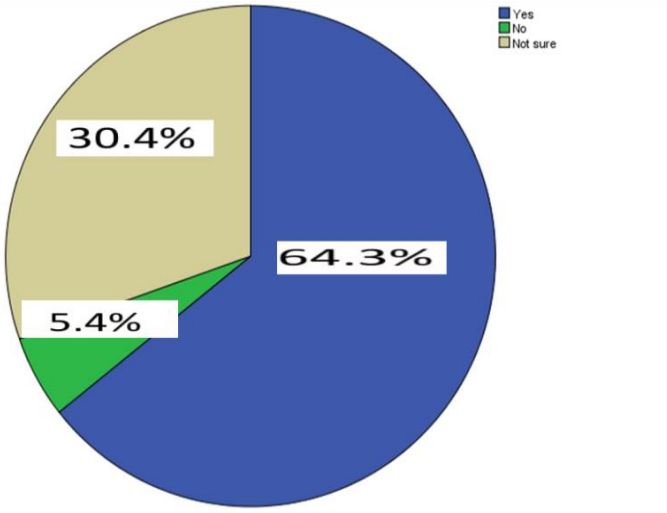
tools, while 42.9% of the students indicate that they would not use AI tools in the future. These numbers demonstrate a favorable predisposition on behalf of most students and, even though concern or restriction in using it may have been found at present, these tools are potentially worthwhile for use further investigating.

This willingness to consider future use may be related to the "hypothetical-drivenness" of AI tools, their interactive aspect, or their technocentrism, in other words, that students may think these tools could be improved upon with time and practice. It also suggests that a large proportion of learners who have disengaged may be open to a second chance at AI tools with better structure on how they should be used, more obvious outcomes, or improved usability.

The relatively substantial number of students responding "No" (approximately 43%) acts as a wake-up call that conversion to new systems needs to consider not only technical operability but also student use and perceived value. Teachers should be prepared to pair their use of AI tools with explicit support, clear learning goals, and continuous feedback loops to facilitate long-term and positive integration.

Table 3.14: Students' Perception of AI Tools as Confidence Boosters in Speaking.

q13					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	36	64.3	64.3	64.3
	No	3	5.4	5.4	69.6
	Not sure	17	30.4	30.4	100.0
	Total	56	100.0	100.0	



Pie chart 3.13: Students' Perception of AI Tools as Confidence Boosters in Speaking.

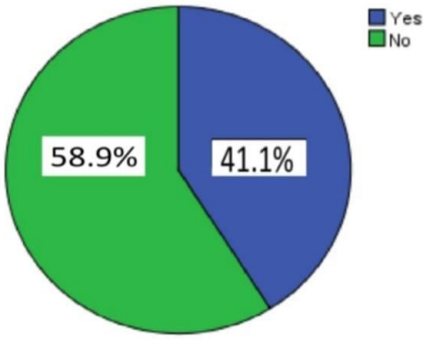
Based on the table and the graph, 64.3% responded "Yes", that AI tools improved their confidence in speaking. " Not sure " 30.4% "No" 5.4%

These results suggest that most of the learners experienced a psychological or communicative advantage brought by the AI-enriched learning tool, with regard to confidence. This is an important discovering, since confidence is frequently a major psychological limitation of EFL oral production – many students are not afraid to talk because they know nothing, but are afraid of errors or of not knowing how to express their ideas.

Given the extremely high portion of students that reported feeling more confident, the visual support, structured prompts, and low-risk practice afforded by AI platforms like Napkin Ai might also serve to lessen anxiety and encourage risk-taking in speaking. For the 30.4% who answered unsure, it may be that this issue was too short or that the increase or decrease in confidence had not yet felt yet in its entirety. The extremely low percentage of negative responses further supports the notion that AI tools are generally not perceived as intrusive and can even be beneficial in generating speaking confidence.

Table 3.15: Students' Preference for Learning with or Without AI Tools.

q14					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	23	41.1	41.1	41.1
	No	33	58.9	58.9	100.0
	Total	56	100.0	100.0	



Pie chart 3.14: Students' Preference for Learning with or Without AI Tools.

From the table and chart, 58.9% of students preferred learning without AI tools, and 41.1 with tools.

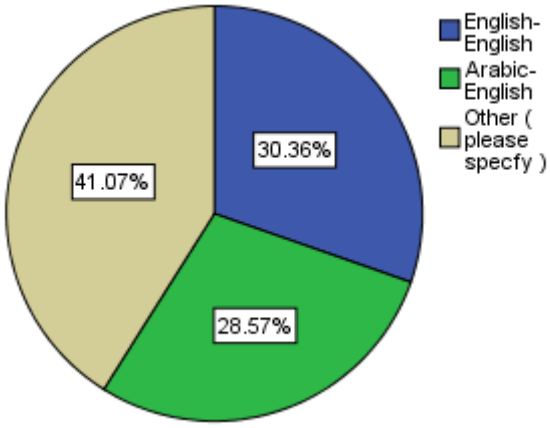
This finding indicates a strong split in the preference of learners, with a small majority preferring traditional (non-AI-supported) ways. Why is this happening? Mistrust of AI platforms Lack of training, or a preference for more human-guided instructionishment. Some students may also consider technology to be an intrusion and not as an aid to learning.

The 40%+ who still reported an interest in learning with AI tools suggests a high degree of openness, especially among those who found the visual, structured and responsive attributes of platforms such as Napkin AI to be helpful. This percentage is encouraging for future integration if educators respond to learners' concerns and lead them to deeper interaction with AI.

Finally, these findings indicate that (implemented) AI in EFL speaking instruction needs a balance between innovation and familiarity; that is to give options, train, and support throughout the process so that our students feel empowered, not overpowered by new tech tools.

Table 3.16 : Students' Preferred Language for Using AI-Based Tools

q15					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	English-English	17	30.4	30.4	30.4
	Arabic-English	16	28.6	28.6	58.9
	Other(pleasespecfy)	23	41.1	41.1	100.0
	Total	56	100.0	100.0	



Pie chart 3.15: Students' Preferred Language for Using AI-Based Tools

Which languages do you prefer to use when accessing the AI tool?

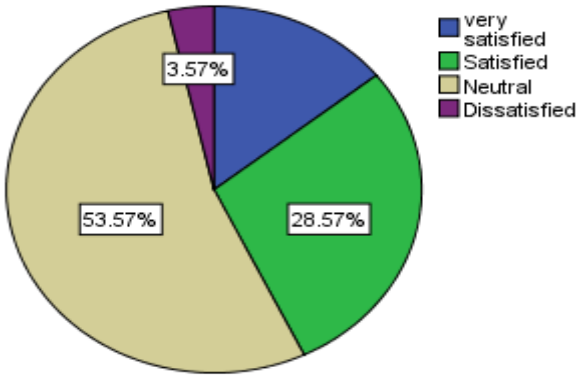
Based on the table and the graph, 41.1% of the students chose the "Other" language interface to use AI tools, whereas 30.4% used the "English-English" language interface, and 28.6 used the "Arabic- English" language interface.

This distribution shows the variety of language preferences from the community and the amount of them that choose something different than what was offered. The "Other" aggregated from all others are comparably likely reflecting effective interest in multilingual UIs, locale dialectal adaptation or even visual communication with less emphasis on a dominant language. This indicates the necessity of being more flexible in the structure of AI educational-platforms and approaches.

The fair spread between full English and bilingual (Arabic-English) preference indicates the ethnic linguistic heterogeneity and mixed ranging competence of the listeners. Some students are comfortable with an English-only interface, but some feel safer when they are supported by their own language especially when they need to understand technical or instructional meaning. These results highlight the relevance of language variance in AI-based educational systems. For SUCH systems to work well across a range of EFL situations, the language settings must be user-customizable to ensure comprehensibility and comfort. If the former is neglected, reduced engagement may be experienced, especially by those who find it hard to understand English-centric instructions.

Table 3.17: Students' Level of Satisfaction with the Use of AI Tools

q16					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	verysatisfied	8	14.3	14.3	14.3
	Satisfied	16	28.6	28.6	42.9
	Neutral	30	53.6	53.6	96.4
	Dissatisfied	2	3.6	3.6	100.0
	Total	56	100.0	100.0	



Pie chart 3.16: Students' Level of Satisfaction with the Use of AI Tools

As shown in both the table and graph, 53.6% of the participants were "Neutral" when

asked about their satisfaction with using AI tools, 28.6% were “Satisfied”, and finally 14.3% of the participants were “Very satisfied”. Just **3.6% were dissatisfied.

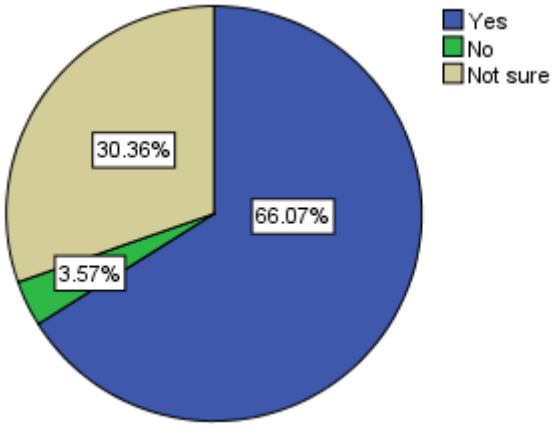
The results suggest that while dissatisfied children were in the minority, on average children were either satisfied or ambivalent about attending gambling-related events. The “Neutral” option being the most popular choice implies the students are still developing their attitude to integrating AI tools into their speaking skills. This neutrality is potentially due to low exposure, nascent trust, or that more guided use is required to realize benefits.

It is encouraging that the percentage (42.9%) of students satisfied/very satisfied is not inconsiderable and represents a meaningful number of learners who seek a helpful support to oral learning within AI-based visual supports. As students become more proficient in their use and their integration into instruction improves, satisfaction is expected to rise.

The low level of unhappiness also reaffirms that AI tools in general seem to be accepted, if not adopted, by the learner community. This is an opportunity for educators to follow up on curiosity and partial engagement through clear usage goals, ongoing support, and tracking of individual progress.

Table 3.18: Students’ Willingness to Use AI Tools outside the Classroom

Q17					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	37	66.1	66.1	66.1
	No	2	3.6	3.6	69.6
	Not sure	17	30.4	30.4	100.0
	Total	56	100.0	100.0	



Pie chart 3.17: Students' Willingness to Use AI Tools outside the Classroom

As can be seen from the table and the graph, 66.1% of the students answered with "Yes," which means that they are willing to use of AI solutions out of the classroom. Thirty-point four percent (30.4%) and only 3.6 responded not sure and no respectively.

This enthusiastic check point indicates high openness and self-initiation to engage AI-enhanced learning. It indicates that a large number of students perceive the value of these tools in autonomous, self-paced language development, particularly with making the transition from written to spoken in which repetition is important and circumstances of low stress and feedback are factors in effective rehearsal.

The high share of students who chose the option "Not sure" may suggest that they want additional advice or simply lack of confidence to cope with AI resources when the classroom contexts are not structured. Others might be worried about the technical difficulties, the applicability of the content, or the absence of teacher help when they practice by themselves.

The extremely low proportion of the negative boats well for the perceived non-threatening nature and utility of AI tools as extensions to classroom education. To capitalize on these ambitions, teachers and institutions might motivate off-campus exploration through assigned activities, tutorials, or reflective journaling that infuses AI use into students' academic lives.

3.7. Discussion of Key Findings

Findings from the data obtained from 56 learners offer rich insights into how Napkin AI and other generative tools support the development of speaking in EFL. The results respond fully to

the two main research questions, with significant implications for pedagogy.

3.7.1. AI-Powered Feedback and Students' Perceptions

The profile firmly proves that the majority of the students think that AI tools contribute to improving speaking ability (Q9: 64.3%) as well as helps them perform better at oral tasks (Q13: 64.3%). In Q10 (Do you think, these tools are useful in classroom?), however, respondents seemed divided (Yes: 48.2%, No: 51.8%), which means that, while there is the potential, the context in which these tools are used may be a deciding factor in determining whether or not it is perceived as useful.

Besides, large proportion of students felt neutral to the satisfaction scale (Q19: 53.6%), which only were satisfied by a small proportion (14.3%). This suggests that learners are open-minded but skeptical so that the learning context has to offer a clearer framework, well guided activities, and more time for the students to integrate the value of the tool.

A similar observation is that a large number of students are not sure about how AI works or if they have used it (Q7 and Q4) with percentage of responses "Not sure" reaching 50% and 39.3% respectively. It is under these circumstances that there is a strong case for the promotion of digital literacy so that students utilise the devices that they have in hand and learn with them.

3.7.2. AI-Based Techniques and Pedagogical Outcomes

Mind maps (Q5: 75%), which are a common and favourite type of visual AI, structured and associative for all, were the visual AIs that most frequently helped students, confirming that instructional visual aids, structured and associative are the most effective pedagogically visual aids to guide oral production. These devices allowed students to focus their ideas, work on coherence and vocabulary retrieval.

There are still some challenges but students get some: students reported that technical issues hindered them (28.6%), and difficulty understanding visual aids (26.8%) (Q8). These barriers need to be overcome by more thoughtful design, language support, and education. Furthermore, even though AI tools provided detailed AI suggestions, more than a third of students had not

used visual support in speaking tasks before this study (Q6: 35.7%), indicating a pedagogical gap this study contributes to fill.

The results support this view, showing that while many students are willing to use the AI-based tools in the future (Q12: 57.1%), and even outside the classroom (Q20: 66.1%), some of them are skeptical about the traditional learning environment (Q14: 58.9%). This is why balanced integration is key, where the AI simply augments the human – it does not replace human touch and learning.

3.8. Limitations and Future Research Directions

3.8.1. Limitations of the Study

Although the present study is illuminating in the role of generative AI, especially NA-AI in improving the speaking proficiency level of EFL learners, some limitations must be taken into account:

Sample size and scope Despite the reasonable number of 56 participants, the study is local (at a single institution) and national (at a single educational level) in its coverage. As such, the transferability of the findings is limited.

Short Interval of Implementation: Time of being exposed to Napkin AI was short. A substantial proportion of students reported being "neither satisfied nor dissatisfied" and uncertain which may be attributable to their relatively short duration of stay. A more lasting adoption could lead to more distinctive attitudes and evidence of beneficial language development.

Tool Familiarity: Many students have never worked with AI tools prior to their experiences, which may have impacted both their performance and perceptions. Several of them likely hadn't seen or used it for a while and hadn't been socialized into the space, which could have negatively impacted both their use of the learning environment and their understanding of its pedagogical potential.

Speaking Only: The study concentrates on speaking skills only and does not include any possibility of advantage or disadvantage for other aspects of the language (writing, listening, or

reading). This limited view restricts the extent of the scrutiny to which Napkin AI can be subjected as a language learning tools suite.

Student-Reported Data: Some data (including part of the observations and questionnaire data) is based on students' perceptions and subjective interpretations, which could be different from how they actually perform or what they actually learn in the long run.

3.8.2. Directions for Future Research

- Longitudinal Studies: A longitudinal study could be employed to investigate if and how extended exposure to AI tools affects speaking performance and if and how students' perceptions change with repeated exposuresession of 50 minutes and travel time.
- Comparative Studies: It would be interesting to compare between various AI tools or platforms to understand which features and formats are most conducive to developing the oral performance in their different environments.
- Broader Integration of Skills: Other areas to explore would be the influence of AI tools on speaking in conjunction with other language skills, providing a more comprehensive view of the impact of AI tools on overall language learning.
- Teacher Views: Incorporating teachers' views in future research may enhance our understanding of how such tools are used, assessed, and supported in formal curricular contexts.
- AI Literacy Training: Research might investigate how to improve students' AI literacy—an understanding of how the technology functions and how to use it more critically and effectively.

3.9. Conclusion

This chapter has described an in-depth field study that was undertaken to examine the effect of generative AI (in the form of Napkin AI's text visualization) on EFL learners' speaking abilities. Through investigating responses from 56 students in a survey and observing a number of classroom situations, this study has shed light on Interaction among learners and AI tools, the

Issues and Difficulties encountered on a regular basis, as well as the Perceptions of the AI tools among language learners.

Results showed that while students lacked familiarity with AI for education, they were generally open to the use of such tools, especially when the learners perceived them as aids in organizing ideas, building confidence in speaking, and developing fluency. Visual styles like mind map were an overwhelming favorite, while technical and understanding difficulties suggested a lack of design and training.

Overall, students had a mix of curiosity and caution, and many said they were interested in further using AI tools in- and outside of class. "The results indicate that when deployed in a considered and pedagogical manner, AI-based visual aids such as Napkin AI can be an effective aid to the speaking development process.

General conclusion

General conclusion

The objective of this dissertation is to explore the influences of text visualization with Napkin AI software on assisting second-year licence students in the Department of English at the University of Ghardaia to develop speaking skills. Structured in three interrelated chapters, the study explored the conceptual dock through which the analysis of computational artifacts and practical responses were focused on AI-enabled spoken communication.

Chapter one centred on speaking ability as a necessary element of the communicative competence. Sub-skills (i.e. fluency, pronunciation, coherence and lexical range) were examined in the chapter along with the different psychological and linguistic difficulties that EFL students encounter to communicate orally. Emphasis was placed on confidence building, idea organization and interactive speaking activities to chip out from these challenges.

Artificial Intelligence tools in support of speaking development Discussion in this chapter has focused in the previous chapters on visualisation of text as a way of enhancing and supporting learners speaking development. It presented an account of Generative AI (GAI) tools, and explored their pedagogical role. Particularly of note was Napkin AI, a system that visualizes spoken content as mind maps, diagrams, and interactive guides that help learners see how everything fits together. The chapter demonstrated how AI tools can promote engagement, autonomy, and oral performance when integrated into meaningful classroom instruction.

The applied fieldwork in Chapter Three was conducted with 56 students who interacted with the Napkin AI in a set of taught activities. Analysis of student survey responses and classroom observations indicated that most of the students thought mind maps were the most useful form when they had to be encouraged to speak. Many experienced increased fluency, vocabulary recall, and confidence. Yet, this was also true for many who encountered technical issues and also voiced the ambiguity about the tools' aims and working.

Findings in answer to the research questions, the study found that AI-aided visualization

tools can boost EFL speaking after students are trained on how to use them and perceive their pedagogical value. Strategies that were most helpful included methods to enable learners to plan what to say, organise ideas and manage anxiety.

In general, the thesis provided evidence that Napkin AI has a potential to evolve into an effective aid in EFL oral production – not as 20 a replacement for the teacher- but as an enrichment to the teaching and learning process. The power of it comes when language is shown in visually structured ways and learners then better conceptualise, structure, and recall the spoken material. Through the use of mind maps, diagrams, and text-based cues, Napkin AI reduces the cognitive overhead of impromptu speaking, freeing users up to present concepts confidently and coherently – without losing their train of thought.

Rather than replacing a teacher's role, Napkin AI operates as an interactive support, navigating the students through challenging oral tasks, and providing them with visual support that drives idea generation and lexical retrieval. When carefully designed and fitted within a pedagogical structure comprising proper sequencing of tasks with clear objectives, guided practice, and thoughtful feedback, such tools can promote learner autonomy and self-confidence and enrich the language practices characterized by dynamic, interactive and inclusive speaking classroom.

In summary, the results of this dissertation suggest that incorporating tools, such as Napkin AI into EFL speaking instruction. Moreover, Napkin AI encourages customisation of learning to meet the needs and learning style of each individual student by allowing them to tailor the visualisations. For cautious or lower-level speakers, it offers a non-threatening and non-critical interface where practice can be both repeated and experimental. This combination of features make it particularly well-suited to heavy result in measurable performance and perception improvements, so long as such incorporation is structured, deliberate, and learner driven.

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Appendices

Appendix A: Students Questionnaire

Section One: Demographic Information

1.Gender:

o Male

o Female

2.Age:

o 18–20

o 21–23

o 24–26

o 27+

Section Two: Napkin AI Usage and Speaking Practices

3.How often do you use Napkin AI for text visualization?

o Always

o Sometimes

o Rarely

o Never

4.Do you find Napkin AI helpful in improving your speaking skills?

o Yes

o No

o Not sure

5.What types of text visualization do you prefer using on Napkin AI? (You can choose more than one)

o Mind maps

o Infographics

o Diagrams

o Other (please specify): _____

6.How often do you practice speaking English using Napkin AI?

o Always

o Sometimes

o Rarely

o Never

7.Do you feel more confident speaking English after using Napkin AI?

o Yes

o No

o Not sure

8.What challenges do you face when using Napkin AI for speaking practice? (You can choose more than one)

o Technical issues

o Difficulty understanding the visuals

o Limited features

o Other (please specify): _____

_____

Section Three: Speaking Skills and Vocabulary Development

9.Do you think Napkin AI helps you improve your vocabulary retention?

o Yes

o No

o Not sure

10.Do you use Napkin AI to practice pronunciation?

o Yes

o No

11.Do you feel that Napkin AI helps you reduce L1 interference (e.g., thinking in your native language) while speaking English?

o Yes

o No

o Not sure

12.Do you use new vocabulary or expressions learned through Napkin AI in your speaking practice?

o Yes

o No

13.Do you think Napkin AI helps you organize your ideas better when speaking?

o Yes

o No

o Not sure

14.Do you use dictionaries alongside Napkin AI?

o Yes

o No

15.yes, which type of dictionary do you use?

o English-English

o Arabic-English

o Other (please specify): _____

_____

Section Four: Feedback and Suggestions

16.Overall, how satisfied are you with Napkin AI as a learning tool?

o Very satisfied

o Satisfied

o Neutral

o Dissatisfied

o Very dissatisfied

17.Would you recommend Napkin AI to other EFL learners?

o Yes

o No

o Not sure

Thank you for your time and valuable input!

Appendix B: Visual Aids

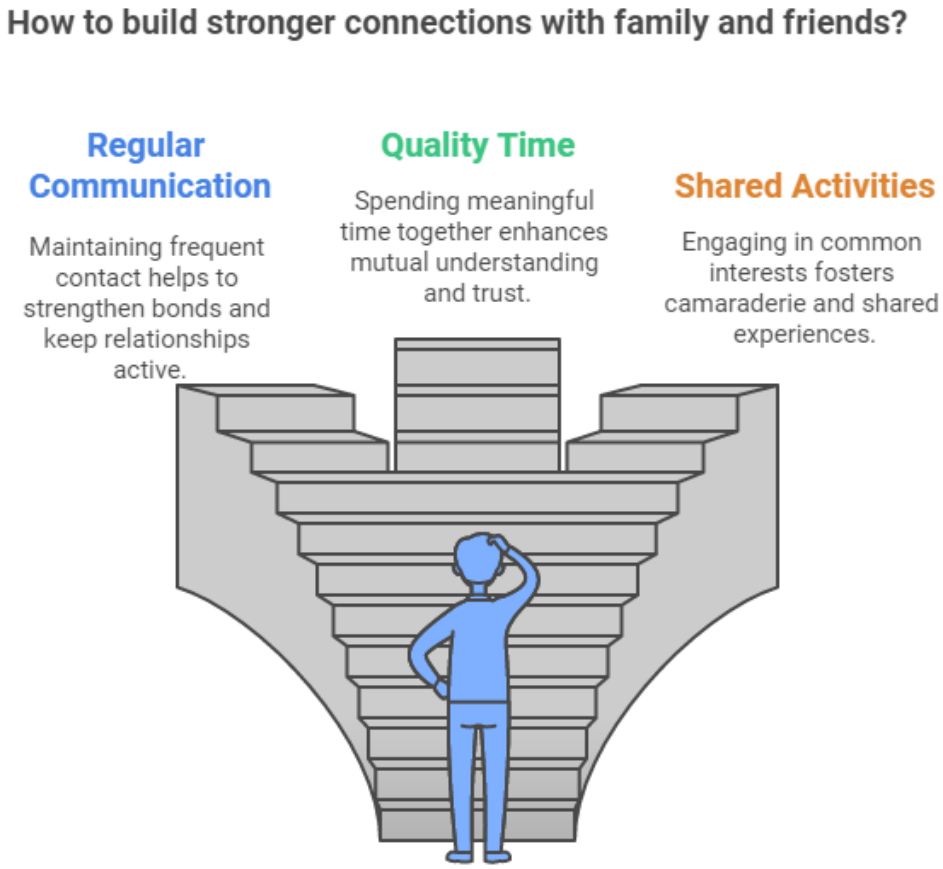
This appendix contains AI-generated visual aids created using the Napkin AI platform for the Oral Expression section with 2nd-year (L2) students at the University of Ghardaia. These visuals were designed to spark discussions on themes such as:

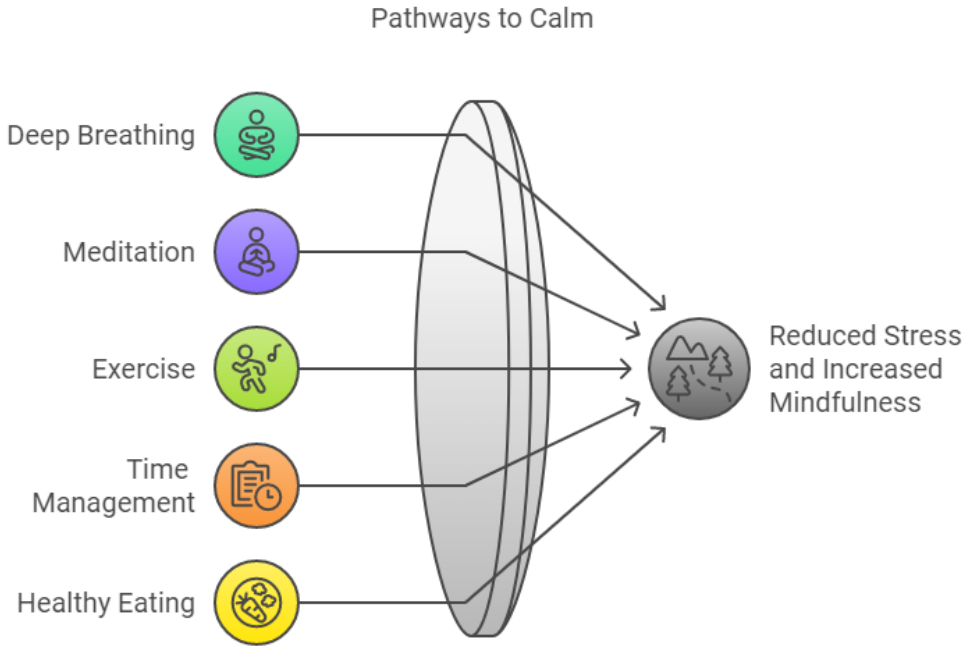
- Building strong relationships with family and friends.

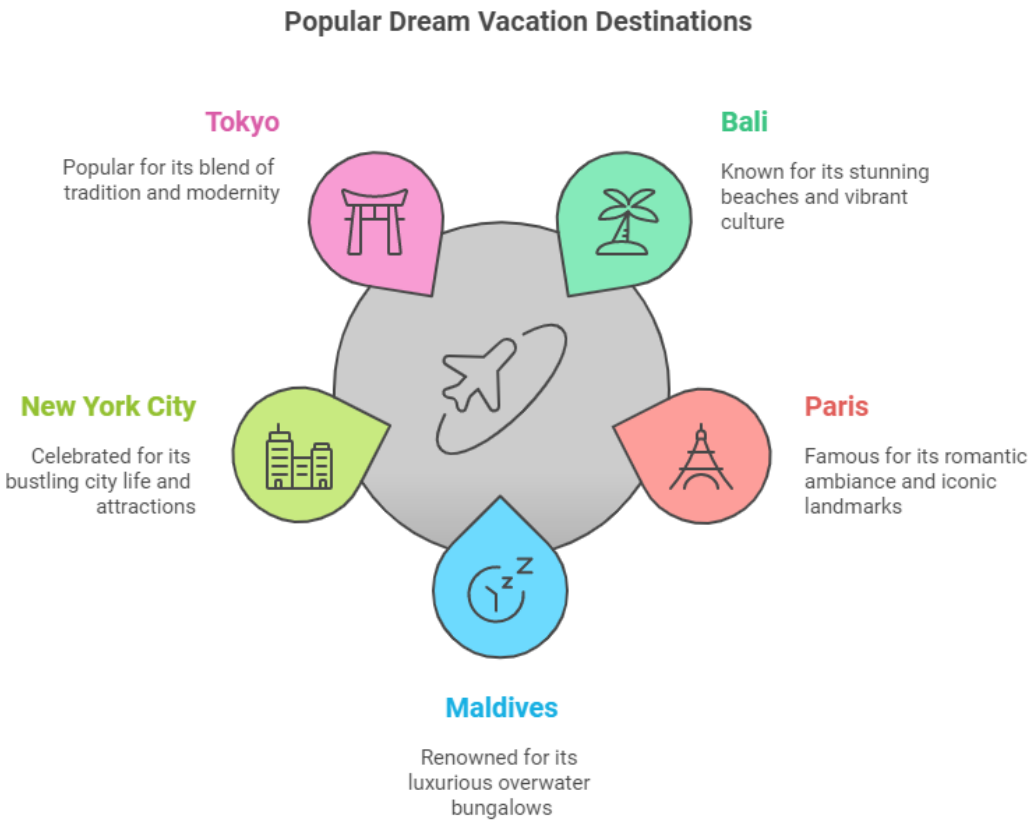
- Pathways to calm.

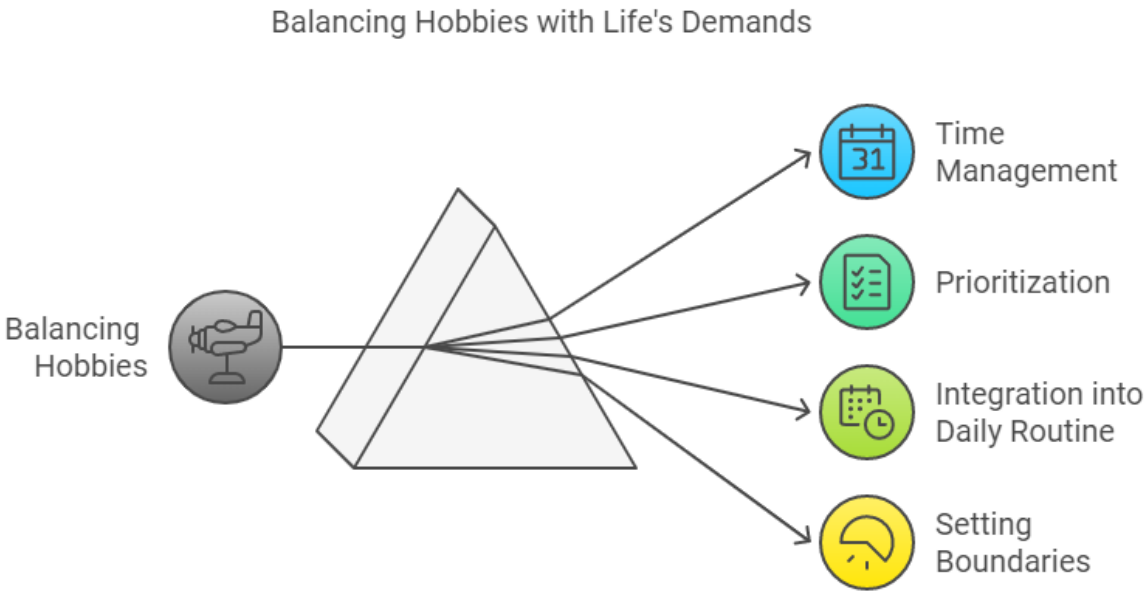
-Best places to visit in the world.

- Balancing hobbies.




Pathways to Calm
Deep Breathing
Meditation
Exercise
Time Management
Healthy Eating
Reduced Stress and Increased Mindfulness


Popular Dream Vacation Destinations
Tokyo
Popular for its blend of tradition and modernity
Bali
Known for its stunning beaches and vibrant culture
New York City
Celebrated for its bustling city life and attractions
Paris
Famous for its romantic ambiance and iconic landmarks
Maldives
Renowned for its luxurious overwater bungalows


Balancing Hobbies with Life's Demands
Balancing Hobbies
Time Management
Prioritization
Integration into Daily Routine
Setting Boundaries

ملخص

أُجري هذا البحث لدراسة آثار استخدام منصة الذكاء الاصطناعي منصة نابكين على تحسين الكفاءة الشفهية لمتعلمي اللغة الإنجليزية كلغة أجنبية. تم إجراء التجربة، خلال العام الدراسي 2024-2025، على 56 طالبًا جامعيًا في السنة الثانية بجامعة غرداية، من خلال تطبيق نابكين في تعليم مهارة التحدث: من خلال الملاحظة ومقياس الأداء، تم تقييم الأداء الشفوي للمتعلمين في هذه الحالة. جُمعت البيانات باستخدام استبيان، أُعدّ لغرض هذه الدراسة، والذي قيّم تصورات الطلاب حول استخدام المنصة ومساهمتها في أدائهم الشفهي. قُسّم الاستبيان إلى أربعة أجزاء رئيسية: المعلومات الديموغرافية، واستخدام منصة نابكين، والمشكلات المتعلقة بالكلمات المنطوقة، والملاحظات والتعليقات. كان التحليل الإحصائي وصفيًا، وكانت النتائج مصحوبة بترددات نسبية وجداول توضيحية. شعر معظم الطلاب أن استخدام منصة نابكين ساعدهم على تنظيم أفكارهم، وبناء الطلاقة، وتقليل قلقهم من التحدث. أوضح المتعلمون أيضًا أن التصور المرئي للمنصة ساهم في تحسين مهاراتهم في التعبير باللغة الإنجليزية. إلا أن هناك بعض العيوب، منها التدريب الرقمي الأولي الذي اضطروا إلى إجرائه، وصعوبة استخدام الأداة في الفصول الدراسية ذات الوقت المحدود. تشير الأبحاث إلى أنه من الأفضل في فصول التعبير الشفهي استخدام أدوات التصور المرئي الذكية مثل منصة نابكين، حيث تُقدم للطلاب تدريبًا مسبقًا لاستخدامها بشكل جيد ودمجها.

الكلمات المفتاحية: منصة الذكاء الاصطناعي نابكين، الكفاءة الشفهية، التصور المرئي.