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***Faculty of Letters, Languages and Social Sciences
Department of Letters and English Language***

***Teacher-Designed Low-Cost VR Tasks and Their
Impact on EFL Learners' Speaking Fluency in
Algerian Higher Education***

*A Dissertation Submitted in Partial Fulfilment of the Requirements for a
Master's Degree in Didactics and Applied Languages*

Submitted by:

Ms.Fatima Zohra BABA BENDERME

Supervised by:

Dr. Boualem BENGHALEM

Board of Examiners

President :	Dr. Amina KERKEB	MCA	Belhadj Bouchaib Ain temouchent University
Supervisor :	Dr. Boualem BENGHALEM	MCB	Belhadj Bouchaib Ain temouchent University
Examiner :	Dr. Souad BAILICH	MAB	Belhadj Bouchaib Ain temouchent University

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Dedications

To my dear parents,

Mr Toufik Baba Bendermel and Mrs Badra Ouggad

Your love, sacrifices, and unwavering faith have laid the foundation for everything I have achieved. This accomplishment is yours as much as it is mine.

Thank you for everything you have done for me.

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Abstract

This research explores the effects of a teacher-designed, low-cost VR-based speaking task on the speaking fluency of third-year (L3) English as a foreign Language learners at Belhadj Bouchaib University. A quasi-experimental design was adopted, comprising pre-tests and post-tests for the control and experimental groups of the Continuous Oral Production module. The experimental group (N=10) prepared their oral presentations implementing immersive 360° virtual reality videos available on YouTube through smartphones (with final presentations delivered using shared PCs). Whereas the control group (N=10) prepared their presentations using non-immersive conventional visual materials, including digital photographs and videos. Both groups were assessed at pre-test and post-test using an Oral Fluency Rating Rubric designed by the researcher, scored out of 20 points, assessing five criteria: speech rate, pause frequency, repair and self-correction, speech continuity, and fluency markers use. Descriptive statistics, independent samples t-tests, and paired samples t-tests were used to analyse data. Findings showed that the control group significantly improved in speaking fluency ($p < 0.001$, $d = 1.806$), while the experimental group exhibited no significant improvement ($p = 0.853$, $d = 0.060$). The hypothesis of the research was not supported. These results are explained in light of the theories of Cognitive Load, Constructivist Learning, and Task-Based Language Teaching. This research concludes that despite the potential of low-cost VR in the context of education, its success in teaching EFL speaking is determined by how it is implemented and by students' experience with VR technology.

Keywords: Virtual Reality, EFL Speaking Fluency, Low-Cost VR, 360° VR Videos, Task-Based Language Teaching.

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List of Abbreviations and Acronyms

1A : Group 1 subgroup A

2A : Group 2 subgroup A

3D : Three-Dimensional

AI : Artificial Intelligence

AR : Augmented Reality

ALLE: Anxiety Related to Foreign Language Learning

APTIS : Assessment of Phrasal, Integrated, and Technical Skills

ASR : Automatic Speech Recognition

CAF : Complexity, Accuracy, and Fluency

CALL : Computer-Assisted Language Learning

CAVE : Cave Automatic Virtual Environment

CLT : Communicative Language Instruction

CEFR: Common European Framework of Reference for Language

DGBL : Digital Game-Based Learning

EFL : English as a Foreign Language

EFL L3 : Third-Year English as Foreign Language Students

FLCA : Foreign Language Classroom Anxiety

FLA: Foreign Language Anxiety

HMDs :Head-Mounted Displays

HTC Vive : Virtual Reality Eyewear

HTML5 WebVR : HyperText Markup Language 5 Virtual Reality

ICT :Information and Communication Technologies

IPC : Immersion-Prompted Communication

ISLA :Instructional Second Language Acquisition

IVR : Immersive Virtual Reality

L1 : First Language

L2: Second Language

LAC : Limited Attention Capacity

LMD : License-Master-Doctorate System

LMS : Learning Management Systems

MALL :Mobile-Assisted Language Learning

MR : Mixed Reality

MUVEs : Multi-User Virtual Environments

MCA : Master of Computer Applications

PBL : Project-Based Learning

POC : Continuous Oral Production module

PRAAT : Scientific Analysis and Synthesis for Speech, Phonetics, and Linguistics
software program

ZPD : Zone of Proximal Development

STEM : Science, Technology, Engineering, and Mathematics

SVVR : Spherical Video-Based Virtual Reality

SLA: Second Language Acquisition

TBLT : Task Based Language Teaching

TELL : Technology Enhanced Language Learning

VR : Virtual Reality

VRALL : virtual reality-assisted language learning

WW : Word-WordAssociation Learning

XR : Extended Reality

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General Introduction

Teaching and learning English as a Foreign Language (EFL) have encountered many challenges in recent years, particularly in relation to learners' oral performance development. There are still a number of psychological and linguistic difficulties that prevent EFL learners from being successful in oral communication. These difficulties include lack of self-confidence, speaking anxiety, shyness, as well as lack of grammar knowledge, insufficient vocabulary, and incorrect pronunciation (Wu & Rose, 2025). As a consequence, these difficulties often cause learners to refuse or avoid using opportunities to speak, resulting in negative impacts on their speaking ability and overall fluency (Tao et al., 2026).

Traditional methods of teaching speaking continue to dominate in most EFL classes. While there is nothing wrong with traditional methods, they tend to involve the process of memorizing, repeating, and controlled practice by students. Thus, they are often lacking authentic culture and communication in real-life situations (Peters, 2014). It means that learners' speech may be hesitant, slow, and lacking spontaneity (Kara & Alalem, 2025). In terms of developing oral communication skills, students participate in role-playing, discussions in pairs or groups, and unstructured debates during class time. While these types of activities may be beneficial for language learning on some level, such as improving pronunciation and expanding vocabulary, they are not always performed in fully immersive and interactive contexts that encourage real communication in native or foreign cultures (Chen & Hwang, 2022). It is difficult for students to imagine realistic situations and construct ideas, thus reducing their ability to speak and perform academically (Wang et al., 2024).

To address these constraints, the use of technology in language teaching has been identified as the most effective strategy to enhance educational quality. The intention behind the use of technological tools is to create an environment where the use of language can be simulated outside the classroom because they are capable of creating an interesting and stimulating environment (Hu et al., 2025). Development in Computer-Assisted Language

Learning (CALL), Mobile-Assisted Language Learning (MALL), Artificial Intelligence (AI), and Virtual Reality (VR) have facilitated the use of language practice in a situation that simulates real-life conversation using personalized and meaningful learning processes (Yan & Lowell, 2025).

Among these technologies, virtual reality has been identified as one of the effective ways to overcome speech-related difficulties in EFL contexts (Cai, 2022). VR technology has been used by learners to simulate a number of activities like acting as a tour guide, having social interactions, or taking part in interviews (Olexa & Taquet, 2026). In this way, the learner's confidence can be improved since the virtual world provides the learners with opportunities to practice in a less stressful environment and motivates them to speak (Huang, 2024).

Despite all the continuous efforts aimed at increasing the level of EFL teaching, the majority of EFL learners are hindered from achieving fluency due to various psychological and linguistic barriers. Traditional speaking activities usually fail to provide a motivating environment that would encourage EFL learners to speak freely and fluently. The potential benefits of VR for improving speaking abilities have already been proven by previous studies. Nevertheless, there are no studies concerning affordable and accessible VR, particularly speaking tasks created by teachers to meet the needs of their students (Lin, 2025). Due to a lack of empirical data, the application of VR in EFL education, especially in under-resourced educational institutions, remains unexplored. Therefore, this study seeks to investigate the impact of low-cost VR based speaking tasks designed by teachers on EFL learners' speaking fluency.

3. Research Question

How does the use of virtual reality-based speaking tasks enhance EFL learners' speaking fluency?

4. Research Hypothesis

The use of virtual reality-based speaking tasks has a positive impact on EFL learners' speaking fluency.

The research adopt a quasi-experimental pre-test post-test control group design involving third-year (L3) EFL students at Belhadj Bouchaib University. The students were chosen based on their speaking abilities in the Continuous Oral Production (POC) module. Four sessions of the continuous oral production were considered in the study: two pre-test sessions (one with the experimental group and one with the control group) and two post-test sessions (one with the experimental group and one with the control group), during which there were two intervention weeks, in which the students from each group used different preparation materials at home.

Two groups were formed in the experiment: the experimental group was asked to prepare for their oral presentation using low-cost VR technology in the form of 360° videos available on YouTube through smartphones, and the control group, which used traditional methods of preparation in the form of printed or digital photographs. All activities were designed by the researcher in accordance with the syllabus of the "Tourism and Hospitality" unit of the Continuous Oral Production module.

The data was gathered via pre- and post- speaking tasks through speaking fluency rating, with the adopted rubric for the constructs of speech rate, pause frequency, repair and self-correction, speech continuity, and fluency markers use, with a maximum score of 20 points (Olkkonen, 2024). Data was statistically analyzed using spreadsheet software (Microsoft Excel) and manually verified to determine the effect of virtual reality on learners' speaking fluency.

This study focuses on low-cost teacher-designed VR-based speaking tasks and their effects on the speaking fluency and oral performance of EFL learners. The paper aimed to

investigate the potential of VR as an innovative technology that can transform the medium of instruction to provide authentic, engaging, and immersive learning experiences. This study aims to:

1. Compare speaking performance between EFL learners using teacher-designed VR speaking tasks and those using traditional speaking activities.
2. Determine the extent to which VR-based speaking tasks improve speaking fluency among EFL learners.
3. Demonstrate the effectiveness of integrating low-cost VR as a solution to EFL learners' speaking challenges.

The significance of the present study lies in its potential contributions to enhancing the quality of EFL instruction and learning, particularly in the area of developing speaking fluency. There are some previous studies that have explored the role of VR in language instruction. Nevertheless, those studies have rely on either expensive or commercially available software that does not entirely serve the needs of pedagogy or is unavailable to all learners (Berrezueta-Guzman et al., 2025). This study provides a more context-sensitive and pedagogically grounded contribution by focusing on affordable VR equipment and teacher-designed tasks.

The results of the present study can be helpful to EFL teachers and curriculum developers in their decision to adopt affordable VR programs that can incorporate pedagogical principles in task design to enhance learners' engagement and speaking performance (Ding, 2024). Furthermore, this study sheds light on the need for providing adequate training and support to enable teachers to responsibly implement emerging technologies in language teaching (Mena et al., 2023).

The research is organised into three main chapters, preceded by a general introduction and followed by a general conclusion. Chapter one reviews the theoretical and empirical

literature relevant to the study, introducing key concepts such as speaking fluency and its challenges in English as a foreign language (EFL) context, the role of technology in language teaching, the theoretical foundations of virtual reality in education, and previous studies on the use of VR in improving EFL speaking. Chapter two outlines the methodological framework, detailing the research design, participants, instruments, data collection procedures, and data analysis methods. Moreover, it addresses the reliability, validity, and ethical considerations. Chapter three presents the quantitative findings from the statistical analysis of the pre-test and post-test data, discusses the results with reference to the research question and hypotheses, and expands on the literature reviewed in chapter one before presenting the overall conclusions and recommendations.

Chapter I: Literature Review

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I.1 Introduction

This literature review's primary goal is to critically analyse the theoretical frameworks and existing studies regarding speaking fluency development in higher education contexts for English as a Foreign Language (EFL), with an emphasis on the growing significance of virtual reality (VR) technologies. The study focuses on low-cost VR interventions as viable and easily accessible tools for addressing traditional pedagogical and infrastructure challenges, particularly in educational settings with limited resources in Algeria (Rahmanu & Molnár, 2026). To identify the potential difficulties and gaps to direct the ongoing research on VR-based speaking tasks created by instructors, this study places these technological applications within relevant theories and pedagogical approaches related to second language acquisition.

The scope of this review includes research on immersive technologies like computer-assisted language learning (CALL), mobile-assisted language learning (MALL), artificial intelligence (AI), and especially virtual reality (VR) applications, as well as seminal and recent studies on speaking fluency in EFL higher education. The study prioritizes sources that examine VR's effects on learners' psychological elements such as motivation and anxiety, and oral performance measures, while excluding non-immersive or irrelevant multimedia support resources. Another attention is paid on affordable VR solutions such as Google Cardboard and smartphone-based VR, that make immersive language practice possible in settings with affordable, technological, and infrastructure constraints. Additionally, the review targets only on teacher-designed tasks using VR that follow the task-based language teaching principles, highlighting the advantages of scaffolded and context sensitive interventions (Ding et al., 2025).

The structure of this chapter is organised as follows. First, it addresses the linguistic, cognitive, and communicative dimensions of speaking fluency in EFL instruction. Then, the development of technology-enhanced language learning is examined, with a focus on the

affordances for developing oral skills through the shift from CALL and MALL to interactive VR and AI-driven settings (He et al., 2025). In the following section, empirical research on the effectiveness of VR-based speaking treatments is critically evaluated. Both high-end and low-cost VR implementations are critically examined, along with their pedagogical design, technological viability, and effects on learner outcomes. Finally, a discussion on the difficulties in adopting VR, including technological limitations, psychological barriers, and the necessity for teacher guidance, important gaps in the research are identified that support the current investigation. This systematic research provides a strong theoretical and empirical framework for examining how teacher-designed, low-cost virtual reality tasks could improve speaking fluency among Algerian EFL students.

I.2 Speaking Fluency in EFL

Speaking fluency is a highly valued yet difficult skill for EFL learners. As the dependent variable of this study, it requires a clear definition and measurement, as well as an overview of the barriers EFL learners face. This chapter first examines speaking fluency from linguistic, psychological, and psycholinguistic perspectives; next, it highlights major tools for measuring fluency in EFL contexts; finally, it discusses the main barriers to achieving fluency.

I.2.1 Definitions of Speaking Fluency

Speaking fluency is conceptualised as the smooth and effortless production of speech (Chambers, 1997, as cited in Peltonen, 2024). Previous work by Lennon (1990), has contributed to distinguishing between a “broad” sense of fluency ; which focuses exclusively on the general oral speech proficiency, and a “narrow” sense that relate to the temporal and fluid aspect of speech (Tavakoli, 2025; Peltonen, 2024; Foster, 2020). Speaking fluency was defined as the "rapid, smooth, accurate, lucid, and effective translation of cognition... into language" (Lennon,

1990, as cited in Tavakoli, 2025). According to Foster (2020), academic research requires more specific definitions of fluency rather than simply equate it with being “good” at a language.

Segalowitz's (2010) triadic model defines fluency as multidimensional with three interrelated aspects: perceived fluency (listener inferences), utterance fluency (measurable speech qualities), and cognitive fluency (efficiency of underlying processes) (Tavakoli, 2025; Peltonen, 2024; Bui & Skehan, 2018; Foster, 2020). More recently, researchers like Tavakoli and Wright (2020), highlighted the interactional and sociolinguistics dimensions of fluency, as a social and collaborative practice that is influenced by “context, purpose, and audience” (Peltonen, 2024; Tavakoli, 2025; Feng & Guo, 2022).

According to the scholars, utterance fluency is a multidimensional construct composed of three primary factors: speed, breakdown, and repair (Skehan, 2003, as cited in Bui & Skehan, 2018).

- ❖ **Speed (Speech Rate):** This parameter focuses on the intensity and the speed of the delivered information (Suzuki & Kormos, 2023). It is frequently measured using speech rate (syllables per minute including pauses) and articulation rate (syllables per minute excluding pauses) (Bui & Skehan, 2018; Suzuki & Kormos, 2023).
- ❖ **Breakdown Fluency:** this factor refers to the speech continuity and pausing, and it is measured through frequency, duration, type, and location of pauses (Bui & Skehan, 2018; Suzuki & Kormos, 2023). Among the various dimensions of pausing behaviour, recent studies have recognized the importance of locating pauses as an indicator of fluency. While pauses mid-sentence are considered to reflect disturbance in second language processing, pauses at sentence boundaries reflect dysfunction in conceptual processes, such as content planning (Tavakoli, 2025; Suzuki & Kormos, 2023; Foster, 2020).

- ❖ **Repair Fluency:** this dimension focuses on speech monitoring and correction (Suzuki & Kormos, 2023). It is measured by the immediate self-corrections, repeats, false beginnings, and reformulations (Bui & Skehan, 2018; Foster, 2020; Suzuki & Kormos, 2023). Recent studies showed that listeners are more potentiated to take repairs better than they do slow speeds or long pauses (Foster, 2020).

Levelt's (1989, as cited in Foster, 2020) model of speech production is often used to explain fluency from the psycholinguistic perspective, which is composed of three stages: the Conceptualizer (initiallinguistic ideas), the Formulator (grammatical and lexical encoding), and the Articulator (phonetic execution) (Feng & Guo, 2022; Foster, 2020). Fluency occurs when these components operate in parallel; however, when the system requires a change to serial processing due to a lack of automatized knowledge or excessive processing demands, it causes an interruption or slowing of one of the components, leading to disfluency (Foster, 2020).

The efficiency and automation of these fundamental processes are the focus of the cognitive perspective (Tavakoli, 2025; Peltonen, 2024; Bui & Skehan, 2018). Cognitive fluency is the speaker's potential to use language skills while processing information in real time (Foster, 2020). Suzuki and Kormos (2023) make a distinction between processing speed (the speed with which that knowledge may be accessed naturally) and linguistic resources (vocabulary and grammatical knowledge). The scholars have found that while processing speed influences each component of utterance fluency (speed, breakdown, and repair), the contribution of linguistic resources changes according to the activity's cognitive complexity. Furthermore, learners who have limited attentional capacities are more prone to disfluency, and they have to manage the demands of planning, organizing, and observing their speech (Foster, 2020; Bui & Skehan, 2018).

Fluency is commonly evaluated under the framework of The CAF (Complexity, Accuracy, and Fluency) triad, which characterizes L2 performance (Foster, 2020; Bui & Skehan, 2018). The authors make the following distinctions between these theories:

- ❖ **Complexity Theory:** deals with how the learner's language is elaborated or advanced. It can be assessed based on whether it is structural (subordination ratio, clause length, variety of grammatical structures) or lexical (lexical diversity, lexical sophistication, and lexical density) (Bui & Skehan, 2018).
- ❖ **Accuracy Theory:** refers to the degree to which a student follows the rules of the target language. It is measured through a general measurement that employs one value to represent all faults, and a specific measurement that focuses on single errors (Bui & Skehan, 2018).
- ❖ **Fluency Theory:** is concerned with the effortlessness and smoothness of the speech performance. It have three main types: perceived fluency, utterance fluency, and cognitive fluency (Bui & Skehan, 2018).

According to the Limited Attention Capacity (LAC) theory, learners have a limited processing capacity, so if the focus is mainly on accuracy or complexity, it may affect fluency, and vice versa (Foster, 2020; Bui & Skehan, 2018). According to Foster (2020), fluency is exceptional in the CAF quartet since it can be associated with both linguistic development and lack of progress, in which a speaker becomes fluid and rapid but preserves their errors.

Table 1.1: Fluency, Accuracy, and Complexity: A Comparative Overview

Dimension	Definition	Focus	Example Indicator
Fluency	Smoothness and continuity of speech	Time and flow	Speech rate, pauses

Accuracy	Correctness of language produced	Grammar and form	Error frequency
Complexity	Sophistication of language used	Structure and vocabulary	Clause length

Source: Adapted from Skehan (1996, as cited in Bui & Skehan, 2018).

I.2.2 Measuring Speaking Fluency

In the fields of Second Language Acquisition (SLA) and English as a Foreign Language (EFL) research, speaking fluency is often examined from: a “narrow” lense that focuses specifically on speed rate, pause, and repair and temporal features of speech production, and a “broad” lense that consider speaking fluency as an indicator for overall oral proficiency (Huang, 2024; Van, et all 2020). Utterance fluency is the main focus of the measurement of L2 speaking fluency, as it reveals the tangible form of the speaker’s L2 oral fluency (Huang, 2024; Van, et all 2020).

Skehan (2003, as cited in Tavakoli et al., 2016) provides a fundamental framework for the objective measurement to assess how well learners’ speech is produced using temporal variables , and divides them into three categories: repair, breakdown, and speed fluency (Tavakoli et al., 2016; & Huang, 2024):

- ❖ **Articulation Rate and Speech Rate:** It is considered an indicator of breakdown and speed by representing the total average of syllables produced per minute or second, including all pause time. However, articulation rate is measured through dividing the overall phonated time (the speech time without including any pauses) by the number of syllables generated either per second or per minute (Huang, 2024; Tavakoli et al., 2016; Qurbi, 2024).

- ❖ **Pause Length and Pause Frequency:** Pause frequency is determined in terms of the frequency of pauses per minute or per 100 words (Huang, 2024 & Qurbi, 2024). While some researchers use as little as 0.2 seconds or as much as 0.4 seconds of silence to determine a pause, pauses usually last for more than 0.25 seconds of silence (Huang, 2024; Tavakoli et al., 2016; Van Os et al., 2020). However, the location of the pauses should also be considered; when a pause is made in the middle of a clause, it is mostly used as an indicator of word searches and coherence, while pauses at the end of clauses are common and expected for conceptual planning (Huang, 2024 & Suzuki & Kormos, 2023).
- ❖ **Mean Length of Runs:** It refers to the number of syllables produced between two pauses (Suzuki & Kormos, 2023; Huang, 2024; Tavakoli et al., 2016). According to Skehan (2003, as cited in Tavakoli et al., 2016), mean length of runs was previously considered a measure of speed fluency. However, Tsunemoto (2023, as cited in Huang, 2024) considers it a measure of breakdown fluency as it signifies the extent of speech pauses and hesitation (Huang, 2024).
- ❖ **Breakdown and Repair Measures:** This includes measuring dysfluency based on the count of partial and total repetition, false start, reformulation, hesitation, and self-correction (Tavakoli et al., 2016; Huang, 2024; Suzuki & Kormos, 2023). Researchers have suggested that these measures, which restore fluency, be categorized in certain proportions, for example, the self-repetition ratio, so that a more intricate view can be taken regarding the behaviour of the learners (Huang, 2024). They also classify pauses as silent pauses and filled pauses (intonations, uh, um, oh.....) (Huang, 2024).

In addition to objective temporal measurements, speech fluency is often analysed through subjective human judgment using various rating systems.

- ❖ **Holistic Assessment:** Integration of the various aspects of an effective oral communication performance, such as lexical richness, syntactic complexity, and effectiveness of communication, leads to a general assessment of proficiency (Tavakoli et al., 2016; Van Os et al., 2020). Under this definition, fluency can be described as an oral proficiency that emphasizes speaking at a speed that is comparable to that of a fluent native speaker (Van Os et al., 2020).
- ❖ **Analytic Assessment:** Evaluate fluency separately, using certain descriptions. For instance, the speaking fluency is rated by the APTIS analytic rubric, which evaluates such parameters as pauses, false starts, and reformulations at various levels (De Jong et al., 2021). In addition, other scholars use the rating system that consists of nine points and describes how listeners have to assess fluency with respect to speech rate and nature of pauses instead of grammar and pronunciation (De Jong et al., 2020; Van Os et al., 2020).

While analytic rubrics give particular information and clearly define differences between different levels of ability (for example, from A1 to C1 according to the Common European Framework of Reference), they also need extensive practice on the part of the rater to achieve consistency (De Jong et al., 2021; Qurbi, 2024; Suzuki & Kormos, 2023). Holistic evaluation, in turn, is helpful for assessing competence but might fail to identify fluency behaviours (Tavakoli et al., 2016).

The Particular elicitation activities and analytical instruments are necessary for the standardization of fluency measurement:

- ❖ **Speech Analysis Software:** The most common tool used for calculating the duration of the temporality features of fluency is PRAAT, which allows scientists to calculate exact moments when

pauses occur, phonation time, as well as syllable nuclei (Huang, 2024; Tavakoli et al., 2016; De Jong et al., 2021; Van Os et al., 2020). However, while manual validation is often needed for exact calculation, recently new developments have been made, and PRAAT tools were developed that can identify syllables and pauses automatically (De Jong et al., 2021).

Activities to Promote Fluency:

- ❖ **Monologic Activities:** is a form of continuous oral discourse produced by individuals, it comprises argumentative speeches, storytelling, and picture narration (Suzuki & Kormos, 2023; Tavakoli et al., 2016; Huang, 2024). Such types are favored due to the simplicity involved in their acquisition and lack of any unnecessary interactional element (Huang, 2024).
- ❖ **Dialogic Tasks:** They include role-plays, group discussions, and interviews (Huang, 2024). Turn-taking delay within interaction duration, backchannels, and collaborative completion will be considered while calculating the dialogue fluency (Huang, 2024; Qurbi, 2024; Van Os et al., 2020). Research has suggested that learners generally appear more fluent during dialogue assignments than monologue assignments (Van Os et al., 2020).

In literature, the combination of speed, breakdown, and repair is widely accepted as the foundation of utterance fluency; however, there is disagreement among scholars over how to categorize these measurements. For example, some researchers argue for articulation rate to separate pure processing speed from pausing manners, while others emphasize speech rate as a general indicator (Huang, 2024; Qurbi, 2024). Similar to this, there is still disagreement about

the categorization of mean length of runs in both the speed and breakdown frameworks (Suzuki & Kormos, 2023; Huang, 2024). Additionally, there is also a significant methodological difference between dialogue research, which considers fluency as a co-constructed confluence involving interactive elements like overlaps and turn-taking, and monologue research, which focuses on individual processing (Huang, 2024; Van Os et al., 2020).

Speaking fluency is a multifaceted construct that includes cognitive fluency (mental planning processes), utterance fluency (the physical speech signal), and perceived fluency (the listener's subjective perception); however, measuring it is fundamentally difficult (Huang, 2024; Van Os et al., 2020; Tavakoli et al., 2016). Furthermore, the CAF triad linguistic accuracy and complexity interact dynamically with fluency. This means that a speaker's perceived fluency could be significantly impacted by the cognitive load of the task or their intentional use of pauses to check for grammatical correctness (Tavakoli et al., 2016).

Table 1.2 : Temporal Fluency Measures

Measure	Definition	Tool Used
Speech Rate	Number of syllables or words per minute	PRAAT, manual counting
Mean Length of Runs	Average number of syllables between pauses	PRAAT
Pause Frequency	Number of silent or filled pauses per minute	PRAAT, observation
Repair Frequency	Number of false starts and reformulations	Rubric, transcription

Source: Adapted from Tavakoli and Skehan (2005)

I.2.3 Challenges in Developing Speaking Fluency in EFL Higher Education

The complex interaction of environmental, pedagogical, and psychological factors limits the development of speaking fluency in EFL among university students. This section identifies three major challenges: the limited exposure to authentic communicative environments, the presence of affective barriers, and the persistence of traditional EFL instructional models.

The major challenge that has always faced the students who want to develop language proficiency skills is the lack of opportunities to engage in effective communication inside and outside of the academic settings (Dayanan et al., 2025). Many learners fail to communicate properly because they do not have adequate chances to communicate within the regular learning environment (Dayanan et al., 2025). The problem became worse when the classroom emerged as the sole environment where learners are exposed to the target language (Dayanan et al., 2025). Though, as Some-Guiebre argues, being present in the classroom setting is not enough, the exposure must be purposeful and meaningful to facilitate the transition from theoretical knowledge to active fluency (Dayanan et al., 2025).

In addition, classroom input is often perceived as lacking the unpredictability of real-world conversation because of its scripted or exam-oriented nature (Derwing et al., 2022; Bielak, 2025). Despite the involvement of university students in communicative tasks, according to Sato and Ballinger (2012), they tend to focus on task completion through their first language (L1) or non-verbal means rather than surpassing their second-language (L2) output limits. The large number of students in the classroom is another factor contributing to the development of restricted interaction, leading to limited student-teacher interaction and thus preventing complete collaboration during conversation (Dayanan et al., 2025; Attia & Algazo, 2025).

It is often known that psychological factors, including Foreign Language Classroom Anxiety (FLCA), have always been responsible for hindering speaking proficiency (Dewaele & MacIntyre, 2014; Teimouri et al., 2019). As noted by Teimouri et al. (2019), this can be attributed to a certain concept that leads to anxiety and stress in language use, thus explaining an important achievement score distinction.

- ❖ **Fear of Negative Evaluation:** A number of researchers discuss this issue as an important obstacle (Dayanan, 2025). In accordance with Dayanan et al (2025), students are often anxious about performing in front of a crowd since they fear judgment from their instructors or peers about any errors made. As for MacIntyre, he is concerned about the fact that students are self-conscious and analyzed, particularly in terms of their accent and grammar skills (MacIntyre, 2007).
- ❖ **Affective Filter and Inhibition:** As per the Affective Filter Hypothesis, too much anxiety tends to be a mental barrier for language input to become intake (Attia & Algazo, 2025). Children usually do not talk unless they are psychologically prepared for it and have the language skills to back it up, which is quite an achievement to make under strict circumstances (Hu & Wang, 2023).
- ❖ **Performance Pressure:** Even for high skilled university learners, time pressure and evaluative settings, such as giving speeches or presentations, may significantly raise anxiety levels (Bielak, 2025).

The literature frequently points out the distinction between the demands of oral fluency development and the traditional instruction methods:

- ❖ **Over Reliance on Grammar and Vocabulary:** As Hu and Wang suggest, methods focused on the study of language rules and vocabulary than communication effectiveness have been dominant in EFL teaching

all along (Hu & Wang, 2023). This has made many university students become good readers and writers but poor speakers since they have undergone grammar translation teaching for so long before joining universities (Sato & Ballinger, 2012).

- ❖ **Limited Learner Talk Time:** The typical situation involves the teacher playing the role of the primary speaker, where learners engage in passive learning activities (Sato & Ballinger, 2012; Dewaele & MacIntyre, 2014). It is common for students to feel like they are the recipients of knowledge rather than being active learners, thus preventing them from being autonomous and spontaneous (Dewaele & MacIntyre, 2014).
- ❖ **Misalignment of activities:** As Attia and Algazo (2025) note, teachers sometimes unintentionally increase stress through the provision of too much correction to students or using a sarcastic intonation, thus hindering students' attempts to take risks during the practice of speaking (Attia & Algazo, 2025). Moreover, task-based or group exercises that would usually serve as a positive environment for developing oral skills are not applied enough (Dayanane et al., 2025; Hu & Wang, 2023).

The anxiety while speaking, the lack of authentic communication opportunities, and the teacher-centered and grammar dominance are regarded as three main problematic factors in EFL higher educational settings (Dayanane et al., 2025; Dewaele & MacIntyre, 2014; Sato & Ballinger, 2012). Experts usually suggest that university learners already have enough knowledge about language that allows them to perform effectively in speaking tasks. However, such knowledge is not used due to fear of being criticised in interactive settings. (Dayanane et al., 2025; MacIntyre, 2007; Sato & Ballinger, 2012). As a result, to this vicious cycle of worry,

behaviour is raised, affecting speaking confidence and fluency (Dewaele & MacIntyre, 2014; Kayhan, 2025).

The problems that have been mentioned above support the need for educational innovation regarding the inability of traditional approaches and accuracy models to develop communicative competence in university learners (Sato & Ballinger, 2012; Hu & Wang, 2023). Traditional approaches unconsciously maintain an extremely high level of affective filters that impede the process of language acquisition as they prioritize a higher value on linguistic rather than communication among learners (Hu & Wang, 2023; Attia & Algazo, 2025). Innovation is thus needed to transform the classroom atmosphere from being passive into active, spontaneous, and authentic setting support real-life language communication and foster a collaborative spirit, while reducing the inhibiting influence of anxiety (Sato & Ballinger, 2012; MacIntyre, 2007).

I.3 Technology Enhanced Language Learning (TELL) and Speaking Skills

The rapid growth of digital technologies has transformed language education. It now offers more ways to build speaking skills outside the classroom. Technology-based language learning (TELL) uses various digital tools to create realistic, interactive language practice. This section discusses key technological approaches for teaching EFL speaking, highlights their benefits for fluency, and critically reviews barriers to effective use.

I.3.1 Overview of Technology in EFL Speaking Instruction

The integration of technology in teaching English as a foreign language (EFL) instruction has shifted from stationary computer lab settings to mobile devices and, more recently, to immersive digital environments (Martinez, 2025; Hasumi & Chiu, 2024). This section provides an overview the three main technology frameworks used to assist in the development of oral proficiency.

A specialized area of language education known as computer-assisted language learning (CALL) uses computers to enhance and accelerate learning a foreign language (Hasumi & Chiu, 2024). In the context of speaking instruction, CALL includes a wide range of digital resources, such as learning management systems (LMS), online learning, and distance education (Hasumi & Chiu, 2024).

Scholars argue that CALL successfully supports productive skills by offering a platform for oral engagement that can take place both synchronously and asynchronously (Hasumi & Chiu, 2024). According to Zhang and Zou (as cited in Hasumi & Chiu, 2024), multimedia technologies that help transmit linguistic input, such as PowerPoint slides and audio players, are the main instruments in this category (Hasumi & Chiu, 2024). Additionally, speech-to-text and text-to-speech technologies, together with specialized online communication platforms like Skype, are common CALL tools for oral skills that have been used to help students practice speaking by allowing them to interact with teachers in real time (Hasumi & Chiu, 2024; Xuhong et al., 2018).

Mobile-assisted language learning (MALL) uses the special qualities of portable electronics like smartphones and tablets to improve language learning as a new teaching strategy (Martínez et al., 2025). MALL makes use of the devices' built-in advantages, portability, connectivity, and multimedia capabilities to transcend the traditional classroom's time and space constraints (Martínez et al., 2025).

Through voice recording and playback features, MALL applications help students practice speaking by comparing their oral performance to native models (Martínez et al., 2025). According to Benlaghrissi and Ouahidi, MALL offers a more interactive, spontaneous, and continuous form of language learning, distinguishing it from standard CALL (Benlaghrissi & Ouahidi, 2024). The points that follow are MALL's main benefits:

- ❖ **Mobility and Flexibility:** Stockwell claims that learners may access resources and practice speaking anytime and anywhere thanks to portable devices (Benlaghrissi & Ouahidi, 2024).
- ❖ **Increased Exposure:** Students can instantly access audio-visual resources on mobile devices, which exposes them to authentic speech patterns and contexts (Martínez et al., 2025).
- ❖ **Affective Benefits:** Students are more motivated to engage in spoken interaction when they perceive MALL environments as they consider it low-anxiety settings (Xuhong et al., 2018).

Since digital simulations and interactive learning environments offer an engaging experience in speaking practices, that is the area receiving current advancement (Martínez et al., 2025; Hasumi & Chiu, 2024). This technology consists of digital game-based learning (DGBL), augmented reality (AR), and virtual reality (VR), which create a simulated environment representing the social and cultural context as observed in real-life situations (Martínez et al., 2025; Hasumi & Chiu, 2024). According to Gao (2021, as cited in Hasumi & Chiu, 2024), these simulations put language learners in an authentic cultural setting, which facilitates the development of intercultural communicative competence. In addition, a new interactive feature in these learning environments is introduced following the advent of Conversational Artificial Intelligence (AI) and chatbots, for example, ChatGPT (Al-Obaydi et al., 2025). Through simulation of human interaction, the learners get the opportunity to participate in lively conversations that react to their inputs (Al-Obaydi et al., 2025).

These virtual environments are different from conventional technologies in regard to the interaction process and feedback systems. In immersive environments, the use of virtual agents helps to foster spontaneous interactions and pragmatic skills, while conventional technologies may focus on passive multimedia applications (Martínez et al., 2025). The

phenomenon of the immersive environment involves using the virtual microsystem environment as a substitute for conventional training (Hasumi & Chiu, 2024).

Starting from the station-based CALL approach through the user framework offered by MALL and ending up with extremely exciting and captivating virtual environments provided by AI and VR technologies, there has been a significant evolution of technology application for EFL speaking practice (Martínez et al., 2025; Benlaghrissi & Ouahidi, 2024). The former one involves the initial application of digital tools for oral communication practice; nevertheless, the latter one improved them by adding flexibility and constant availability (Martínez et al., 2025; Benlaghrissi & Ouahidi, 2024). At present, interactive virtual environments based on technologies such as AI chatbots and digital simulations stress the importance of immediate contact, which makes it increasingly difficult to determine whether people engage in either online or face-to-face activities (Hasumi & Chiu, 2024).

The current technological solutions are especially important for speaking fluency since they provide additional opportunities for language output and immediate feedback in interactive low-risk settings (Martínez et al., 2025; Al-Obaydi et al., 2025). These technologies support the spontaneous communication required to improve speech accuracy and conversational skills by simulating real-world interaction and lowering the anxiety related to speech performance (Martínez et al., 2025; Xuhong et al., 2018).

I.3.2 Benefits of Technology for Speaking Fluency

Speaking skills development in English as a Foreign Language has experienced revolutionary changes due to the emergence of the integration of technological means such as MALL and CALL (Martínez et al., 2025; Dong et al., 2022). The literature has consistently pointed out areas where such aids can be applied to overcome the weaknesses associated with

conventional teaching settings in order to enhance spoken language competency (Martínez et al., 2025; Benlaghrissi & Ouahidi, 2024).

The most prominent features of such technologies include the ability to practice outside the conventional classroom setting (Martínez et al., 2025; Benlaghrissi & Ouahidi, 2024). For instance, as highlighted by Álvarez Martínez et al. (2025), MALL provides an effective solution to both temporal and spatial constraints by harnessing the capabilities of mobility and connectivity of mobile devices in order to learn while doing daily activities. Benlaghrissi & Ouahidi (2024) emphasize the ability of learners to come across the language everywhere due to mobile technology.

In particular, some functionalities of these technologies enable autonomous and repetitive learning. Voice recording and playback features help to practice pronunciation skills and compare their speech to that of native speakers (Martínez et al., 2025). Moreover, mobile-assisted projects offer students an opportunity to record voice interviews and summarize them in video form by means of voice recorders. This provides a platform for refining productions and rehearsals (Benlaghrissi & Ouahidi, 2024). Dong et al. (2022) note that due to technological development, learners have the ability to study and assimilate materials at their own pace, which is especially helpful when it comes to mastering spoken language aspects (Dong et al., 2022).

Technology gives modern EFL learners access to interactive communicative settings and language input as never before possible (Martínez et al., 2025; Namaziandost et al., 2020). Audiovisual features used by mobile devices to create immersion in real-world speech patterns and contextualized environments, which are difficult to provide in conventional environments, are of great assistance (Martínez et al., 2025). Besides, virtual agents created by using artificial intelligence (AI), augmented reality (AR), and virtual reality (VR) techniques can encourage learners to participate in realistic dialogues and situations from other cultures (Martínez et al., 2025).

In addition to that, the literature emphasizes the significance of social interactions. According to Namaziandost et al. (2025), messaging applications such as WhatsApp provide opportunities for social interaction and communication with native speakers irrespective of geographic location restrictions (Namaziandost et al., 2020). Benlaghrissi and Ouahidi note that mobile-assisted PBL promotes situated learning since students are required to participate in peer interactions and solve realistic problems using ICT (Benlaghrissi & Ouahidi, 2024). Álvarez Martínez et al. indicate that socialization factors incorporated in MALL systems promote peer interactions and involvement, which are necessary for the development of conversation fluency (Martínez et al., 2025).

The psychological and self-regulation benefits associated with the use of technology are well-known as factors that contribute to increased speaking fluency (Martínez et al., 2025; Dong et al., 2020; Namaziandost et al., 2020). CALL and MALL instruction significantly increase learner motivation and self-efficacy as compared to traditional face-to-face methods (Dong et al., 2020; Namaziandost et al., 2020). An individualized learning experience taking into account personal preferences and proficiency level makes learners feel that they undertake an educational journey in which they take responsibility for their actions (Martínez et al., 2025).

In general, technology diminishes psychological obstacles. According to Dong et al., Internet environments drastically lower levels of foreign language anxiety (FLA) and provide learners with a feeling of control over their learning activities (Namaziandost et al., 2020; Dong et al., 2022). Furthermore, training speech skills through the use of voice notes or mobile applications creates a stress-free or anxiety-free environment (Namaziandost et al., 2020; Benlaghrissi & Ouahidi, 2024). Benlaghrissi and Ouahidi (2024) explain the improvement in oral fluency and accuracy by the possibility of making mistakes and experimenting.

Learning to speak in a foreign language through the use of portable technology outside class helps with fluency through the process of rehearsing and repeating via recordings

(Martínez et al., 2025; Benlaghrissi & Ouahidi, 2024). Moreover, using technology to engage peers and interact with virtual interlocutors creates conditions for simulated communication similar to those of real life (Martínez et al., 2025; Namaziandost et al., 2020). Lastly, the decrease in anxiety associated with foreign-language oral production and the rise in learners' independence and motivation create favorable conditions for oral speech development (Martínez et al., 2025; Dong et al., 2022; Namaziandost et al., 2025).

However, while these benefits tackle the psychological and temporal aspects of speech production, they become particularly important regarding speaking fluency (Qurbi, 2024). Fluency, according to Essa Qurbi (2024), is assessed by measuring the speech rate as well as the reduction of pauses. The use of technology facilitates the repeated practice and the non-threatening environment needed to build one's confidence and processing skills to deliver fluent, smooth speech (Qurbi, 2024).

I.3.3 Limitations of Technology Use in EFL Contexts

The integration of technology-enhanced language learning (TELL) in the EFL curriculum encounters many challenges, which may be technological, pedagogical, and contextual. Technology offers enormous opportunities in terms of enhancing language learning, but according to specialists, there are still many barriers that do not allow for the development of students' speaking skills, especially in the context of higher education.

One such barrier discussed in the study is the problem of unreliable technical equipment and inequality of access to hardware. Even though modern computer software is very developed, many institutions, especially in remote regions, use obsolete technologies and have unreliable internet connections, which makes teachers reluctant to implement CALL (Zainurrahman, 2023). Similarly, in the case of Ethiopian higher education institutions, the

problem of limited access to technology inside and outside classes hinders students' speaking practice (Bulbula et al., 2025).

This is further complicated by technical issues and a lack of institutional support. Operational difficulties, including slow loading times and software-related issues, affect the delivery of online learning experiences (Zainurrahman, 2023). The switch to online learning takes place without any form of relevant administration and technological help, forcing teachers to handle technological failures and digital gaps themselves (Hasumi & Chiu, 2024). In addition, regarding speaking exercises, the failure of voice recognition presents a significant technical issue; when computers misinterpret learners' speech, they give false information (Zou et al., 2024).

It is also noted in the literature that unequal access for learners may result in greater inequalities within education. Technological uptake depends on social features and a country's economic status, affecting disadvantaged students (Hasumi & Chiu, 2024). The point is emphasized that making technology compulsory is an unjustified educational environment for poor children who cannot afford the required equipment (Zainurrahman, 2023).

However, the use of TELL in instruction is hampered by the fact that speaking practices tend to be superficial. Most of the solutions offered by AI tools are limited to read-aloud and presentation methods and do not allow conversational interaction, role-playing, and spontaneous speech required for holistic fluency (Zou et al., 2024). Zainurrahman confirms this idea, arguing that even complex computer programs are better than real-life socialization since they do not require the contextual information and personal interactions that would otherwise make communication possible (Zainurrahman, 2023).

One more criticism associated with technology-assisted language education concerns the low level of feedback provided by the instruments used. As mentioned by Zou et al., feedback is most often numeric or presented in the form of colored symbols, leaving the learners

with too little explanation and advice on correcting their mistakes (Zou et al., 2024). In addition, Zainurrahman argues that although some software allows real-time correction of writing mistakes, it fails to explain other aspects of language proficiency requiring an instructor's involvement (Zainurrahman, 2023). Moreover, as pointed out by Kaur et al., there is a general shortage of adaptive software for language learning when compared to STEM disciplines (Kaur et al., 2023).

In addition to this, technology is employed for instructional purposes without clear objectives being set. Incoherence has been observed between computer-assisted language learning programs and prescribed textbooks or instructional guides from educational ministries (Zainurrahman, 2023). The effective implementation of the technology would require a careful combination of technology and pedagogy, which was largely overlooked while implementing emergency online teaching (Hasumi & Chiu, 2024).

Lack of ICT literacy on the part of learners and teachers is one of the most basic impediments to successful TELL. The inability to use ICT tools creates a state of stress for the individual, and it also leads to poor learning outcomes due to lost instructional time spent exploring the program (Zainurrahman, 2023; Bulbula et al., 2025). Language educators may lack the technical skills required to manage complex algorithms, whereas computer scientists may be unfamiliar with the complexities of language education (Kaur et al., 2023).

Over-reliance on technology and decreased involvement could potentially have detrimental emotional effects. Hasumi and Chiu claim that because of the high cognitive load and lack of engagement, pupils usually get bored and distracted in online settings (Hasumi & Chiu, 2024). According to Zainurrahman, focus distraction happens when learners start paying more attention to the technology's visual elements (the user interface) than the language content that is being taught (Zainurrahman, 2023).

Finally, a number of contextual limitations in EFL higher education are identified by the literature. Time limitations are highlighted by Bulbula et al., who point out that instructors are discouraged from experimenting with technology by the obligation to cover course material within a strict timeline (Bulbula et al., 2025). According to Kaur et al., there is a geographical bias in the research, with a strong emphasis on English in Asia, which could hide the varied requirements of other EFL environments (Kaur et al., 2023). Additionally, Bulbula et al. indicate that students who continue to choose conventional teaching techniques over online courses reveal a resistance to change (Bulbula et al., 2025).

Technical instability (voice recognition mistakes and insufficient hardware), low feedback quality (numerical ratings without qualitative explanation), and the incapacity of technology to replace real human connection are the most commonly mentioned drawbacks of TELL in EFL environments. Researchers frequently point out that insufficient digital literacy and an improper integration of digital tools with official pedagogical goals increase these difficulties. A "one-size-fits-all" technology solution ignores the varying degrees of infrastructure and digital readiness present in international EFL contexts; therefore, these limitations call for more focused and context-sensitive approaches. Instructors can make sure that digital technologies promote rather than hinder the development of authentic communicative skill by adjusting their use of technology to meet certain institutional resources and pedagogical objectives.

I.4 Virtual Reality (VR) in Language Learning

Within the range of the latest technologies that are considered in the area of TELL, VR is an especially attractive technology that has received increasing research attention. It can overcome many obstacles in traditional EFL instruction, which include the absence of meaningful interaction and communication practice. This section aims to introduce the

definition of VR and its types, outline the differences between VR and other similar technologies, and analyze the theories behind the use of virtual reality in EFL speaking.

I.4.1 Definition of Virtual Reality and its Types

The combination of hardware and software technologies designed to create the comprehensive sensory experience of being present in a computer generated environment is commonly referred to as virtual reality (VR). It aims to perfect this sensory illusion such as that the user feels as if they are in another universe (Biocca and Delaney, 1995)(Radianti et al., 2020). According to more modern definitions, such those found in the Encyclopaedia Britannica (2019), virtual reality (VR) is a technology that uses computer simulation and modeling to let users engage with a synthetic three-dimensional visual or sensory environment (Sala, 2021). Immersion, presence, and interactivity are the three main features often referred to as the "three pillars" that set VR apart from conventional digital media, according to research (Radianti et al., 2020).

- ❖ Immersion is described by Slater and Wilbur (1997, as cited in Radianti et al., 2020) as a technological characteristic that characterizes the degree to which computer screens produce a realistic, immersive, and immersive illusion of reality. It is further defined by Freina and Ott (2015, as cited in Radianti et al., 2020) as the experience of being physically present in a non-physical world through the use of music, pictures, and other inputs (Radianti et al., 2020).
- ❖ The psychological sensation of being present in a task environment, even when one is physically located elsewhere, is known as presence. It is defined by Witmer and Singer (1998, as cited in Radianti et al., 2020) as the subjective perception of being in one location while physically placed in another.

- ❖ Interactivity is the degree to which a user can alter the virtual world in real time (Radianti et al., 2020). According to Steuer(1995, as cited in Radianti et al., 2020), this entails the system reacting dynamically to user inputs such as spoken orders or gestures (Radianti et al., 2020; Sala, 2021).

The main way that VR differs from conventional digital settings is by omitting physical reality. VR seeks to detach the user's perception of time and the outside world, whereas users in conventional settings stay conscious of the screen or workspace (Radianti et al., 2020). Based on technological needs and the degree of sensory connection to the actual world, educational research separates VR into three main categories (Wang & Li, 2024).

This kind completely encloses the user's vision, offering the maximum degree of immersion (Parmaxi, 2023). VR eyewear like the Oculus Rift or HTC Vive, or Head-Mounted Displays (HMDs), are usually needed (Radianti et al., 2020; Wang & Li, 2024).

- ❖ **Technical Requirements:** High-end HMDs frequently come with sensors to monitor head movement and orientation, haptic feedback, and dedicated controllers (Radianti et al., 2020).
- ❖ **Educational Benefits:** Students can focus entirely on an immersive, distraction-free environment created by virtual reality (Crogman et al., 2025). A perception of being physically present is therefore created, which facilitates realistic simulations and virtual field visits (Radianti et al., 2020; Crogman et al., 2025).

Systems classified as semi-immersive fall somewhere in between fully immersive and non-immersive technology (Wang & Li, 2024).

- ❖ **Technical Requirements:** These sophisticated systems frequently employ CAVE (Cave Automatic Virtual Environment) technology, which create an environment based on the user's actual location, or project graphical displays onto massive screens (Radianti et al., 2020; Parmaxi, 2023).
- ❖ **Educational Affordances:** These settings enable a virtual experience while preserving a sense of the real world (Wang & Li, 2024). For organic interactions, they might use gesture recognition (Parmaxi, 2023).

Desktop VR is a common term used to describe non-immersive VR (Radianti et al., 2020).

- ❖ **Technical Requirements:** It navigates 3D graphics systems using conventional flat screens, keyboards, and a mouse (Parmaxi, 2023).
- ❖ **Educational Affordances:** The graphics workstation and the real world are still recognizable to users (Radianti et al., 2020). Desktop-based programs are frequently more accessible and simpler to use in conventional classroom environments, despite being less immersive (Parmaxi, 2023; Crogman et al., 2025).

Table 1.3 : Virtual Reality Types

Type	Description	Example Tools	Level of Immersion
Non-Immersive VR	Screen-based, no headset required	Desktop simulations, 360° videos on screen	Low

Semi-Immersive VR	Smartphone and basic headset	Google cardboard and 360° YouTube videos	Medium
Fully Immersive VR	High-end headset, full sensory engagement	Oculus Quest, HTC Vive	High

Source : Adapted from Radianti et al. (2020)

The virtuality continuum put forward by Milgram and Kishino (1994, as cited in Wang & Li, 2024) is used in research to distinguish between technologies that are included in the Extended Reality (XR) category (Wang & Li, 2024; Sala, 2021).

Virtual Reality (VR)

- ❖ **Degree of Immersion:** Offers total submersion in a digital world that is entirely synthetic (Sala, 2021).
- ❖ **Interaction with the Real Environment:** The actual world is hidden or ignored (Sala, 2021).
- ❖ **Typical Educational Uses:** Applied to high-risk training situations where complete presence is necessary, complex scientific structures, or historical site simulations (Crogman et al., 2025).

Augmented Reality (AR)

- ❖ **Degree of Immersion:** known as "half immersive" due to its ability to let users view both virtual and real-world aspects at the same time (Sala, 2021).

- ❖ **Interaction with the Real Environment:** augmented Reality overlays or superimposes digital content (sound, video, and graphics) over the real world. Instead of taking the place of the physical world, it enriches it (Sala, 2021; Crogman et al., 2025; Wang & Li, 2024).
- ❖ **Typical Educational Uses:** enables interactive learning by adding more information to real items or settings, including historical reconstructions at specific locations or 3D models superimposed on a textbook (Sala, 2021; Crogman et al., 2025).

Mixed Reality (MR)

- ❖ **Degree of Immersion:** Combines the powers of AR and VR to produce a smooth environment in which real and virtual objects coexist (Sala, 2021; Crogman et al., 2025).
- ❖ **Interaction with the Real Environment:** MR, in contrast to AR, enables real-time interaction between virtual and physical items by anchoring them to the real environment (Sala, 2021; Crogman et al., 2025). For instance, a virtual object can be controlled with organic hand motions or concealed beneath an actual chair (Sala, 2021; Crogman et al., 2025).
- ❖ **Typical Educational Uses:** Facilitates intricate hands-on training, such as medical students using virtual instruments to practice procedures on real mannequins or engineering students engaging with 3D machinery models while rooted in a physical lab (Crogman et al., 2025).

The different types of virtual reality are determined by the way in which the user engages with digital content as well as their sense of detachment from reality (Sala, 2021; Wang & Li, 2024). AR involves augmenting reality through the addition of information, while VR involves replacing reality. MR, on the other hand, is a combination of both AR and VR to enable

interaction between virtual and real objects (Sala, 2021; Crogman et al., 2025). These technologies fall somewhere between the purely virtual and the purely real (Sala, 2021).

Importance of this differentiation for research on language learning: Language learning studies should understand these differentiations, as the nature of the communicative context created for the learner will depend on the level of interaction and immersion (Parmaxi, 2023). Though the use of AR or even desktop-based VR may be more appropriate for enriching classroom materials and providing real-time vocabulary-focused feedback, immersive VR can provide a realistic experience of entering a different culture. All these types of VR environments provide a number of educational possibilities related to learning contexts (Parmaxi, 2023; Wang & Li, 2024; Radianti et al., 2020). The researchers can choose the most suitable digital environment for implementing specific language learning activities based on the technology requirements and affordances provided by each particular type (Parmaxi, 2023).

Table 1.4: VR, AR and MR Distinction

Technology	Full Name	Key Feature	Example
VR	Virtual Reality	Fully replaces real environment	Oculus, Google Cardboard
AR	Augmented Reality	Overlays digital on real world	Pokemon Go, Snapchat filter
MR	Mixed Reality	Blends real and Virtual interactively	Microsoft HoloLens

Source: Adapted from Milgram and Kishino (1994, as cited in Wang & Li, 2024).

I.4.2 Theoretical Foundations Supporting VR Use

The foundation of constructivist learning theory is the idea that learning is a process of creating knowledge rather than only absorbing it (Mayer, 2002). According to this theory, students are seen as active sense makers who construct mental models from the data they take in (Mayer, 2002). According to Piaget (1954, as cited in Kolb, 2014), learners integrate new experiences into existing cognitive schemas in a cycle of accommodation and assimilation that leads to mental development. This approach places a strong emphasis on learner-centeredness, moving the emphasis from the teacher's exterior stimuli to the student's interior cognitive processes (Richards, 2006).

These assumptions are theoretically supported by virtual reality (VR) environments, which serve as spaces for encouraging the active process of sense making (Mayer, 2002). Multimedia and virtual environments, in contrast to traditional delivery methods, enable students to participate in active cognitive processing, such as choosing relevant content and organizing it logically (Mayer, 2002). This is further supported by Vygotsky's observations on higher mental activity, which imply that learning is a socially mediated process in which people adapt thought patterns through interactions with their surroundings (Lantolf, 2000). As a result, VR helps students create mental models in which different components of a system interact in a morally sound way (Mayer, 2002).

According to experiential learning theory, learning is the process by which experience is transformed into knowledge (Sweller, 1988). Kolb (1984, as cited in Kolb, 2014) asserts that this viewpoint sets itself apart from behavioral or conventional cognitive theories by highlighting the crucial role that experience plays in the learning process. Concrete experience, reflective observation, abstract conceptualization, and active experimentation are the four stages that make up the theory's cycle (Kolb, 2014; Sweller, 1988). Throughout history, influential thinkers like Dewey (1938, as cited in Kolb, 2014) and Lewin have characterized

learning as a dialectic process in which concepts and experience are combined by action and reflection (Kolb, 2014).

Immersion and simulation play a crucial part in virtual environments in order to deliver the concrete experience that this theory demands (Mayer, 2002). VR enables learning by doing, in which the student participates both behaviorally and physically in tasks like navigating computer-based simulations or animated microworlds (Mayer, 2002; Richards, 2006). Through media rich environments that transcend the confines of the classroom, experiential language learning makes it possible to experience the context of language use (Parmaxi & Demetriou, 2020). Virtual reality (VR) enables an interactive view of the world that aids the ongoing process of learning through first hand experience by placing students in these significant, authentic scenarios (Parmaxi & Demetriou, 2020; Kolb, 2014).

According to sociocultural theory, which was heavily influenced by Vygotsky's research, language is the most important tool used to mediate human mental activity (Lantolf, 2000). The introduction of an auxiliary device into an activity to connect people to the world of objects or mental behaviour is a fundamental idea known as mediation (Lantolf, 2000). According to the theory, learning happens initially through social interaction and then internally through internalization. The Zone of Proximal Development (ZPD), where learning is co-constructed with scaffolding from an expert or more experienced peer, is frequently where this process occurs (Lantolf, 2000).

Through the creation of intentional situations for meaningful communication, virtual reality (VR) facilitates engagement and collaborative learning in EFL (Littlewood, 2007). These kinds of settings help students work together to negotiate understanding and create meaning (Richards, 2006). Virtual environments give learners the social context they need to appropriate new communicative resources because dialogic interactions distribute and construct conscious mental activity (Lantolf, 2000). VR supports the sociocultural idea that the classroom

is a community where students flourish through cooperation and sharing by facilitating peer contact and the co-construction of assistance (Ballinger & Sato, 2016; Richards, 2006).

The significance of attention and the limitations of human processing power are emphasized by cognitive perspectives on learning (Sweller, 1988). According to cognitive load theory, learners have a limited processing capacity, and sophisticated techniques like means-ends analysis can place a significant burden on learning new schemas (Sweller, 1988). The dual-channel assumption, which holds that people have distinct systems for processing verbal and visual information, is one way that Mayer (2001, as cited in Mayer, 2002) further explains this. Active processing, or choosing, arranging, and integrating information from several sources, is necessary for effective learning (Mayer, 2002).

The experience of immersion and presence in virtual learning is thought to have important cognitive and motivational consequences (Mayer, 2002). Virtual gaming settings with animated microworlds and interactive voice are frequently used to create presence (Mayer, 2002). Moreno and Mayer (2001, as cited in Mayer, 2002) claim that a learner's attempt to engage in deep cognitive processing, such as building and integrating verbal and visual mental models, might be influenced by a heightened sense of presence (Mayer, 2002). VR can lessen cognitive load and make it easier for learners to form the connections necessary for deep learning by creating multimedia messages that enable them to simultaneously store relevant verbal and visual content in working memory (Mayer, 2002).

By presenting virtual reality as a transformative instrument for meaningful communication and active learning, these well-established learning theories collectively support the educational relevance of VR in EFL. Through tangible, simulated experiences, virtual reality (VR) can transform students from passive consumers of knowledge into active producers of it, according to constructivism and experiential learning theory. Although cognitive and presence-based viewpoints offer a framework for controlling mental processes

and optimizing engagement through immersion, sociocultural theory highlights how these virtual spaces mediate social interaction and scaffolding. These theories collectively imply that by placing language use in rich, interactive, and cognitively stimulating environments, virtual reality (VR) offers a cogent basis for fostering communicative competence.

Table 1.5: Theoretical Framework Summary

Theory	Key Principle	Relevance to VR in EFL
Constructivist Theory	Learning through experience and reflection	VR enables active sense-making and cognitive processing
Sociocultural Theory	Learning through social interaction and scaffolding	VR enables peer and stimulated interaction
Experiential Learning	Learning through direct experience	VR immerses learners in stimulated real world tasks
Cognitive Load Theory	Managing mental effort in learning	VR reduces cognitive load by providing visual context

Source: Researcher (2026), based on reviewed literature

I.5 VR and EFL Speaking Skills

Empirical research has been conducted, which has demonstrated the actual capacity of virtual reality (VR) technology in developing speaking skills of EFL learners. Empirical studies undertaken within various EFL contexts have begun investigating the effect of the use of VR technology on aspects such as speaking fluency, pronunciation skills, interactional skills, and speaking anxiety. The present paper intends to review the empirical studies conducted on the

use of VR technology in developing EFL speaking skills, address the affective issues in using VR technology, and analyze the weaknesses of existing empirical studies.

I.5.1 Empirical Studies on VR and Speaking Performance

Recent research studies have concentrated more and more on applying VR as a learning tool for enhancing speaking skills in EFL. Such research usually deals with the use of VR technologies to create realistic environments that simulate real life situations and enable language practice (Yan et al, 2023; Pasaribu et al, 2024; Legault et al.,2019).

Fluency, Pronunciation, and Interaction: The data collected demonstrates the positive influence of VR enhanced instruction on such basic elements as fluency, pronunciation, and interaction. Thus, in a study carried out among young learners, Jumashova (2024) noted statistically significant progress in different areas of performance, namely, 46.4% improvement in fluency and 45.1% enhancement of pronunciation accuracy (Jumashova, 2024). Also, in their research study, Yan et al. (2024) demonstrated significant achievements in speaking skills, specifically, fluency, pronunciation, and grammatical accuracy. Interaction emerges as an important benefit in the context of VR learning. According to Kassim et al. (2019), there exists a concept called "immersion-Prompted communication" (IPC) which states that with its immersion characteristic, virtual reality provides opportunities for the initiators of oral interactions (Kassim et al, 2019). Moreover, studies conducted by Jumashova (2024) show that learners experience 43.3% improvement in their interactional skills since the learner should negotiate the conversation in real-time within the VR environment (Jumashova, 2024). Lastly, learners who undertake a task in VR can be shown to demonstrate a higher level of intonation and pronunciation rhythm when compared with baseline levels (Zheng et al., 2018, as cited in Pasaribu & Lestari, 2024).

Comparison with traditional or non-VR learning methods: Comparative studies frequently contrast VR-based learning approaches with traditional learning approaches as well as other digital methods when discussing this topic. Pasaribu et al. (2024) conducted a study involving 40 students who were learning English as a foreign language and divided them into two groups, where one group used VR and the other used more traditional methods. According to the findings, the first group showed 20% improvement in pronunciation and 18% improvement in fluency, whereas the second group managed only 12% and 10%, respectively (Pasaribu & Lestari, 2024).

Additionally, Legault et al. (2019) conducted research on comparing immersive virtual reality (IVR) and conventional word-word (WW) association learning. Their findings suggested that trial accuracy associated with IVR was much higher compared to those acquired with traditional techniques (Leghault et al, 2019). It appears that IVR could become especially important for struggling students, as it could offer assistance to those having difficulties memorizing information (Leghault et al, 2019). On comparing virtual reality to the use of smartphones, Kassim et al. (2019) reported that while the level of English speech used was not significantly different, virtual reality evoked a much greater feeling of presence and enjoyment; students felt that this form of interaction helped develop skills better than using smartphones (Kassim et al, 2019). Moreover, Yan et al. (2024) state that traditional learning materials cannot reflect real-life complexities and randomness as well as virtual reality does (Yan et al, 2024).

Although these empirical findings emphasize the efficiency of virtual reality (VR) in enhancing the skills and competences regarding oral communication, literature also points out that success achieved in this field is directly related to students' internal state. The immersion provided by virtual reality changes not only language production but also motivation levels and emotional state within the classroom environment.

Table 1.6: Summary of Key Previous Studies

Author(s) and Year	Participants	VR Tool Used	Key Findings	Key Findings
Jumashova (2024)	Young EFL learners	VR-enhanced teaching	Fluency, pronunciation, interaction	+46.4% fluency, +45.1% pronunciation, +43.3% interactional skills
Yan et al. (2024)	EFL learners	Computer-based VR	Fluency, pronunciation, grammar	Significant gains; VR replicates real-life complexity better than traditional materials
Kassim et al. (2019)	EFL learners	VR vs smartphone activities	Oral interaction, presence, enjoyment	VR induced immersion induced communication (IPC); greater presence and enjoyment
Pasaribu et al. (2024)	40 EFL learners; experimental vs control	VR vs repetition and role-play	Pronunciation, fluency	VR: +20% pronunciation, +18% fluency. Control: +12% and +10% only
Legault et al. (2019)	EFL learners incl. struggling students	IVR vs traditional WW	Vocabulary retention, accuracy	IVR significantly higher accuracy; especially beneficial for struggling students
Zheng et al. (2018)	EFL learners	VR task-based environment	Intonation, pronunciation rhythm	Improved intonation and rhythm compared to baseline

Source: Researcher, (2026), compiled from reviewed studies

I.5.2 VR and Affective Factors in Speaking

The incorporation of VR into EFL instruction is typically investigated from the angle of affective dimensions, whose impact on speaking is notable. Affect-related aspects such as

anxiety, communication willingness, and motivation operate as filters that could assist or interfere with the development of oral proficiency (Ebadi & Ebadijalal, 2022; Abhari, 2026; Huang, 2024).

The concept of virtual reality is referred to as a barrier or comfort zone in terms of reducing anxiety associated with foreign language learning (ALLE) in comparison with other methods of learning, such as face-to-face contact or video communication (Kaplan-Rakowski & Gruber, 2023). According to Kaplan-Rakowski & Gruber (2023), speaking practice in virtual reality resulted in lower scores on ALLE scale compared to learning in video conferencing applications such as Zoom (Kaplan-Rakowski & Gruber, 2023). The reduction is explained by the possibility of making mistakes anonymously through avatars without feeling ashamed since your face does not appear in front of the camera (Kaplan-Rakowski & Gruber, 2023).

In addition, the application of virtual reality helps reduce the physiological reactions of anxiety. Abhari (2025) states that despite the fact that short-term use of virtual reality cannot help get rid of anxiety, quantitative tendencies show that there are reductions in key parameters, including palpitations and tension while speaking (Abhari, 2026). Similar findings were reported by Huang (2024): speaking anxiety reduced considerably for university students who used virtual reality as an environment for practicing (Abhari, 2026; Huang, 2024). However, some learners may experience double anxiety when the technology is introduced, simultaneously worrying about their language skills and their ability to use the virtual reality equipment (Abhari, 2026; Huang, 2024).

Willingness to communicate refers to a readiness on the part of the learner to engage in communication at a certain point in time (Ebadi & Ebadijalal, 2022). In the case of virtual reality, such willingness is facilitated through the establishment of a calm environment, thereby encouraging the learner to start communicating (Ebadi & Ebadijalal, 2022). It was discovered that EFL learners who used virtual reality technologies such as Google Expeditions were much

more willing to communicate at the end of their presentation compared to those studying in a non-virtual learning context (Ebadi & Ebadijalal, 2022). Such a level of willingness can be attributed to the abundant details and credible information available through the software, which enhances one's self-confidence regarding his or her knowledge (Ebadi & Ebadijalal, 2022). Virtual reality technology provides an atmosphere of trust which, in turn, helps the learners overcome the fear of evaluation as the greatest barrier to participation in oral tasks (Ebadi & Ebadijalal, 2022; Abhari, 2026).

Both motivation and engagement are crucial to language acquisition through virtual reality. It is well known that VR technology can move students to the virtual world, for instance, museums or international cities, which provides an authentic experience (Ebadi & Ebadijalal, 2022). According to research conducted by Ebadi and Ebadijalal (2020), virtual reality enhances general awareness and knowledge and makes oral exercises entertaining and engaging (Ebadi & Ebadijalal, 2022).

According to engagement theory, learners should be fully engaged in the activities through interaction and meaningful tasks (Ebadi & Ebadijalal, 2022). This is possible because VR gives emotional encouragement and sensory realism, which creates a condition of optimal focus and creativity when producing oral language (Ebadi & Ebadijalal, 2022; Huang, 2024). In addition, Huang (2024) and Abhari (2025) both point out that virtual reality enables learner autonomy and engagement as learners become more motivated to learn when interacting with virtual objects and exploring real-world experiences (Abhari, 2025; Huang, 2024).

It is clear that the studies listed above emphasize the impact of VR on the affective dimensions related to oral EFL learning; however, there are differences in terms of the results yielded by each research study. This may be explained by some constraints inherent in the methodologies used, for instance, the short intervention period during which the experiments were carried out, and the small sample size can obscure the long-term effectiveness of this

technology. Therefore, it is necessary to examine the limitations of existing VR studies to understand the current gaps in the literature and the challenges associated with standardizing VR implementation in the classroom.

I.5.3 Limitations of Existing VR-Based Studies

Empirical studies that have been conducted in terms of incorporating virtual reality (VR) in EFL learning processes demonstrate several common constraints associated with financial, time, and situational considerations of such research.

First, a number of empirical studies involve the use of costly technologies that demand considerable investments. In particular, Kaplan-Rakowski and Gruber (2023) and Huang (2024) have used the HTC VIVE system, which refers to the immersive VR technology consisting of VR helmets and sensors as well as room-scale motion tracking (Kaplan-Rakowski & Gruber, 2023; Huang, 2024). The implementation of the system also requires specific infrastructure, including desktop computers, monitors, and special portable microphones (Huang, 2024). According to Kaplan-Rakowski and Gruber (2023), owing to its expense, such expensive equipment is not available to many educational establishments and students (Kaplan-Rakowski & Gruber, 2023). Moreover, Huang (2024) claims that professional hardware and software purchases are one of the main challenges of adopting VR in education (Huang, 2024).

In the contemporary literature, it appears that there is a short span of interventions in VR, limiting the scope of findings. Huang (2024) undertook an intervention lasting up to four weeks, where the sessions were held for two hours per week (Huang, 2024). It is noteworthy that even though Ebadi and Ebadijalal (2020) and Kaplan-Rakowski and Gruber (2023) have extended the research period up to three months, it can still be said that the interventions are short as far as language learning is concerned (Ebadi & Ebadijalal, 2020; Kaplan-Rakowski & Gruber, 2023). Huang (2024) further states that these short interventions will not help in

changing the students' preference for particular learning devices or give them enough time to adapt to innovative technology-based teaching processes (Huang, 2024). Moreover, no longitudinal data is available on the long-term effects of virtual reality on language acquisition and the attitude of students toward VR-based teaching (Huang, 2024).

Current research has been mainly done under academic conditions characterized by good resources. The study by Kaplan-Rakowski and Gruber (2023), for example, was conducted in a specially equipped virtual reality lab located in a university of applied sciences in Germany (Kaplan-Rakowski & Gruber, 2023). Likewise, the intervention by Huang (2024) took place in a medical university in Taiwan. It was conducted through a special digital self-learning center that had a virtual reality capacity (Huang, 2024). Such centers provide more staff assistance and technical facilities than can be offered in a traditional EFL classroom. In this regard, Huang (2024) stresses that much political support and funding for virtual reality technology will be needed for future implementation of this technology. Ebadi and Ebadijalal (2020) also conducted their study at a university language center, targeting upper-intermediate learners with access to smart mobile technologies (Ebadi & Ebadijalal, 2020).

The reliance on expensive, immersive equipment, along with the concentration of research in well-funded elite institutions, reveals a gap in the literature regarding the adaptability of virtual reality to diverse educational contexts. These constraints underscore the need to explore more accessible alternatives capable of offering immersive experiences without the prohibitive costs of laboratory equipment.

I.6 Low Cost Virtual Reality in Educational Contexts

Although the findings obtained from the studies analyzed above show the benefits that can be expected from the use of VR for EFL speaking training, a great number of the research

mentioned are characterized by employing highly expensive commercially-produced VR systems, which cannot be afforded by the vast majority of EFL speakers in different parts of the world. The use of inexpensive VR devices, which is feasible due to the wide availability of smartphones and open websites like YouTube, presents another solution to the problem under analysis. This part of the paper is aimed at defining the term of low-cost VR, discussing its potential role in teaching EFL speaking, and outlining the main obstacles to be addressed.

I.6.1 Concept of Low-Cost Virtual Reality

The integration of hardware and software systems intended to produce the comprehensive sensory illusion of being present in a distinct environment is known as virtual reality (VR) (Radianti et al., 2020). A crucial contrast is made between low-cost virtual reality and high-end immersive VR in the educational context (Radianti et al., 2020). High-end systems that offer a high level of immersion, like the Oculus Rift or HTC Vive, usually need to be connected to strong computer hardware and employ specialized controllers for interaction (Radianti et al., 2020). Low-cost virtual reality, on the other hand, makes use of accessible and affordable head-mounted displays (HMDs), which frequently rely on already-existing consumer technology to provide immersive experiences (Radianti et al., 2020; Parmaxi, 2023).

The most popular low-cost VR solutions are those that run on smartphones, such as Samsung Gear VR and Google Cardboard (Radianti et al., 2020). These systems work by inserting a mobile smartphone into a basic head-mounted display (HMD) to serve as the main display and processing unit (Radianti et al., 2020). Low-cost HMDs usually use gaze control or a magnetic switch to enable user interaction within the virtual environment, whereas high-end equipment uses specialized controllers (Radianti et al., 2020). Comparisons of the literature have shown that although expensive systems offer better immersion, inexpensive smartphone headsets can nevertheless offer a useful immersive learning experience (Radianti et al., 2020).

Since these technologies allow almost everyone with a smartphone to experience a realistic virtual environment, their main benefits are their scalability and low cost (Radianti et al., 2020).

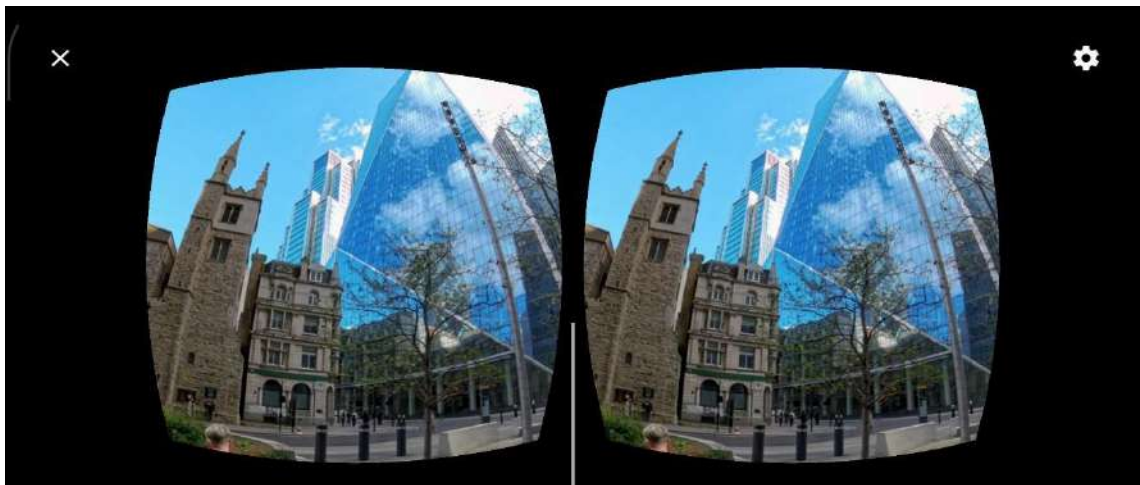
Figure 1.1: Google Cardboard viewer



Source: Google for Developers (2024). Google Cardboard viewer [Photograph].

Retrieved from https://developers.google.com/static/vr/images/Cardboard_viewer_cropped.png

The use of 360-degree videos, which are also called spherical video-based virtual reality (SVVR) in scientific literature, falls under low-cost VR as well (Parmaxi, 2023). SVVR is based on the application of 360-degree images or films, which can be viewed using a head-mounted display, in order to create a simulated virtual environment (Parmaxi, 2023). The use of SVVR is particularly beneficial for EFL instruction; specifically, as found by Chien et al. (2020), the combination of SVVR and peer assessment increases motivation and performance in speaking English (Parmaxi, 2023). Similarly, it was shown that immersing students in an SVVR environment facilitates the development of higher-order thinking skills (Parmaxi, 2023).

Figure 1.2: 360° VR YouTube Vidéo

Source: The 360 Guy (2025). Insta360 X4 | 8K VR Video Footage [Screenshot from 360° video]. YouTube.

<https://youtu.be/b5Z7uxJ53dk>

Learning environments can be provided by teachers in different open-source or free environments in order to make learning more accessible. Second Life and Open Simulator are often mentioned as examples that allow the creation of unique virtual environments for specific courses (Parmaxi, 2023). Communication in a shared virtual environment, assignment giving, and collaboration in documents are some activities that can take place in collaborative environments such as MaxWhere (Radianti et al., 2020). The scalability of VR technology in multiple learning settings is also promoted by browser-based solutions, such as WebVR, created based on HTML5, allowing interactivity via HMD devices (Radianti et al., 2020).

The obstacles that EFL learning may face in developing countries or other resource-constrained contexts can be overcome through inexpensive virtual reality. Indeed, the application of immersive technology in education was always hindered by the expensive price tag on such equipment and the necessity for advanced technical knowledge (Parmaxi, 2023). Through affordable alternatives such as Google Cardboard and SVVR, it is possible to provide learners with the realistic and context-related practice without paying for the costs associated

with immersive learning (Parmaxi et al., 2020; Parmaxi, 2023). This benefit becomes especially useful for educators who lack resources to receive adequate training in the usage of such devices, as most of the alternatives are mobile-based and easy to use, which makes the incorporation in the current curriculum easier. Thus, moving towards affordability and full immersion creates a base for further exploration of VR opportunities (Parmaxi et al., 2020).

I.6.2 Pedagogical Potential of Low-Cost VR for EFL

A greater variety of learners can gain access to the immersive VR environments since the integration of affordable VR technology, such as Samsung Gear VR and Google Cardboard (Radianti et al., 2020; Parmaxi, 2023). Inexpensive HMDs utilize ordinary mobile devices to offer high immersion, unlike expensive VR systems that require expensive equipment (Radianti et al., 2020). As a result, educators will be able to offer students immersive experiences such as virtual field trips and being immersed in complex anatomical structures that would have been difficult or expensive to achieve otherwise (Parmaxi, 2023). Moreover, there are currently available VR systems such as Google Expeditions that offer an assortment of immersive activities that are easily implementable in different educational settings (Parmaxi, 2023).

Low-cost virtual reality (VR) systems can be used as an alternative to expensive solutions such as HTC Vive and Oculus Rift in situations where there is limited availability of financial means and technology (Radianti et al., 2020; Parmaxi, 2023). It is important to note that, according to research, teachers tend to be hesitant about using VR technologies due to the cost involved and the level of technical knowledge required (Parmaxi, 2023). The use of affordable HMDs that offer simple methods of interacting through gaze control or magnetic switches helps to overcome these challenges (Radianti et al., 2020). For instance, Spherical Video-based Virtual Reality (SVVR), which makes use of 360-degree images and videos, has been shown to be a cost effective yet efficient way to depict virtual worlds (Parmaxi, 2023).

These technologies promote active involvement over passive learning by enabling students in resource constrained contexts to engage with multisensory digital ecosystems (Parmaxi, 2023).

Because low-cost virtual reality (VR) produces authentic, virtual communication situations that bridge the gap between classroom theory and real-world practice, it is especially well suited for task-based and communicative language instruction (CLT) (Parmaxi, 2023; Huang, 2024). Specific apps, such as Virtual Speech, have been successfully deployed to scaffold communication skills in English for Foreign Language (EFL) learners, including job interview preparation and public speaking (Huang, 2024). Important pedagogical conclusions include:

- ❖ **Anxiety Reduction:** Several researchers have found that VR therapy helps reduce anxiety among students who speak English (Huang, 2024). Specifically, practicing among machines using VR technology can help students build self-confidence prior to their engagement with individuals in the physical environment due to lack of fear of being evaluated by their peers (Huang, 2024).
- ❖ **Enhanced Performance:** It has been discovered that using SVVR systems in conjunction with peer evaluation improves motivation, critical thinking abilities, and English-speaking proficiency (Parmaxi, 2023).
- ❖ **Contextualized Learning:** By offering relevant and genuine communication activities, such problem solving in a target language environment, virtual reality (VR) aids in the development of contextualized communicative competence (Parmaxi, 2023).
- ❖ **Immediate Scaffolding:** There are many VR platforms that offer instant feedback in the form of scores, best points, or haptic feedback, thus

allowing students to monitor and measure their own speaking skills (Radianti et al., 2020; Huang, 2024).

In conclusion, inexpensive virtual reality (VR) holds great pedagogical promise for teaching English as a foreign language (EFL) since it makes immersive, real-world learning experiences more accessible to everybody, lowering anxiety levels and encouraging higher-order thinking (Radianti et al., 2020; Huang, 2024; Parmaxi, 2023). Affordable virtual reality (VR) solutions can revolutionize the teaching process and encourage notable language improvements across a range of educational levels by coordinating technical affordances with communicative task design (Parmaxi, 2023). The shift to immersive environments presents substantial obstacles in terms of technological stability, pedagogical foundation, and the possibility of dual anxiety combining both language and technology, the successful implementations of these technologies are not without its difficulty (Huang, 2024; Parmaxi, 2023).

I.6.3 Challenges of Low-Cost VR

When compared to high-end systems, low-cost or cheap head-mounted displays (HMDs), like the Samsung Gear VR and Google Cardboard, have substantial hardware limitations (Radianti et al., 2020). These low-cost gadgets frequently rely on smartphones to create the virtual world, which may result in restrictions on processing speed and screen quality (Radianti et al., 2020). Technically, the level of immersion is often dictated by the frame rate and display resolution; low-budget systems sometimes have trouble with these aspects, which may diminish the user's awareness and sense of presence within the virtual work (Radianti et al., 2020). Additionally, low-cost HMDs usually rely on gaze control or basic magnetic switches rather than the specialized controls seen in high-end systems like the HTC Vive or Oculus Rift, which limits the user's ability to interact naturally with virtual things (Radianti et

al., 2020). Beyond hardware, software instability is still a recurring problem in educational VR applications; research has shown that there is a dearth of instructional content and unstable technological issues (Radianti et al., 2020; Parmaxi, 2023).

The psychological state of immersion, the sense of being physically present in a non-physical world, is strongly impacted by the technological features of inexpensive VR systems (Radianti et al., 2020). While desktop and mobile VR are frequently classified as non-immersive or semi-immersive because the user maintains awareness of the real-world environment, high-end systems are deemed fully immersive because they successfully eliminate physical reality through superior graphics and a greater variety of sensory modalities (Radianti et al., 2020; Parmaxi, 2023). Poor graphical quality can make this decreased immersion even worse by reducing the sensation of presence (Radianti et al., 2020). These technical issues can lead to dual anxiety in the context of teaching English as a foreign language (EFL), where students experience stress related to both their language skills and their ability to use new, sometimes difficult technologies (Huang, 2024). Students may worry that technical difficulties may have a detrimental impact on their academic performance, which can inhibit their progress in learning (Huang, 2024).

The present misalignment between technology and learning theories is a major obstacle to VR implementation (Radianti et al., 2020; Parmaxi, 2023). Instead of being firmly based in well-established pedagogical frameworks like constructivism or experiential learning, many VR applications are built with an emphasis on technical characteristics. (Radianti et al., 2020). Particularly in language acquisition, researchers have observed a propensity for mechanical exercises like fill-in-the-gaps that do not take advantage of VR's special affordances for authentic language production (Parmaxi, 2023). A real life task design that inspires students through relevant communication settings is necessary for an effective VR integration (Parmaxi, 2023). Additionally, teachers must apply sophisticated scaffolding techniques to lead students

through the virtual experience because VR environments sometimes lack standardized answers or outcome orientations (Huang, 2024). To guarantee that the VR activities support real learning outcomes rather than being merely entertaining, this procedure is usually time-consuming and calls for a high level of technical and pedagogical cooperation (Radianti et al., 2020; Parmaxi, 2023).

In conclusion, hardware limitations, a reduced sense of immersion, and the complex need for pedagogically sound activity design are the main obstacles to the adoption of affordable VR in EFL. These psychological and technological obstacles imply that implementing technology in the classroom requires substantial support. Intentional, teacher-designed VR exercises that give students the required scaffolding and organization are obviously needed to lessen these difficulties.

I.7 Teacher Designed VR Tasks in Language Learning

In addition to being contingent upon the technology utilized in an enhancement strategy, the effectiveness of learning using technologies is highly contingent upon how the learning tasks themselves are structured. Specifically, the quality and intentions with which learning tasks are created have an enormous impact on the success of using technology in education. Regarding VR-enhanced language training, then, speaking task design is just as crucial as the selection of VR technology itself. Thus, this chapter will discuss the Task-Based Language Teaching methodology underlying the creation of speaking tasks in the present study, the teacher's role in creating language tasks in VR, and empirical research findings in this regard.

I.7.1 Task-Based Language Teaching (TBLT) Framework

Using tasks as the primary unit of instructional design, implementation, and assessment is known as task-based language teaching (TBLT) (Bui & Skehan, 2018; Long, 2015). TBLT is an analytical approach that stresses using a learner's innate skills for accidental language acquisition through the execution of goal-oriented tasks, in contrast to standard synthetic techniques that provide a planned linguistic curriculum (Long, 2015; Ellis, 2017). Giving students functional language skills that meet their real-world communicative demands is the main goal of TBLT in English as a Foreign Language (EFL) instruction (Long, 2015). Integrating implicit and explicit learning, emphasizing meaning over form, and requiring that exercises produce a non-linguistic consequence are important tenets (Long, 2015; Ellis, 2017).

Tasks have a crucial part in the development of fluency, which is concerned with the ease and fluidity of speech (Bui & Skehan, 2018). The tripartite lens of complexity, accuracy, and fluency (CAF) is frequently used to conceptualize performance within the TBLT paradigm (Bui & Skehan, 2018). When communication tasks offer a clear macrostructure, such as a familiar script or a predictable schedule, the speaker's Conceptualizer is less under cognitive pressure, which supports fluency (Tavakoli & Skehan, 2005). Because they can devote more attentional resources to the Formulator, learners are able to produce speech more automatically and quickly as a result of this reduction in processing load (Tavakoli & Skehan, 2005). Additionally, interactive exercises encourage interaction that enhances the development of utterance fluency by pushing learners to build upon the language of their interlocutors (Bui & Skehan, 2018).

Virtual simulations and other mediated language learning contexts are especially pertinent to the theoretical foundations of TBLT. TBLT is based on the cognitive-interactionist theory of instructional second language acquisition (ISLA), which holds that learning by doing

facilitates language acquisition as a social and cognitive process (Long, 2015). According to this theory, which has its roots in education integral, mediated tasks can mimic real world activities and activate the same learning processes that are employed in naturalistic contexts (Long, 2015). Furthermore, according to Robinson's (2011) Cognition Hypothesis, tasks can be created to push learners toward more intricate and precise language use by adjusting resource directing factors like causal demands or spatial reasoning (Bui & Skehan, 2018; Tavakoli & Skehan, 2005). Because it acknowledges that task conditions and qualities directly affect the type of performance evoked, TBLT provides a psycholinguistically realistic framework for mediated teaching (Bui & Skehan, 2018; Tavakoli & Skehan, 2005).

TBLT offers the parameters required to identify target activities that may be successfully recreated in simulated settings by prioritizing the learner's communication goals through a task-based needs analysis (Long, 2015). The paradigm emphasizes the need for principled task design since a variety of factors, such as task complexity and interactional conditions, influence task performance (Tavakoli & Skehan, 2005).

I.7.2 Teacher Role in Designing VR Tasks

The role of the teacher in technology-mediated instruction has changed from that of a traditional knowledge transmitter to that of a key designer and mediator of intricate digital learning environments (Derewianka, 2014, as quoted in Tomlinson, 2023; Huang, 2024). Teachers must navigate a "Bermuda triangle" of classroom pedagogy, materials production, and computer-assisted language learning (CALL) while creating Virtual Reality (VR) assignments in order to support the social and cognitive processes required for second language acquisition (Chapelle, 2003).

Making strategic decisions about the tasks, material, and VR tools is the teacher's main pedagogical responsibility. Teachers must differentiate between pedagogic tasks, which are

classroom-based iterations intended to develop competency, and target tasks, which are real world tasks students must do, according to task based language teaching (TBLT) frameworks (Long, 2015). Making decisions is frequently a dialectical process in which educators match resources to the particular environment and learner requirements to find a good fit (Rubdy, 2014, as referenced in Tomlinson, 2023).

Teachers must consider the software's interaction and potential for language acquisition while using VR tools (Chapelle, 2003). For instance, resources such as virtual speech enable educators to include immersive situations like elevator pitches or job interviews, offering a safe ground for discussion and negotiation (Rubdy, 2014, as quoted in Tomlinson, 2023; Huang, 2024). With regard to evaluation, the role of the teacher here is to populate these digital environments with relevant content and experiences, as opposed to being an interpreter of pre-determined texts (Hutchinson & Torres, 1994; Edge & Wharton, 1998, as cited in Tomlinson, 2023).

Teachers must make sure that VR-based tasks closely match learning objectives, paying special attention to the aspects of CAF (Complexity, Accuracy, and Fluency) (Bui & Skehan, 2018). Providing the cultural contexts that may be absent from the virtual program, the teacher acts as an intercultural mediator in designing VR tasks (Pulverness, 2014, as cited in Tomlinson, 2023). Teachers develop activities that help improve input for fluent speech through salience, repetition, and change (Chapelle, 2003).

Control of the task cycle, which is categorized into pre-, during-, and post-task stages, is one important aspect of educational function (Willis & Willis, 2007, as cited in Bui & Skehan, 2018). Teachers can apply a "Plan-Do-Check-Act" cycle to bridge the gap between virtual scenarios and communication practices by facilitating interactive discussions after a VR session (Huang, 2024). This will ensure that the virtual environment generates communicative skills rather than a reduced and incoherent register (Piper, 1986, as cited in Chapelle, 2003).

Adaptation, according to Madsen and Bowen (1978) and Islam and Mares (2014) as cited in Tomlinson (2023), is an important element of the teacher's role, and it requires harmony among the material, methods used, and student characteristics. For learners at various language proficiency levels, the teacher adapts virtual reality activities by including, excluding, simplifying, or reorganizing certain activities (Islam & Mares, 2014 as cited in Tomlinson, 2023). In most cases, adaptation involves scaffolding within the virtual reality settings, where instructors offer temporary assistance to learners within their zone of proximal development (ZPD) (Huang, 2024).

However, before demanding rapid oral output, teachers might focus on artifact scaffolding for students who have lower proficiency levels, including artificial intelligence assistance for grammar or pronunciation purposes to foster confidence (Huang, 2024). Furthermore, teachers must also adapt to the environment through controlling both language and technology aspects (Huang, 2024). In order to help students use the VR equipment and software efficiently, this requires creating user-friendly orientation and procedural scaffolding (Hannafin et al., 2013, as cited in Huang, 2024).

In conclusion, the involvement of the teacher is crucial, considering that the personal performance of the service provider is what dictates whether a virtual reality activity will be successfully delivered (Lyons, 2014, as cited in Tomlinson, 2023). The teacher's capacity to conduct needs analyses, meaning negotiations, and offer differentiated support, which transforms a digital task into an engaging language learning experience, despite the highly immersive nature of virtual reality (VR) (Long, 2015; Huang, 2024).

I.7.3 Empirical Studies on Teacher-Designed Digital Tasks

The shift from traditional face-to-face practices to student-centered and blended methods as the basis of EFL teaching was brought about by the integration of technology (Isa-

Montes et al., 2022). With respect to this trend, technology-mediated tasks, which are typically based on TBLT, play an important role as tools to encourage interaction (Bear et al., 2024; Nurfadhilah et al., 2023). This section provides an empirical analysis of such technologies, their execution, outcomes, and design.

Research reveals a clear conflict between commercialized products and digital activities created by teachers. The benefit of teacher-designed tasks is their high context-specificity, which enables them to be aligned with both the real demands of a particular student population and local state curricula (Bear et al., 2024). To ensure that the materials were at a suitable A2 competency level, for instance, teachers were able to modify exercises based on input from German secondary students thanks to the conversational agent Aisla's iterative design (Bear et al., 2024). On the other hand, commercial products frequently offer more reliable technical infrastructures, including enhanced AI capabilities or more precise Automatic Speech Recognition (ASR) (Bear et al., 2024). However, trivial or naïve subjects that lack the cognitive challenge of teacher-produced materials are frequently included in commercial textbooks (Stockwell, 2013). The possibility of technical instability is a major drawback of teacher-designed tools. For example, many teacher-led initiatives struggle with ASR accuracy in noisy classroom settings, which can exacerbate student displeasure (Bear et al., 2024).

Learner behaviors and results are changed when tasks are converted from paper-based to digital formats.

- ❖ **Interaction and Fluency:** Communication on digital media platforms tends to be more passionate. The students who were provided with digital devices communicated more often and had more exchanges while participating in an experiment between digital communication and paper communication involving the same task (Isla-Montes et al., 2022). The

users of digital devices did not always manage to achieve their work goals (for instance, planning meetings) better than the paper tool users, confirming that more is not always better in terms of effective communication (Isla-Montes et al., 2022).

- ❖ **Linguistic Accuracy vs. Complexity:** Research suggests that digital communication platforms may lead to less reflective communication (Isla-Montes et al., 2022). Since there was an opportunity for greater focus on form when using paper, students who used digital chat functions made more errors in their writing and used fewer complex grammatical forms (Isla-Montes et al., 2022).
- ❖ **Motivation and Autonomy:** As mentioned under the “novelty effects” phenomenon (Bear et al., 2024; Nurfadhilah et al., 2023), digital activities are known to encourage good attitudes and motivate participants. The prediction of academic success strongly relies on engagement, which is enhanced by the application of digital technologies and usually helps satisfy basic psychological needs such as that for competence due to instant feedback and that for autonomy through self-paced learning (Shao et al., 2025). Self-consciousness among peers explains why students prefer typing to voice recording (Bear et al., 2024).

This field's empirical research employs a variety of approaches, from large quantitative structural equation modeling (N=931) evaluating the mediating role of learning engagement in academic performance to small scale qualitative narrative inquiries (N=5) concentrating on student experiences (Nurfadhilah et al., 2023; Shao et al., 2025). The majority of studies are brief, with single interventions typically lasting 20 to 76 minutes (Isla-Montes et al., 2022; Bear et al., 2024). In order to improve digital tools, many researchers use Action Research

approaches, which emphasize repeated cycles of planning, intervening, and reflecting (Isla-Montes et al., 2022). The participant characteristics range from undergraduate university students (Isla-Montes et al., 2022) to young teenagers in secondary schools (Bear et al., 2024; Nurfadhilah et al., 2023).

The necessity of authenticity in digital task design has been emphasized repeatedly in the literature; in order to maintain students' engagement, assignments must be seen as pertinent to their real world objectives (Chapelle, 2005). Additionally, it is well acknowledged that digital technology directly improves academic performance in English (Shao et al., 2025). However, there are important inconsistencies when it comes to skill development. While some research indicates that technology-mediated TBLT enhances speaking skills and vocabulary growth (Nurfadhilah et al., 2023), other studies suggest that digital tools may lead to poorer linguistic precision and word recall when compared to traditional handwriting (Isla-Montes et al., 2022).

These empirical results offer important new information about Multi User Virtual Environments (MUVEs) and Virtual Reality (VR). The speaking reluctance noted in classroom studies may be addressed by VR interventions; the use of avatars offers a level of anonymity that may lessen anxiety related to foreign languages and boost engagement (Stockwelle, 2013; Chapelle, 2005). VR speaking tasks must include context embedding (such as gestures and visual clues) while retaining a high cognitive demand to go beyond undemanding social discussion in order to effectively manage cognitive load (Chapelle, 2005).

Although there are still a lot of unanswered questions, recent research shows that teacher-designed digital projects have the potential to improve student engagement. Longitudinal studies that evaluate the long-term retention of linguistic qualities learned through digital interventions are desperately needed (Bear et al., 2024; Isla-Montes et al., 2022). Additionally, although the effects of technology on motivation are widely known, a thorough

examination of how these digital dynamics function in various geographical contexts is lacking in the literature.

I.8 EFL Instruction in Algerian Higher Education

The wider academic body of work on virtual reality and technology-mediated language learning has emerged mainly from the resources available in relatively rich educational environments in East Asia, Europe, or North America. For a complete understanding of the present study and to situate the research questions, there is a need to discuss the specific setting of EFL teaching and learning in Algerian universities. This section gives an insight into EFL education in Algeria, especially in relation to the position of speaking skills and the use of technology in the current educational context. Finally, the research gaps within the Algerian setting, which the present study aims at addressing, will be identified.

I.8.1 Overview of the Algerian EFL Context

English as a Foreign Language (EFL) in Algerian universities is presently going through major changes to better meet socioeconomic demands and international academic requirements (Haddar et al., 2025). In the past, teaching English was mostly textbook and grammar-based, sometimes prioritizing memorization over communication skills (Haddar et al., 2025). However, recent changes, such as the implementation of the License-Master-Doctorate (LMD) system, aim to improve tertiary education quality and modernize curricula (Haddar et al., 2025). Analyses of university speaking course syllabi show a discrepancy: strategy development is often listed as a key objective, but there is frequently a lack of explicit pedagogical work or assessment criteria dedicated to individual speaking strategies, despite the curriculum's increasing emphasis on developing communicative strategies to foster fluency (Missoum, 2024). Accordingly, conventional classroom methods can still find it difficult to transcend

conventional language functions and achieve genuine, unplanned communication (Missoum, 2024).

Since speaking is thought to be the most fulfilling yet difficult part of learning a language, the state of speaking abilities at Algerian institutions continues to be a major source of concern (Missoum, 2024). Speaking has frequently been overlooked in favor of written language, even though it is acknowledged as a critical ability for success in both the classroom and the workplace (Bougandoura, 2021). Language barriers resulting from the complex sociolinguistic environment in which Standard Arabic, regional dialects, and French coexist are among the many challenges faced by Algerian students (Yahia, 2024). Phonological interference, grammatical mistakes such as beginning sentences with verbs, and a dependence on direct translation from the first language (L1) are among the observed learner challenges (Yahia, 2024). Additionally, students' motivation to speak in English is severely hampered by psychological issues like shyness, nervousness, and a fear of receiving a poor grade (Yahia, 2024; Haddar et al., 2025).

Effective EFL instruction is further complicated by institutional and contextual limitations. Large class sizes, which restrict opportunities for individual oral practice and student-teacher interaction, are a common problem at Algerian colleges (Bougandoura, 2021). Time restrictions frequently remain a barrier, despite the fact that dividing classrooms into smaller groups has been suggested as a remedial technique (Bougandoura, 2021). Additionally, teacher preparation is often cited as a significant barrier; many teachers are not adequately trained in contemporary educational approaches and technological integration (Bougandoura, 2021; Benraghda et al., 2024). Because Arabic and French continue to be the most used languages of social and formal communication in Algeria, contextual limitations also include a lack of opportunities to practice English outside of the classroom (Yahia, 2024). English has historically only been considered a second foreign language due to policy constraints and a

historical emphasis on French, although this is changing as a result of recent government initiatives to give English priority in elementary and higher education (Haddar et al., 2025).

In conclusion, a misalignment between curriculum objectives and real classroom practice, exacerbated by linguistic interference and institutional barriers like crowded classrooms and inadequate teacher professional development, characterizes the substantial gaps in Algerian EFL speaking instruction (Missoum, 2024; Bougandoura, 2012). To overcome their lack of oral fluency, students indicate a great desire for more specialized courses and more exposure to the target language (Haddar et al., 2025). A diversified strategy is needed to meet these demands, one that incorporates the strategic use of digital tools and the updating of instructional materials (Yahia, 2024; Benraghda et al., 2024).

I.8.2 Technology Use in the Algerian Higher Education

The COVID-19 pandemic, which required a change from traditional face-to-face instruction to e-learning models, has significantly accelerated the integration of information and communication technologies (ICT) in Algerian higher education (Hadj Mohamed, 2024; Si-Muhammed, 2025). A complex interaction of technological, institutional, and socioeconomic factors continues to shape the actual use and availability of these tools, despite the Algerian Ministry of Higher Education and Scientific Research's modernization initiatives, most notably the 2020 mandate for the implementation of the Moodle Learning Management System (LMS) across all universities (Bouallaga, 2025; Si-Muhammed, 2025).

Currently, Algerian universities' digital environments are defined by a "mobile-first" mindset. With 97.8% of pupils owning smartphones, mobile devices are the main means of obtaining educational content (Si-Muhammed, 2025). On the other hand, access to more durable hardware, including tablets (18.7%) and laptops (46.2%), is significantly reduced (Si-Muhammed, 2025). Informal technologies are frequently used in addition to institutional

platforms like Moodle and the PROGRES information system, which are formally required for administrative and pedagogical management (Hadj Mohamed, 2024; Bouallaga, 2025). To stay in touch with students instantly and get around the perceived unreliability of official platforms, teachers usually turn to social networking sites and messaging apps like Facebook, WhatsApp, and Telegram, as well as video conferencing tools like Zoom and Google Meet (Bouallaga, 2025; Benabbes & Araiche, 2024). Additionally, more specialized facilities like language labs and interactive whiteboards are frequently reported as either missing or underutilized due to pedagogical and technical hurdles, despite the prevalence of traditional instruments like projectors (Zourez, 2022).

Despite continuous efforts to integrate technology at the policy level, several factors hinder its incorporation. As the availability of broadband is only 15%, the major barrier to integrating technology into classrooms remains infrastructure (Si-Muhammed, 2025). Thus, almost 60% of students rely on expensive mobile data, which often proves to be unreliable and limits students' ability to access high-quality audio and video streams (Si-Muhammed, 2025; Benabbes & Araiche, 2024). Moreover, this digital divide becomes evident in contrast with connectivity issues in rural regions and well-equipped urban regions like the University of Batna-2 (Bouallaga, 2025; Si-Muhammed, 2025).

Beyond technology, the problem with teacher training and digital literacy persists (Bouallaga, 2025; Si-Muhammed, 2025). Most teachers admitted that they acquired the skills necessary to use digital tools not as a result of institutional assistance but due to self-study and trial-and-error approaches (Bouallaga, 2025; Si-Muhammed, 2025; Benabbes & Araiche, 2024). Additionally, there are sociocultural challenges that hamper the shift into a digital academic environment since people prefer in-person learning and have doubts about the effectiveness of online assessment (Bouallaga, 2025; Si-Muhammed, 2025; Benabbes & Araiche, 2024).

These limitations have an immediate effect on planning and conducting speaking tasks in English as a Foreign Language (EFL) courses. The current emphasis on the prevalence of written content, combined with the inability to integrate various multimedia elements such as videos or podcasts, causes a passive learning experience, despite the fact that technology can help shy learners join in and reduce the affective filter (Bouallaga, 2025; Si-Muhammed, 2025). Synchronous speaking practice, an essential element when it comes to achieving fluency, is very difficult to establish, considering that disconnections caused by the unreliable nature of online communication are unpredictable (Bouallaga, 2025; Benabbes & Araiche, 2024). Besides, there are rarely systematic speaking activities, mostly restricted to basic resource exchange rather than interactive speaking due to the absence of special models for teaching and learning using technology (Zourez, 2022).

In conclusion, Algeria's transition to digitalization opens up new opportunities to increase learners' autonomy and present easier access to resources, although this initiative remains limited by many pedagogical and infrastructural gaps (Bouallaga, 2025; Si-Muhammed, 2025). In contrast to the highly interactive environments required for acquiring a high-level skill set in any language, the focus in modern strategies is mostly concentrated on transferring static information. Most importantly, there is a significant research gap regarding the application of VR in relation to enhancing students' abilities to speak fluently. Whether immersive technology can contribute to developing oral skills in Algerian EFL learners remains unclear due to the fact that most scholarly attention has been paid to the functionality of LMS systems such as Moodle.

1.8.3 Identified Research Gaps in the Algerian Context

While there is evidence that indicates an increase in virtual reality-assisted language learning (VRALL) globally, especially since the pandemic period, the critical assessment of

EFL teaching in Algeria shows that there are several pedagogical and empirical gaps (Hua & Wang, 2023). Although the Algerian authorities have stated English language teaching improvement is one of the priorities in the country in order to foster scientific and economic development, few intervention studies involving virtual reality have been conducted in the local context (Mehdaoui & Benabed, 2023). Most existing works in Algeria concentrate either on the macroeconomic factors of educational policies or the microeconomic factors of classroom management in traditional settings, leaving the transformative potential of immersive technologies largely unexplored (Mehdaoui & Benabed, 2023). The use of information and communication technologies (ICTs) has not played an important role in Algerian universities, and traditional teaching methods continue to dominate Algerian classrooms (Baghdadi, 2024). This lack of empirical data on virtual reality interventions in Algeria justifies the present study's attempt to introduce and evaluate immersive technology within a local higher education context.

Moreover, oral fluency is not frequently explored as an independent research variable in the Algerian academic environment when it comes to foreign language learning. According to international literature, although virtual reality is perceived positively for lowering anxiety and increasing motivation, its efficiency as a tool in oral fluency enhancement is doubtful and underexplored (Yudintseva, 2023). Within the framework of the Algerian academic context, previous studies have identified the gap between the country's strategic objectives and reality when it came to exam-oriented practices, neglecting genuine communication in favor of memorization of knowledge (Mehdaoui & Benabed, 2023). Many students exhibit gaps in communicative skills, often fearing making mistakes due to a lack of authentic interaction (Mehdaoui & Benabed, 2023). By specifically targeting oral fluency through virtual reality, this study fills a significant gap in current local research, which tends to view language achievement as a score-based measure rather than a performative skill (Mehdaoui & Benabed, 2023).

Finally, it is worth highlighting a great number of underinvestigated studies regarding the implementation of low-cost teacher-designed virtual reality-based interventions adapted to the Algerian context. High-immersion VR systems are typically associated with a high cost and complex implementation that, in turn, may worsen the existing inequality in education (Ironsi, 2023). As Algerian scientists have established, there is a shortage of technological equipment, including computers and projectors, as well as a need for additional professional development for teachers and collaboration among them in order to integrate modern technologies into teaching processes (Baghdadi et al., 2024). Moreover, there is limited information available about affordable teacher-designed VR activities adapted to the needs of Algerian learners (Ironsi, 2023). Therefore, the present study focuses on the investigation of teacher-designed, context-appropriate VR-based interventions, which may prove to be quite an important contribution to research since it demonstrates how immersive learning can take place without high-end and costly technology.

Identifying these specific gaps, ranging from the general scarcity of virtual reality interventions to the neglect of indicators specific to fluency and the need for teacher-designed, adaptive solutions, underscores the need to redirect research toward innovative, technology-enhanced methodologies.

I.9 Conclusion

The literature review of Virtual Reality (VR) as a transformative and promising technological solution to improving speaking fluency in EFL higher education. The critical analysis shows that because of the provision of a safe, authentic, and engaging environment for speaking practices, the immersive and interactive characteristics offered by virtual reality have an advantage over traditional and non-immersive technological tools. Some of the main points discussed include how virtual reality contributes to reducing language anxiety through offering

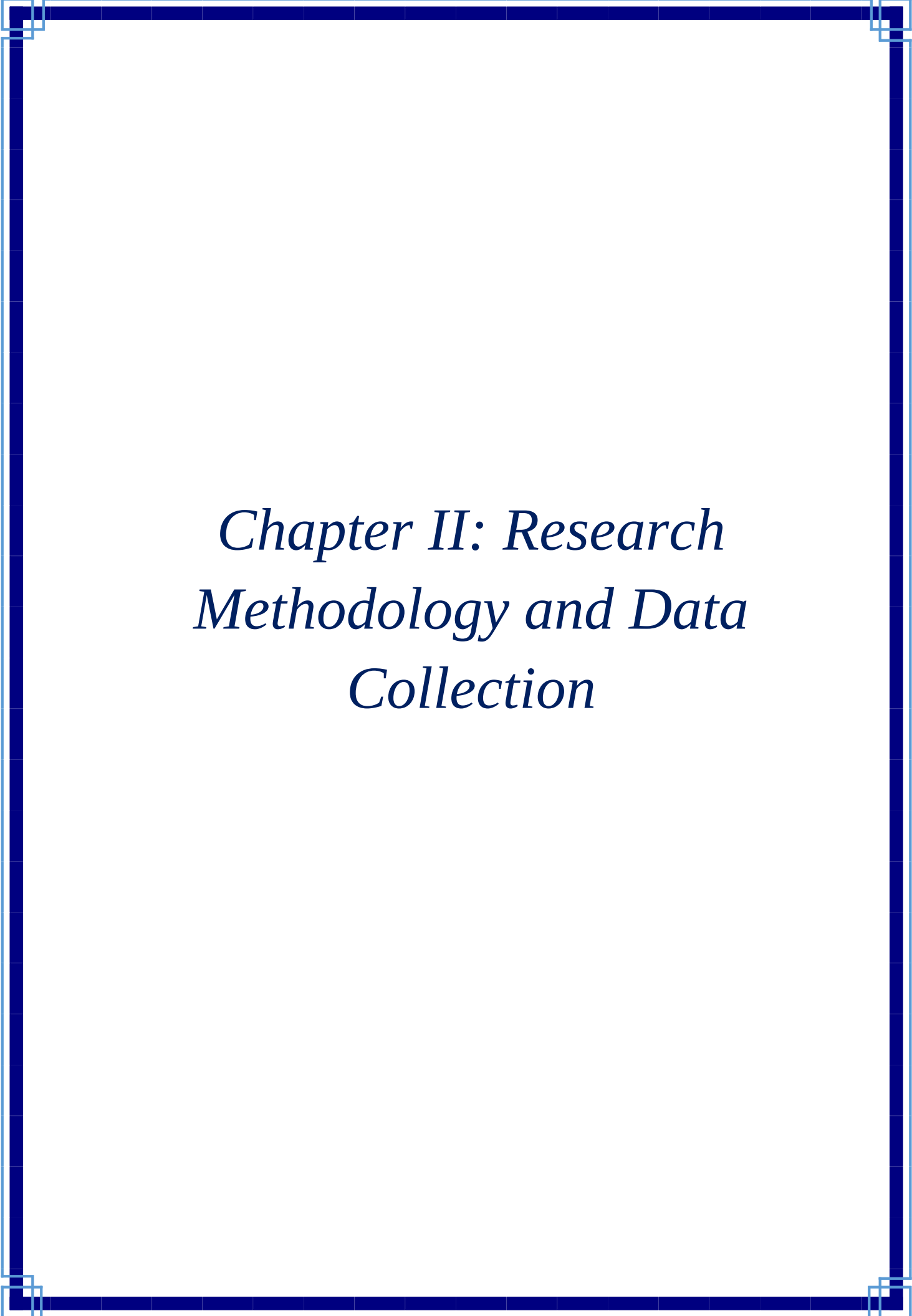
students protection from the pressure of peer assessment. This results in increased competence when speaking, including coherence and fluency. Moreover, the use of affordable virtual reality technology using consumer equipment like 360-degree video and smartphone VR technology provides immense benefits in developing affordable and accessible immersive language experiences in the context of limited resources like Algeria.

Despite the presence of numerous issues that require clarification upon the examination of these results, the first one should be emphasized. First, despite the increasing popularity of VR technologies, much of the scholarly research has concentrated on expensive platforms or commercial programs that could fail to meet some pedagogical objectives or learner needs. Second, such limitations make it rather difficult for educators to use VR technology efficiently in many educational contexts. To encourage meaningful engagement and efficient scaffolding in their lessons, teachers would benefit from designing VR-based speaking tasks that meet the learners' level of linguistic proficiency, sociocultural contexts, and instructional objectives, which are significantly absent in empirical research. Third, there are several methodological problems that complicate comparative analysis across the studies and limit the generalizability of findings, including short intervention durations, small sample sizes, and inconsistent approaches to measuring speech fluency. Finally, in order to improve the user experience and learning outcomes, further pedagogical research is needed to address an emerging problem known as "dual anxiety," which refers to learners' concerns about using language and adopting VR technology.

The present research work is extremely significant in addressing these unsolved pedagogical issues, attempting to fill these gaps by investigating the effects of teacher-designed, low-cost VR-based speaking tasks on the speaking fluency of EFL learners in Algerian higher education. This study attempts to meet the increasing demand for flexible, affordable, and pedagogically grounded intervention that suits the limited-resource setting through

investigating accessible VR technologies that combine both immersiveness and accessibility to a certain extent. Moreover, the experimental design of the study, incorporating pre- and post-intervention assessments, along with specific context task design and scaffolding, corresponds to the contemporary pedagogical demands for employing technological aids in language teaching.

In the end, this study aims to advance the theoretical and applied aspects of VR-mediated language education by providing empirical evidence on the effectiveness and viability of low-cost VR applications in improving EFL speaking fluency as well as shedding light on practical strategies for involving teachers and supporting learners.



Chapter II: Research Methodology and Data Collection

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2.1 Introduction

This chapter presents the methodological framework adopted for this study. It describes the research design, the participants, the instruments used to collect data, the data collection procedure, and the statistical methods used for data analysis. It also addresses the reliability and validity of the study and outlines the ethical considerations adhered to during its conduct. The main objective of this methodology is to examine whether the use of low-cost virtual reality-based oral tasks influences the oral fluency of third-year English as a Foreign Language learners when the following research question is addressed: How does the use of virtual reality-based speaking tasks enhance EFL learners' speaking fluency?

2.2 Research Design

The study follows a quasi-experimental design with a control group, pre-test, and post-test measures. This design was chosen because it closely resembles a classic experimental design while taking into account the institutional constraints inherent in realistic educational settings, particularly the impossibility of randomly assigning students to groups. As Cohen, Manion, & Morrison (2018) remarked, quasi-experimental designs are especially appropriate in the context of applied linguistics and educational research, where participants belong to natural intact class groups that cannot be reconstituted for research purposes.

The research consisted of two naturally existing groups, the experimental and the control group. A pre-test was administered to both groups prior to the intervention in order to determine their initial level of oral fluency. Following two weeks of preparation, during which each group worked with different materials, a post-test oral presentation was allocated to both groups to measure any changes in their fluency.

The independent variable in the study was the type of preparation material used during the intervention weeks. The experimental group prepared their oral presentations using low-cost virtual reality instruments, including immersive 360° YouTube videos using smartphones. On the other hand, the control group used non-immersive conventional materials consisting of digital photographs or videos. Students' oral fluency was the dependent variable and was evaluated through an oral fluency-rating rubric designed by the researcher, which was scored out of 20 points.

Table 2.1: Quasi-Experimental Research Design and Overview

Group	Pre-test	Intervention weeks	Post-test
Experimental (Group 1 Subgroup A)	Oral fluency baseline measurement	Preparation using 360° VR videos on smart devices (smartphone)	Oral presentation fluency measurement
Control (Group 2 Subgroup A)	Oral fluency baseline measurement	Preparation using non-immersive materials	Oral presentation fluency measurement

Source: The Researcher creates this Table

2.3 Participants

The subjects of this study were third-year English as Foreign Language (EFL) students at Belhadj Bouchaib University. The Continuous Oral Production (POC) module at this institution is organised according to a weekly schedule in which each main group is divided into two subgroups that attend sessions alternately, one week at a time. This institutional organization is a structural feature of the university, not changed for the sake of this inquiry.

The study focused on a teaching unit on tourism and hospitality, integrated into the

module of the Continuous Oral Production (POC), and a key part of the student curriculum during the period of data collection. It is also worth pointing out that tourism and hospitality were not a field of specialization but a thematic unit within the module syllabus common to all third-year English department students.

A convenience sampling method was adopted, with the researcher working within the existing structure and schedule. After discussions with the thesis supervisor and the professor of the Continuous Oral Production module, the study was conducted with the first subgroups of groups 1 and 2, named as 1A and 2A, respectively. This decision was motivated by practical and institutional reasons: dealing with these two specific subgroups enabled the researcher to complete the entire data collection process within the allotted time before the early closure of the academic year, without interrupting the curriculum or the schedule.

The two subgroups had the same professor, the same classroom, the same weekly schedule, and the same syllabus, which increased the comparability between the two groups and minimized the chances for any confounding variables resulting from the teaching context. Group 1A was assigned to the experimental group and used virtual reality-based preparation materials. Group 2A, on the other hand, was the control group and relied on traditional preparation materials. Study participation was completely voluntary: students were informed about the nature of the research before the sessions were conducted and were explicitly assured that their participation would not have any effects on their academic grades. Out of these, 10 from the experimental group and 10 from the control group agreed to participate, representing a total of 20 subjects.

Table 2.2: Participant Distribution by Group and Condition

Subgroup	Condition	Preparation Material	N
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Group 1A Experimental	Experimental	360° VR videos (YouTube / Smartphones)	10
Group 2A Control	Control	digital potos or videos	10
Total			20

Source: The Researcher creates this Table

2.4 Research Instruments

The study employed two types of instruments for data collection: a measuring tool to assess oral fluency at both stages, and teaching materials to guide students in their preparation during the weeks of intervention. Each is described in the following Sections.

2.4.1 Oral Fluency Rating Rubric

Oral fluency was measured using a fluency-rating rubric developed by the researcher. This grid is inspired by established theoretical frameworks in second and foreign language fluency research, particularly Skehan's (1996) work, which defines fluency as the ability to mobilize linguistic resources in real time, as well as Tavakoli & Skehan (2005), who operationalize fluency through a series of temporal and hesitation-related measures. The grid also takes into account Lennon's (1990) distinction between break fluency and flow fluency, which the author describes as two complementary dimensions of oral performance.

The evaluation grid included five criteria, and each was rated on a four-point scale, starting from 1 (poor) to 4 (Excellent), and the highest total score a participant could attain was 20 points. This same grid was applied uniformly in both the pre-tests and post-tests to ensure equivalence of measurements between the two data collection periods. No audio was recorded;

the researcher evaluated every student's oral performance live as they presented. The full evaluation grid is included in Appendix B.

Table 2.3: Oral Fluency Rating Rubric — Criteria and Score Distribution

Criterion	Description	Score
Speech Rate and Pace	Evaluates the naturalness and consistency of speech speed, including the ability to maintain an appropriate and controlled pace throughout the performance.	1 – 4
Pause Frequency	Measures the frequency and length of disruptive pauses exceeding 0.25 seconds that interrupt speech flow and hinder communication.	1 – 4
Repair and Self-Correction	Assesses the frequency of false starts, reformulations, and repetitions, as well as the smoothness with which the student manages and recovers from these breakdowns.	1 – 4
Speech Continuity	Evaluates the extent to which the student produces connected, uninterrupted utterances and maintains a rhythmic and coherent flow of speech.	1 – 4
Fluency Markers Use	Measures the frequency of filled pauses (uh, um) and hesitation markers (well, let me think), and assesses whether their use is natural or disruptive to communication.	1 – 4
Total		20

Source: Adapted from Skehan (1996), Lennon (1990), and Tavakoli and Skehan (2005)

2.4.2 Task Instruction Materials

In addition to the rating rubric, the researcher designed an instruction set for both groups, delivered after the pre-test session. Both groups received the same three oral production tasks related to the "Tourism and Hospitality" course unit. Each student was allowed to prepare and perform one task of his or her choice. A total of three tasks were included: (1) Hotel receptionist and check-in, (2) Travel agency consultant, and (3) Tour guide at a landmark. The selection of these three tasks represented the standard way of teaching in the Continuous Oral Production (POC) module, where students choose a topic from several topics instead of being assigned a single one.

Both groups received a vocabulary list directly relevant to the theoretical content presented by the professor in the new tourism and hospitality unit in the Continuous Oral Production module in the first session, linking the academic content of the session to the oral presentation. A supplement guide on 360-degree smartphone videos as preparation material was sent to the experimental group participants, and a guide on how to use non-immersive materials was sent to the control group participants, alongside the written tasks sheet for the same purpose. Following the pre-test session of each group, all task materials were distributed via email.

2.5 Data Collection Procedure

The data were collected in four sessions (two sessions per group), integrated into the regular schedule of the oral production course, and strictly adhered to the timetable, syllabus, and the pedagogical approach of the professor. All sessions were held at Belhadj Bouchaib University, in the Continuous Oral Production module classroom. The procedure was divided into three stages: An introductory and pre-test session, two weeks of intervention, and a post-

test and presentation session.

2.5.1 Stage One: Introduction and Pre-test Session

The first session was held on the same day for both groups, taking place separately in their pre-test session, in accordance with the university's weekly sub-groups' scheduling system. The session was structured to allow the experimenter to spend approximately 30 minutes with each group, providing instructions, explaining how each group should use the preparation materials, and administering the pre-test. This procedure was carried out with the approval and full cooperation of the POC module professor, who scheduled this time for the research.

Following the introduction of the tourism and hospitality unit by the professor, the researcher addressed both groups using the same standardized opening. The students were informed that their participation in the study was completely voluntary and that the data gathered would be used solely for academic research purposes and would not affect their grades. All the students present gave a verbal agreement to participate, and ten students from each group ultimately took part.

The researcher then explains the oral presentation task instructions with the information on the three possible options, as well as how each group would use their unique preparation materials in the next two weeks. The experimental group was instructed on how to access and use immersive 360-degree YouTube videos on their smartphones, and the control group was instructed on how to use conventional materials (digital photographs or videos).

The pre-test was then administered. Students were asked to speak individually for one to two minutes about their plans after graduation and their academic experiences. This was a

consciously selected topic as it is personal, familiar, and unrelated to the Tourism and Hospitality module, to ensure that no group would have an advantage in terms of content during the initial assessment. Students were given one minute to prepare before speaking. The researcher evaluated each student's oral performance live using the oral fluency rating grid, assigning a score to each of the five fluency indicators with scores ranging from 1 to 4. The pre-test instructions are included in Appendix A.

Following the pre-test, the instruction documents were delivered to both groups via email. The three task options, the supporting vocabulary list, and the preparation guidance for groups were attached in each document: 360° virtual reality video instructions to the experimental group and instructions for the use of non-immersive visual materials to the control group. The instruction document distributed to the experimental group is presented in Appendix C, and the one distributed to the control group is in Appendix D.

2.5.2 Stage Two: Intervention Weeks

The second stage extended over a period of two weeks following the pre-test session, due to unforeseeable circumstances beyond the researcher's control, which hindered the holding of the planned presentation session. As a result, both groups were given two complete weeks to prepare their selected oral presentation task at home with the materials supplied to them.

The experimental group was given instructions to prepare their presentations by viewing 360-degree videos on YouTube on their smartphones. Students were invited to select an immersive environment related to the task, play it at least twice (one for a general overview and a second time to acquire vocabulary and other details), and to rely on this visual and immersive experience as the main resource to prepare their oral presentation. This affordable virtual reality solution aimed to offer a context-rich and immersive preparation experience without the need for specialized hardware, thus allowing everyone to participate without

having to worry about the lack of financial resources (Radianti et al., 2020; Lan, 2020).

The control group prepared their presentations using digital photographs and non-immersive videos illustrating the task contexts. Students were asked to pay close attention to the visual materials and note relevant vocabulary and details while preparing. These were intentionally designed to be thematically equal to the virtual reality stimulus, ensuring that the only significant variable between the two groups was the preparation tool.

2.5.3 Stage Three: Presentation and Post-test Session

The third stage was conducted during the second in-class session, 2 weeks after the pre-test session, in accordance with the weekly alternation. Each group had its separate post-test session on the same day, respecting the session structure established during pre-test.

The students presented their oral presentations individually to the class. Each presentation lasted two to three minutes, which is consistent with the standard format of oral production used in the module. Both groups worked under identical conditions: they followed the same procedures in the classroom, with the same professor, the same time limit, and the same researcher evaluating performance using the same oral fluency assessment grid. There were no audio recordings made during either session. Following the post-test, the researcher evaluated the performance of each student in real time using the same rating grid as used in the pre-test, thus ensuring complete consistency of measurements across the two data collection periods.

It should be observed that during the post-test session, there were some unforeseen technological restrictions that influenced the delivery conditions of the oral presentations carried out by the experimental group students. According to the initial plans, the experiment participants were expected to use their personal smartphones to gain access and present their

selected 360-degree VR videos during their speeches because smartphones constitute the most convenient and controllable tool for manipulating 360-degree videos uploaded on YouTube since it follows the users' physical movements. Nevertheless, due to the absence of Wi-Fi at the university, the smartphones could not be connected to the internet during the testing session. In such a way, the only computer connected to the Internet within the classroom belonged to the professor, and it was used as a common display device for all members of the experimental group. Thus, each participant had made the corresponding preparation on the basis of a particular 360-degree video, but had been instructed to show it with the help of the professor's PC and its projector during the speech. As the method of controlling a 360-degree video on a computer is much different from that on one's own mobile phone, especially when it comes to interface and navigation issues, many students had trouble controlling the VR screen and presenting verbally at the same time. The unexpected change in equipment used became a confounding variable, which was not intended in the study design and probably led to the poor results achieved by the experimental group mentioned in Chapter Three.

Table 2.4: Data Collection Procedure by Stage and Group

Stage	Session	Experimental Group (1A)	Control Group (2A)
Pre-Test	Session 1 (Same day, both groups)	Researcher takes 30 min: explains study, obtains consent, delivers task instructions, explains preparation materials Pre-test: talk about graduation plans (1–2 min) Task materials distributed by email	Identical procedure to the experimental group
Intervention	Preparation weeks (at home, no session)	Prepare chosen task using 360° VR videos on smart devices (smartphones)	Prepare chosen task using non-immersive materials

Post-Test	Session 2 (Same day, both groups)	Deliver 2-3 min oral presentation : Scored using same rubric	Identical procedure to the experimental group
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Source: Researcher's personal draft

2.6 Data Analysis

The quantitative data obtained in the oral fluency assessment grid were analysed using descriptive statistics and parametric t-tests. Calculations were performed using spreadsheet software (Microsoft Excel) with manual verification. The analysis focused mainly on the group level to examine patterns of differences between subgroups at the group level, rather than the examination of individual profiles of students, consistent with the quasi-experimental design and research objectives of the study.

Three statistical analyses were performed. The first, an independent samples t-test was conducted on the pre-test scores to examine whether the experimental and control groups differed significantly in terms of oral fluency. This was to ensure that the two groups were at a statistically equivalent baseline level of oral fluency prior to the experiment. The second analysis, a paired samples t-test, was conducted separately within each group to assess the difference between pre-test and post-test scores, as an indicator of the change in fluency within each group during the intervention. The post-test scores of the two groups were compared by conducting a third analysis, another independent samples t-test. This primary test was designed to test the hypothesis of the study and to determine whether the group prepared by using virtual reality achieved significantly better results than the traditionally prepared group after the intervention or not.

Effect sizes (Cohen's d) were reported for all significant comparisons. The level of alpha for statistical significance was $p < 0.05$. Due to the small sample size ($N = 20$; $n = 10$ per group), a Shapiro–Wilk normality test was not performed, as it is known to be less reliable for

samples smaller than 20 per group. Normality, however, was assumed on the grounds that the t-test is robust against minor violations of normality, especially when group sizes are equal.

Table 2.5: Summary of Statistical Tests and Their Purposes

#	Statistical Test	Data Compared	Purpose
1	Independent Samples t-test	Pre-test : Experimental vs Control	Verify group comparability at baseline
2	Paired Samples t-test	Pre-test vs. Post-test: Experimental group	Measure within-group improvement (VR)
3	Paired Samples t-test	Pre-test vs. Post-test: Control group	Measure within group improvement (Traditional)
4	Independent Samples t-test	Post-test : Experimental vs. Control	Primary hypothesis test: compare groups after intervention

Source: The Researcher creates this Table

2.7 Validity and Reliability

2.7.1 Internal Validity

The internal validity of the study was protected through several procedures. First, both groups completed an identical pre-test on the same day, covering the same topic, for the same duration, and assessed by the same examiner. This reduced the risk of selection bias and confirmed the initial comparability of the groups. Second, both groups performed the same type of oral task on the same topic in the post-test under the same pedagogical conditions. This

ensured that any differences observed in post-test scores could be attributed more confidently to the type of preparation material rather than to a difference in the task difficulty or in the conditions of administration. Third, both groups shared the same teacher, the same classroom, followed by the same weekly schedule, and were provided with the same curriculum, which eliminated several potential sources of external variation (Campbell & Stanley, 1963).

2.7.2 External Validity

The research was conducted in the regular institutional framework of the Continuous Oral Presentation module, respecting the schedule and the structure of the sessions. This naturalistic and integrated methodology enhances the ecological validity of the findings, as they reflect students' performance in authentic classrooms rather than in an artificially controlled laboratory environment (Mackey & Gass, 2005). However, the researcher recognises that the generalisability of the findings is limited by the small sample size (20 participants) and the fact that they are drawn from one institution; this limitation will be discussed in Chapter Three.

2.7.3 Instrument Reliability

The oral fluency rating rubric was designed following clear performance descriptors for each of the four score levels and for all five criteria of oral fluency, in order to eliminate the subjective evaluation and potential inconsistency of scoring. The researcher employed this same grid for both the pre-test and post-tests, thereby maintaining consistency in the measurement instrument throughout the data collection. As there were no audio recordings in the sessions, the evaluation took place in the moment, and the researcher directed his focus on each student's performance during their turn to speak.

2.7.4 Ethical Considerations

The study was conducted in strict compliance with the ethical principles in educational research. Prior to the commencement of data collection, all students were informed in clear terms that their participation in the study was voluntary and explicitly stated that their decision to participate or not would have no impact on their grades or standing in the course. All subjects gave verbal informed consent before any data was collected. The researcher obtained the cooperation and formal authorization of the professor in charge of the Continuous Oral Production module prior to any research activities in her sessions. All data collected were treated with strict confidentiality and used exclusively for academic research purposes.

2.8 Conclusion

This chapter describes the methodological procedure adopted to study the impact of low-cost virtual reality oral tasks on the oral fluency of third-year English as a Foreign Language (L3) student at Belhadj Bouchaib University. A pre-test post-test measures design with a control group was used in this quasi-experimental study with 20 volunteer participants from the first two subgroups of groups 1 and 2 of the Continuous Oral Production module. The oral fluency-rating grid, with its five criteria, each with a maximum of 20 points, served as the sole measurement instrument used uniformly in both assessments. Data were collected during four sessions (two per group), integrated into the normal course schedule, following the timetable and curriculum of the institution. Statistical analysis was conducted using spreadsheet software (Microsoft Excel), employing a combination of independent and paired t-tests, focusing on comparisons between groups. During the whole research process, several measures were taken to guarantee internal validity, ecological validity, the reliability of the instrument used, and the ethical integrity of the study. The results in relation to the research question and the hypothesis of the study are presented and discussed in the following chapter.

Chapter III: Data Analysis, Suggestions and Limitation

Chapter III: Data Analysis, Suggestions and Limitations

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3.1 Introduction

This chapter reports the findings of a quasi-experimental study that examined the effects of low-cost virtual reality-based oral tasks on the speaking fluency of third-year English as a Foreign Language (EFL) learners at Belhadj Bouchaib University. The chapter is divided into four major parts. Section 3.2 presents the statistical results of the pre-test and post-test contrasts, with no interpretation. Section 3.3 discusses the implications of these results in relation to the research question, the hypothesis of the study, and the theoretical and empirical literature presented in Chapter One. Section 3.4 summarizes the pedagogical implications of the results. Section 3.5 discusses the limitations of the research and Section 3.6 concludes the paper.

Descriptive statistics and parametric t-tests analyses were performed; calculations were done in Excel and checked manually. A total of 20 students took part in the study: 10 students were in the experimental group (Group 1A, VR-based preparation) and 10 in the control group (Group 2A, traditional preparation). The threshold for statistical significance for all tests was $p < 0.05$.

3.2 Results

This part presents the results of the statistical analyses without any interpretation. The following analyses were performed: (1) a pre-test comparison of groups to confirm baseline equivalence, (2) pre-test and post-test comparisons within groups, and (3) a post-test comparison of groups to assess the effect of the intervention.

3.2.1 Descriptive Statistics

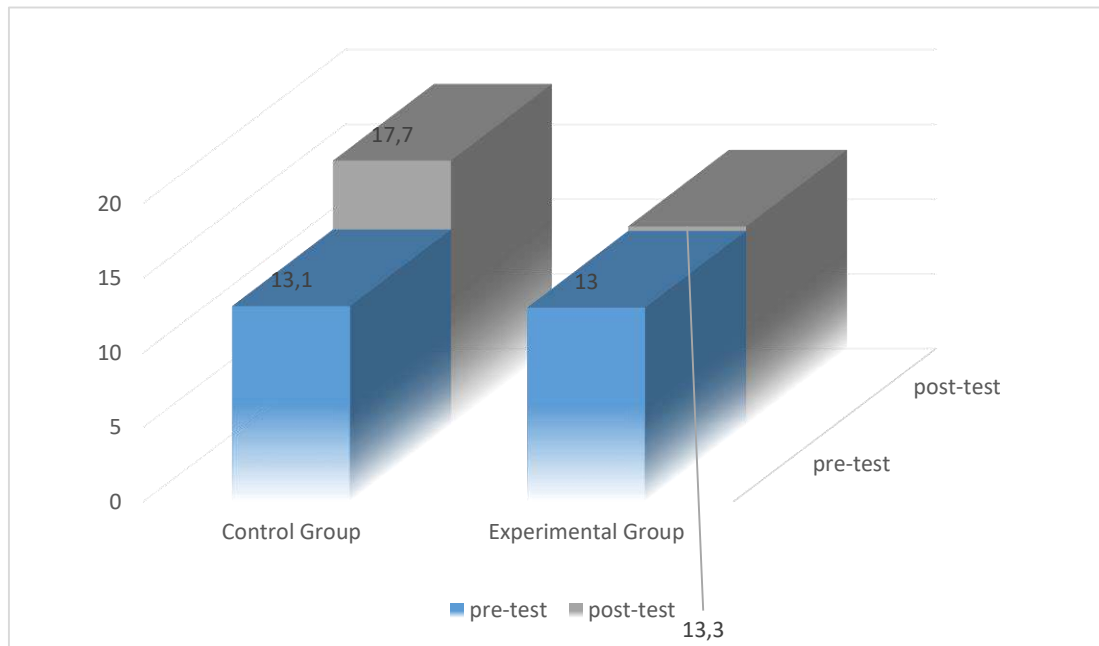
Table 3.1 presents the mean scores and standard deviations for both groups at pre-test and post-test.

Table 3.1: Descriptive Statistics for Fluency Scores by Group and Time

Group	n	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Change
Control	10	13.10 (1.91)	17.70 (2.11)	+4.60
Experimental	10	13.00 (2.00)	13.30 (3.74)	+0.30

Source: Researcher (2026).

As can be seen in Table 3.1, the two groups had similar mean scores at pre-test. The control group had a mean of 13.10 (SD = 1.91), and the experimental group with a mean of 13.00 (SD = 2.00). The mean score for the control group rose dramatically at post-test to 17.70 (SD = 2.11) with a mean change of +4.60 points. By contrast, the mean score of the experimental group increased slightly to 13.30 (SD = 3.74), with a mean change of +0.30 points.

Figure 3.1: Pre-test and Post-test Mean Fluency Scores by Group

Source: Researcher (2026).

3.2.2 Pre-test Comparison Between Groups

An independent-samples t-test was conducted to compare pre-test fluency scores between the two groups. Table 3.2 presents the results.

Table 3.2 Independent-Samples t-Test Results for Pre-test Comparison.

Comparison	Mean Diff.	t-value	df	p-value	Cohen's d
Control vs. Experimental (Pre-test)	0.10	0.114	18	0.910	0.051

Source: Researcher (2026).

There was no statistically significant difference between the control group ($M = 13.10$, $SD = 1.91$) and the experimental group ($M = 13.00$, $SD = 2.00$) at pre-test, $t(18) = 0.114$, $p = 0.910$ according to the analysis. The size of the effect was minuscule (Cohen's $d = 0.051$).

These findings established that the two groups were equal in speaking fluency before the treatment.

3.2.3 Within-Group Comparisons (Pre-test vs. Post-test)

Paired-samples t-tests were conducted separately for each group to examine changes in fluency scores between the pre-test and post-test. Table 3.3 presents the results.

Table 3.3: Paired-Samples t-Test Results for Within-Group Comparisons

Group	Mean Diff. (Post - Pre)	t-value	df	p-value	Cohen's d
Control	+4.60	5.710	9	< 0.001	1.806
Experimental	+0.30	0.191	9	0.853	0.060

Source: Researcher (2026).

There was a statistically significant pre-test post-test improvement for the control group ($M = 13.10, 17.70$), $t(9) = 5.710$, $p < 0.001$, with a very large effect size (Cohen's $d = 1.806$). On the other hand, there were no significant differences between pre-test ($M = 13.00$) and post-test ($M = 13.30$) in the experimental group, $t(9) = 0.191$, $p = 0.853$, and the effect size was negligible (Cohen's $d = 0.060$).

3.2.4 Post-test Comparison Between Groups

An independent-samples t-test was conducted to compare post-test fluency scores between the two groups. Table 3.4 presents the results.

Table 3.4: Independent-Samples t-Test Results for Post-test Comparison

Comparison	Mean Diff.	t-value	Df	p-value	Cohen's d
Control vs. Experimental (Post-test)	4.40	3.238	18	0.005	1.448

Source: Researcher (2026).

As can be observed, the analysis revealed a considerable difference between the mean scores for the control group ($M = 17.70$, $SD = 2.11$) and the experimental group ($M = 13.30$, $SD = 3.74$) in post-test, $t(18) = 3.238$, $p = 0.005$. The effect size was extremely large (Cohen's $d = 1.448$), meaning that the control group performed much better than the experimental one after two weeks.

3.2.5 Summary of Statistical Results

Table 3.5 provides an overview of all statistical analyses conducted in this study.

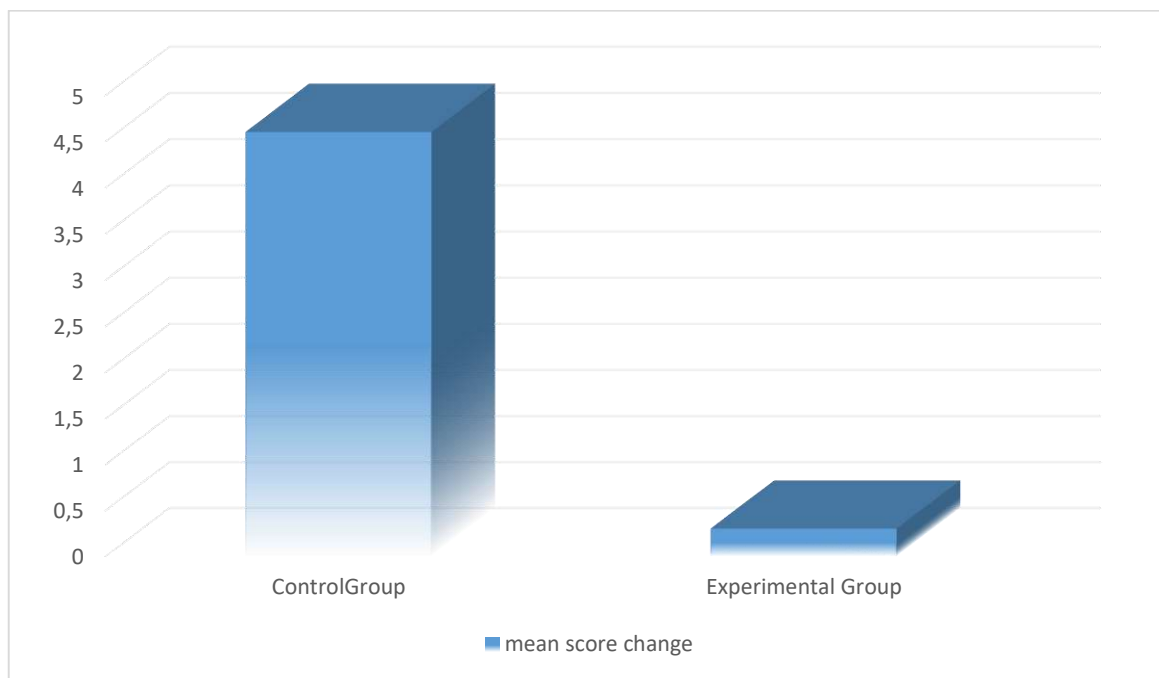
Table 3.5 Summary of All Statistical Tests and Results.

Comparison	Key Result	p-value	Sig ?	Cohen's d
Pre-test: Control vs Experimental	No significant difference	0.910	No	0.051 (Negligible)
Control: Pre-test vs Post-test	Significant improvement (+4.60)	< 0.001	Yes	1.806 (Very Large)
Experimental: Pre-test vs Post-test	No significant change (+0.30)	0.853	No	0.060 (Negligible)
Post-test: Control vs Experimental	Control significantly higher	0.005	yes	1.448 (Very Large)

Source: Researcher (2026).

Four major findings emerged from the findings obtained from the statistical analyses: (1) there was no significant difference between the two groups at pre-test, thereby establishing baseline equivalence; (2) the control group had a very significant and large increase from pre-test to post-test; (3) the experimental group had no significant improvement; and (4) the control group scored significantly higher than the experimental group on post-test.

Figure 3.2: Mean Fluency Score Change from Pre-test to Post-test by Group



Source: Researcher (2026).

3.3 Discussion

This section interprets the statistical findings presented in Section 3.2 in relation to the study's research question, hypothesis, theoretical framework, and relevant empirical literature.

3.3.1 Response to the Research Question and Hypothesis

The research question that was posed for this investigation was: How does the use of virtual reality-based speaking tasks enhance EFL learners' speaking fluency? According to the results obtained during this research, it can be concluded that low-cost VR-based tasks cannot significantly improve the speaking fluency of the learners in this particular context. In other words, there was no change observed in the experimental group from pre-test to post-test ($p=0.853$, $d=0.060$). Consequently, the hypothesis regarding the beneficial impact of implementing VR-based speaking tasks on the fluency of the learners was not confirmed.

However, the control group, which used traditional preparation materials, showed a statistically significant improvement in learners' speaking fluency ($p < 0.001$, $d=1.806$). The results indicate that, at least in this study, conventional preparation materials were better than low-cost VR tools in assisting the development of oral fluency.

3.3.2 Interpretation in Light of Observed Classroom Conditions

The surprising pattern of results can be sensibly accounted for by the particular conditions at observation in the post-test session. During oral presentations, students of the experimental group were required to use the professor's laptop computer and projector to display and control the 360-degree VR videos, as not all students possessed personal access to Wi-Fi. This resulted in a demanding dual-task situation, with students having to master a new technology and give a fluent oral presentation at the same time.

For most students in the experimental group, this was their first encounter with 360-degree VR content in a presentation format. Quite a few had difficulty manipulating the 360-degree view while talking, which caused them to lose their focus and flow of speech. This finding is in line with Cognitive Load Theory (Sweller, 1988), which suggests that too many

cognitive processing demands during a task may have an adverse effect on learning and performance of the learner. The novelty of operating the VR interface also contributed to extraneous cognitive load, which directly competed with the attention resources required for speaking fluently (Mayer, 2002).

In contrast, students in the control group were given traditional, static materials to refer to for their presentations, and as such, they could devote their full cognitive attention to the content and delivery of the speech rather than be distracted by manipulating the materials. Based on researcher observations of the delivery, their calm and confident manner of delivery corresponds well to the substantial fluency gains observed in their post-test scores.

3.3.3 Discussion in Relation to Previous Studies

The results of this study are in contrast to those of several previous studies which demonstrated positive effects of VR on EFL speaking performance. Jumashova (2024) demonstrated a 46.4% and 45.1% improvement in fluency and pronunciation accuracy, respectively, with young EFL learners in a VR-supported environment. Pasaribu et al (2024) observed a superior fluency performance in the VR group compared to the traditional group by a margin of 18%. Yan et al. (2024) also demonstrated significant spoken language improvements through the use of a computer-based VR application.

Yet these studies are fundamentally different from this one. Most of the positive results in the literature stem from controlled VR settings, with appropriate technical and support infrastructure, which also include one or more sessions of student instruction in the technology. By contrast, this study employed a smartphone-based VR approach presented after two intervention weeks on the post-test session, and many students took their first VR experience in a live presentation setting at the post-test.

This contrast is consistent with Kassim et al. (2019), who stated that although VR induced greater presence and enjoyment than smartphone tasks, these affective gains did not necessarily lead to measurable language performance enhancements. Legault et al. (2019) also reported that the VR advantage was critically dependent on prior experience with the technology, and the nature of task design greatly reflected the current study.

3.3.4 Discussion in Relation to Theoretical Frameworks

As Ellis (2003) points out, TBLT focuses on the dimension of task in which learners are involved in paying attention to meaning and in communicating rather than on the form of the task performance. During this study, the realization of, among other things, the technical challenge of the 360-degree VR interface usage in the presentation as such was a distraction from focus on meaning in communication gone against a tenet of TBLT towards the students, therefore focus was shifted. When designing VR tasks in the future, the technology should be allowed to serve as a preparation tool rather than a live performance assistant.

Theoretically, VR scenarios could promote active knowledge construction through immersive experience from a Constructivist Learning Theory viewpoint (Mayer, 2002; Piaget, 1954). But when technical barriers prevent meaningful participation, the constructivist potential of VR is lost.

The Vygotskian Sociocultural Theory (1978), as it pertains to language acquisition, as stated in Lantolf (2000), focuses on the importance of mediated interaction for cognitive development. The VR simulation was designed to serve as a medium to cultivate students' mental representations of the target communication scenario. Though this mediation may indeed have operated to that end in the home preparation portion of the classroom activity for those who had access to the materials via video, the lack of complete control of the technology

in the actual performance precluded it from serving as mediation at the point of formal assessment.

3.3.5 Why the Control Group Outperformed

The large effect size for the experimental group ($d=1.806$) deserves special attention. The conventional preparation materials formed a predictable, well-defined, and cognitively manageable unit, which students were able to apply at home without any special technical knowledge. Given the control group's prior exposure to traditional study materials, they were able to spend the entire preparation period practicing and internalizing the task of their choice. In the post-test, with no additional technology to handle, they were able to deliver their speeches calmer and more fluent.

These results don't imply that traditional approaches are better than VR for language learning. Instead, they indicate that, in the context of a two weeks intervention, limited technical infrastructure, and students' inadequate preparation for the use of the technology, traditional materials may yield more predictable short-term fluency improvements.

3.4 Pedagogical Implications

Although the hypothesis was not supported, the result had a number of implications regarding the EFL teaching practice, task design, and technology application in the context of under-resourced education.

3.4.1 Implications for EFL Teachers

The findings indicate that low-cost VR tool provided for EFL teachers, in considering their application to speaking instruction, should pay special attention to the preparation phase

to use VR in their class prior to any VR-based assessment. Students need a chance to get comfortable with the technology in an unpressured environment before they're asked to use it for the assessed oral performance. Using VR as a preparation and exploratory tool, as opposed to a live presentation support, might be a way to mitigate the cognitive overload identified in the present study.

Moreover, there is the question of whether the teachers need to evaluate the technical capabilities of their students before they even can plan out a VR assignment. In places where students have little access to compatible devices or reliable Wi-Fi, the logistical challenges may outweigh the teaching advantages.

3.4.2 Implications for Task Design

The results highlight the significance of task form in influencing the efficiency of technology-mediated oral activities. As per TBLT (Ellis, 2003) principles, VR-tasks should be designed in a way that the technology is used as a pre-task motivator and should not be considered as an in-task performance demand. Students should be able to make use of the VR videos to gain context and vocabulary in their preparation, and then give their oral presentation based on their level of prepared knowledge, without using the technology at the same time during their delivery.

In terms of future task designs, tasks should guide students on how to obtain linguistically-relevant information from situated VR environments, because merely being exposed to immersive environments does not necessarily contribute to better language production (Radianti et al., 2020).

3.4.3 Implications for Technology Integration in Algerian Higher Education

This research emphasizes the need for contextually sensitive approaches when introducing digital technologies in EFL classrooms in Algerian universities. The institutional barriers they found to be most restrictive, limited Wi-Fi access, shared devices, and a minimal background in VR, are indicative of wider issues in technology adoption within Algerian higher education. These results indicate that effective VR-based language learning is not only a matter of giving learners access to the technology, but also of institutional support, teacher training, and a phased, scaffolded familiarization with tools on the part of learners.

3.5 Limitations of the Study

The findings should be interpreted with several limitations in mind to provide appropriate context and to inform future research.

- **Sample size:** The study was a small sample pilot with 20 voluntary participants (10 per group). The limited sample size reduces statistical power and limits the generalization of the results.

- **Intervention duration:** The intervention took place over two weeks of preparation, which is a short period of time to be exposed to VR materials. A longer intervention, spread out over several sessions, would be more convincing evidence.

- **Participation:** Since it was a voluntary study, the sample may not fully represent the population of students. Students who volunteered to participate in the study may have had specific opinions about technology or oral performance.

- **Technical limitations:** Utilizing a single shared device for the VR display in the post-test introduced an unsuspected confounding variable between the participants of the

experimental group. Equal, independent access to VR technology should be made available in future research.

- **No audio recording:** The oral performances were not recorded, hence the scores were assigned in real time. This prohibited post-session auditing and verification of inter-rater reliability.

- **One rater:** The researcher was the sole rater for all fluency scores. A second independent rater could have strengthened the reliability of the instrument of measurement.

3.6 Conclusion

This chapter has described and discussed the results of a quasi-experimental research on the effect of low-cost VR-based oral activities on the speaking fluency of third year (L3) EFL learners at Belhadj Bouchaib University. Results of statistical analyses revealed that the non-immersive conventional visual materials (TPM) used by the control group significantly outperformed the virtual reality (VR) video used by the experimental group in fluency gains. Research prediction was not supported in the context of this study.

The findings do not hinder the use of VR for developing EFL speaking. Instead, they make an important empirical contribution to establish the conditions when low-cost VR is unlikely to be viable, for example, when combined with limited student familiarity with the technology, limited technical infrastructure, short intervention duration, and being used concurrently in live oral (external to VR) performance. These findings call for triangulated and context-specific VR implementation strategies across (to some extent) resource-deprived EFL contexts.

It extends the emerging research on technology-enhanced language learning at the Algerian higher education and the general focus on conditions that enable low-cost VR to potentially enhance EFL speaking instruction.

General Conclusion

This dissertation set out to investigate the impact of teacher-designed, low-cost virtual reality-based oral tasks on the speaking fluency of third-year EFL learners at Belhadj Bouchaib University. Guided by the research question: How does the use of virtual reality-based speaking tasks enhance EFL learners' speaking fluency? the study adopted a quasi-experimental pre-test-post-test control group design involving 20 voluntary participants divided equally into an experimental group and a control group.

The study results did not support the original hypothesis. The experimental group prepared oral presentations using immersive 360-degree YouTube videos on smart devices (most used shared PC). There was no statistically significant improvement in speaking fluency from pre-test to post-test ($p = 0.853$, $d = 0.060$). In contrast, the control group, who used traditional preparation materials, showed a statistically significant and very large improvement ($p < 0.001$, $d = 1.806$). At the post-test, the control group scored significantly higher than the experimental group ($p = 0.005$, $d = 1.448$), which suggests that traditional materials were more effective in the specific conditions of this study.

The findings were considered in relation to classroom observation and through the theoretical perspectives of Cognitive Load Theory, Constructivist Learning Theory, Sociocultural Theory, and Task-Based Language Teaching (TBLT) principles. Analysis demonstrated that the experimental group's non-improvement was highly associated with the technical difficulties faced during the post-test session, which required students to manage an unfamiliar 360-degree VR environment and to present fluently using a shared PC. This dual-task requirement induced extraneous cognitive load, which tangibly interrupted speech flow and fluency. In contrast, the control group benefited from straightforward and familiar materials, allowing them to focus solely on their oral presentations.

The research process has been rewarding and difficult in equal measure. Institutional time constraints, shared equipment, and participation that was voluntary as a conductor of a study within the real world as a researcher. I have also developed a deep respect for the challenges of conducting educational research in real-world settings. The unexpectedness of the findings was initially difficult to accept, as I had invested considerable effort in designing the VR-based tasks and sincerely believed that they would improve students' fluency.

But this is what the whole experience taught me, and it is one of the best, most important lessons that any researcher could ever be told: that negative and unexpected results aren't failures, they are findings. The VR intervention not having the desired effect does not diminish the value of the study; on the contrary, it provides an honest and contextually grounded piece of evidence to a field that still has much to learn about how low-cost VR can be effectively implemented in resource-limited EFL classrooms.

I also had the opportunity to work in real research design, instrument creation, and data analysis while dealing with real limitations in conducting research. The collaborative process with my supervisor and the Continuous Oral Production module professor made me realize how significant institutional cooperation is in educational research. Most of all, watching my students' faces, their anticipation for VR, the genuine frustration they overcame when using the technology, and the earnest energy they put into performing, reminded me of why this research is important, and why the question of feasible, meaningful technology integration in EFL teaching is one worthy of sustained consideration.

The findings and limitations of this study give rise to several directions for future research that could build upon and extend the present work:

- **Prolonged intervention durations:** studies may explore the application of VR-based speaking tasks in multiple sessions distributed over weeks, with an aim to provide adequate time for students to get accustomed to the technology prior to assessment. Two preparation weeks, as in the present study, may be too short a period for the cognitive and technical adaptation required for appropriate VR use.

- **Technology familiarisation phase:** Researchers are advised to add a separate technology orientation session prior to the intervention, where students can familiarise themselves with the VR tools in a relatively low-stakes setting. This would minimize the novelty effect and extraneous cognitive load during assessed performance.

- **VR for pre-task only:** Future studies may investigate the use of VR as a pre-task tool while students' interaction with the technology during the live oral assessment is avoided. Such a feedback strategy would be better aligned with TBLT principles and may reduce the dual-tasking observed in this study.

- **Larger and more diversified samples:** Conducting this research again with larger samples involving similar or different institutions, men and women, as well as other EFL contexts in Algeria and elsewhere, would enhance the external validity of the results and facilitate more powerful statistical inference.

- **Mixed-methods designs:** The integration of qualitative data collection instruments (e.g., student interviews, reflective journals, or questionnaires on technology attitudes and anxiety) could result in a more in-depth insight into affective and experiential aspects of VR utilisation for EFL speaking education.

- **Institutional infrastructure and teacher training:** Additional research is also needed on how institutional infrastructure and teacher training may influence the success of VR integration, especially in educational settings with limited resources.

In conclusion, the present research adds a modest but sincere contribution to the emerging work on technology-enhanced language learning in underserved EFL contexts. The path to successful integration of virtual reality in EFL learning and teaching is neither linear nor universal: attention needs to be paid to context, infrastructure, pedagogy, and the emotional component in learning. It is anticipated that the results and the reflections drawn out from this dissertation will be able to provide reference for, among others, future researchers, teachers, and curriculum developers who are equally dedicated to their pursuit of delivering accessible, captivating, and worthwhile EFL learning to their students.

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Appendix A: Oral fluency Pre-test Task Instruction Sheet

Oral Fluency Pre-Test Task	
L3 Speaking Fluency Study - Baseline Measurement - Pre-test	
Student N° :	Group : () Control () Experimental Date :
Purpose of this task: This short task is designed to measure students' current speaking fluency level. There are no right or wrong answers. Evaluation focuses only on how fluent a student's speech is, not on grammar, vocabulary, or accent.	
Pre-Test Task	
Topic: talk about your plans after graduation and your university journey. Guiding Questions: used only to help students get inspired and organize their ideas 1) What are your plans after graduating: work, further studies, or something else? 2) Is there a specific career or field you would like to work in? why? 3) what skills or experiences have you gained during your university years?	
Task Instructions	
Duration:	2 minutes of continuous speaking
Preparation time:	1 minute to organise ideas before speaking
Notes :	No reading is allowed
Evaluation:	Speaking fluency only: speech rate, pause frequency.....
Performance Duration :	Researcher Signature :

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Appendix B: Speaking Fluency Rating Rubric

ORAL FLUENCY RATING RUBRIC					
Student N° :		Group : () Control () Experimental		Pre-test: () Post-test: ()	
Criterion	1 Poor	2 Fair	3 Good	4 Excellent	Score /4
Speech Rate & Pace	Very slow or very fast; unnatural pace; many long silences that break communication	Mostly slow or uneven; noticeable pauses but some attempt at maintaining pace	Generally appropriate pace with occasional hesitations; mostly natural delivery	Natural, consistent speech rate throughout; well-controlled pace with minimal disruption	
Pause Frequency	Very frequent long pauses (>0.25s) that severely disrupt speech flow and comprehension	Several long pauses; speech is often interrupted; flow is inconsistent	Occasional pauses; mostly short pauses; speech flow is generally maintained	Rare or no disruptive pauses; any pauses are natural and do not affect communication	
Repair & Self-Correction	Very frequent false starts, repetitions and reformulations; speech is difficult to follow	Several repairs and repetitions; somewhat disruptive but student manages to continue	Occasional self-corrections; repairs are smooth and do not significantly hinder flow	Rare repairs; when they occur, self-corrections are smooth and natural; strong control	

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Speech Continuity	Speech is very fragmented; frequent breakdowns; student struggles to produce connected utterances	Speech is sometimes connected but breaks down frequently; limited utterance length	Speech is generally connected with some interruptions; utterances are mostly complete	Speech flows continuously and rhythmically; long uninterrupted runs; very coherent delivery	
Fluency Markers Use	Overuse of filled pauses (uh, um) and hesitation markers; very disruptive to communication	Frequent filled pauses and hesitations; somewhat disruptive but message still conveyed	Some filled pauses and hesitation markers but used naturally and do not impede communication	Minimal filled pauses; any hesitation markers are used naturally and appropriately	
SCORE SUMMARY					
Criterion	Speech rate	Pause frequency	Repair & self-correction	Speech continuity	Fluency markers
Total 20/					
Date: performance duration: min					

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Appendix C: Experimental Group Task Instruction and Material Sheet

Oral Production Tasks: Experimental Group

Dear Student, below you will find three oral production tasks. Choose one of the three assignments that you are most comfortable with. You have to prepare and deliver individual oral presentation from 2 to 3 minutes on presentation day using the selected assignment. The difficulty level of all three assignments is the same. While preparing, you can use brief notes, but you must NOT read from a script during presentation.

HOW TO PREPARE USING 360° VR VIDEOS

Instead of printed photos or written descriptions, you will use immersive 360° videos on YouTube to explore real tourism and hospitality environments before preparing your presentation. This helps you build natural vocabulary, visual confidence, and a genuine feel for the context of your chosen task.

STEP-BY-STEP INSTRUCTIONS:

1. Open YouTube on your smartphone and search for a 360° video that matches your chosen task context (see search suggestions below)
3. With Google Cardboard: put your phone inside and explore the immersive environment in full VR mode.
4. Without Google Cardboard: watch normally and drag the video in any direction in order to look around from all angles.
5. Watch the video at least twice, the first time to look at whatever you want to explore, the second time to concentrate on details, vocabulary, and other key elements for your assignment.
6. After watching the video, close your eyes for one minute and try to visualize everything you've seen. This will improve your visual memory and you'll be able to speak more naturally.
7. Prepare your notes and practise your 2-3 minute speech out loud.

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RECOMMENDED 360° VIDEO SEARCH TERMS BY TASK:		
Task	Youtube search terms	What to focus on while watching
Task 1 hotel receptionist	VR 360° Hotel Lobby Tour, 360° Luxurious Hotel Reception, VR Hotel Check-In Experience.	Hotel reception desk layout, lobby facilities, interactions with staff, room features, signage, and general atmosphere.
Task 2 travel agent	VR 360 Travel Destination Tour, 360° Holiday Resort, VR Beach Resort all inclusive.	Holiday resort features, destination landscape, transportation, tourist attractions, vacation package components.
Task 3 tourist guide	360° Tour of Famous Landmark, 360° VR Historical Site Tour, VR Tour Sahara, Casbah, or Timgad.	Architecture of Landmark, surroundings, visitors' movements, interesting visuals, and ambiance.
TASK 1: HOTEL RECEPTIONIST		
You are a professional receptionist working in a four-star hotel in a famous tourist destination. A foreign guest has just arrived to check into your hotel. Your task here will be to welcome the guest, describe the hotel's key facilities, and guide them through the check-in process in a professional and fluent manner		
Useful Vocabulary		

Greetings

Facilities

Check-in

Closing

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Good afternoon /	Rooftop restaurant	May I see your	Enjoy your stay Do
Welcome How may I	NFitness centre / Spa	passport? Here is	not hesitate to contact
assist you? We are	Swimming pool	your key card	Us We look forward
delighted to have	Room service	Breakfast is served	to serving you /Have
you/ Allow me to	/Concierge	from...Checkout time	a pleasant stay
help you		is at...	

TASK 2: TRAVEL AGENT

You are a professional travel agent working in a well-known travel agency. A customer has just walked into your office looking for assistance regarding planning his next vacation. He has set aside a certain amount of money and has certain preferences but doesn't know where he wants to go. It is your job to help him decide upon a place and choose a suitable package for him.

Useful Vocabulary

Greeting & Consulting

Destination & Package

Booking Process

Closing

How can I help you today? What are your preferences? Let me suggest... I highly recommend...	All-inclusive package Return flight / Transfer Four-star accommodation Guided excursion / Tour	Valid passport required Deposit of... Confirmation within 24h Travel insurance included	You will not regret it We will handle everything Feel free to contact us Have a wonderful trip
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TASK 3: TOURIST GUIDE

You are a professional tourist guide showing a group of tourists around a popular tourist landmark in your country or region. The tourists have just come to the place and are ready to learn more about it. Your task is to welcome them, describe the landmark, and make their experience engaging and memorable.

Useful Vocabulary

Welcome & Intro

Description

Historical Facts

Closing

Welcome to... / Good morning I will be your guide today Feel free to ask questions Please follow me	Located in the heart of... This landmark dates back to... It is famous for... As you can see around you...	It was built in... According to historians... This site was once used for... It is listed as UNESCO...	I hope you enjoyed the tour Feel free to explore Do not hesitate to ask Enjoy the rest of your visit
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Appendix D: Control Group Tasks Instructions and Material Sheet

Oral Production Tasks: Control Group

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Dear Student, below you will find three oral production tasks. Choose one of the three assignments that you are most comfortable with. You have to prepare and deliver individual oral presentation from 2 to 3 minutes on presentation day using the selected assignment. The difficulty level of all three assignments is the same. While preparing, you can use brief notes, but you must NOT read from a script during presentation.

HOW TO PREPARE USING TRADITIONAL MATERIALS

Your preparation for the oral presentation will involve the use of traditional learning materials such as digital photos or non-immersive videos. This will allow you to picture the background of the task you chose, expand your vocabulary, and be confident presenting your material.

STEP-BY-STEP INSTRUCTIONS:

1. Select the task you would like to present among the three tasks below before collecting your materials
2. search for visual materials related to the task context via Google Images, Unsplash, or YouTube
4. Analyze the visual materials; pay attention to the environment, the people, the objects, and the general atmosphere
5. While analyzing, note down keywords for your presentation
6. Include the vocabulary list offered for the selected task for better preparation
7. Practice your 2 to 3 minutes oral presentation out loud at least two or three times before presenting

RECOMMENDED VISUAL MATERIALS SEARCH TERMS:

Task	Search terms (Google images, unsplash, YouTube)	What to focus on
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Task 1 hotel receptionist	Hotel lobby reception desk, hotel check-in front desk, luxury hotel facilities pool spa	Reception area layout, hotel facilities, staff uniforms, room features, lobby atmosphere
Task 2 travel agent	Travel agency office consultation, holiday resort beach all inclusive, travel brochure destination photos	Agency setting, holiday destinations, resort amenities, travel package elements
Task 3 tourist guide	Tourist guide landmark group tour , Famous Algerian landmark ,casbah, Timgad, Sahara desert tourist visit .	Landmark architecture, surroundings, visitor interactions, cultural details

TASK 1: HOTEL RECEPTIONIST

You are a professional receptionist working in a four-star hotel in a famous tourist destination. A foreign guest has just arrived to check into your hotel. Your task here will be to welcome the guest, describe the hotel's key facilities, and guide them through the check-in process in a professional and fluent manner

Useful Vocabulary

Greetings

Facilities

Check-in

Closing

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Good afternoon /	Rooftop restaurant	May I see your	Enjoy your stay
Welcome	How may I	NFitness centre / Spa	passport? Here is not hesitate to
assist you? We are	Swimming pool	your key card	contact Us We look
delighted to have	Room service	Breakfast is served	forward to serving
you/ Allow me to	/Concierge	from...Checkout time	you /Have a pleasant
help you		is at...	stay

TASK 2: TRAVEL AGENT

You are a professional travel agent working in a well-known travel agency. A customer has just walked into your office looking for assistance regarding planning his next vacation. He has set aside a certain amount of money and has certain preferences but doesn't know where he wants to go. It is your job to help him decide upon a place and choose a suitable package for him.

Useful Vocabulary

Greeting &
Consulting

Destination &
Package

Booking Process

Closing

How can I help you today? What are your preferences? Let me suggest... I highly recommend...	All-inclusive package Return flight / Transfer Four-star accommodation Guided excursion / Tour	Valid passport required Deposit of... Confirmation within 24h Travel insurance included	You will not regret it We will handle everything Feel free to contact us Have a wonderful trip
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TASK 3: TOURIST GUIDE

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Useful Vocabulary

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Welcome to... / Good morning I will be your guide today Feel free to ask questions Please follow me	Located in the heart of... This landmark dates back to... It is famous for... As you can see around you...	It was built in... According to historians... This site was once used for... It is listed as UNESCO...	I hope you enjoyed the tour Feel free to explore Do not hesitate to ask Enjoy the rest of your visit
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Résumé :

Cette étude analyse les effets d'une tâche d'expression orale en réalité virtuelle à bas coût sur la fluidité orale de jeunes apprenants d'anglais, des élèves de troisième. Vingt sujets ont été assignés à un groupe expérimental, avec l'utilisation des vidéos en réalité virtuelle de YouTube, et un groupe témoin avec un matériel de support traditionnel. Les évaluations pré- et post-intervention ont montré une amélioration significative dans le groupe contrôle, mais pas dans le groupe expérimental. Les résultats, allant à l'encontre de l'hypothèse de recherche, révèlent que le succès de la réalité virtuelle dépend de l'expérience technologique des apprenants et de sa mise en œuvre.

Les mots clés : Réalité Virtuelle, Fluidité d'expression orale en anglais langue étrangère, RV à faible coût, Vidéos RV à 360°, Enseignement des langues basé sur les tâches.

ملخص:

تحلل هذه الدراسة آثار مهمة التحدث باستخدام الواقع الافتراضي منخفض التكلفة على الطلاقة الشفوية لدى متعلمي اللغة الإنجليزية، وتحديدًا طلاب السنة الثالثة جامعي. تم توزيع عشرين مشاركًا على مجموعتين: تجريبية استخدمت مقاطع فيديو الواقع الافتراضي على موقع يوتيوب، وضابطة استخدمت مواد الدعم التقليدية. أظهرت التقييمات قبل وبعد التدخل تحسنًا ملحوظًا في المجموعة الضابطة، بينما لم يُلاحظ أي تحسن في المجموعة التجريبية. تكشف النتائج، التي تتعارض مع فرضية البحث، أن نجاح الواقع الافتراضي يعتمد و بشدة على كيفية تطبيقه و على تجربة الطلاب مع هذه التقنية.

الكلمات المفتاحية : الواقع الافتراضي. طلاقة التحدث باللغة الإنجليزية كلغة أجنبية. واقع افتراضي منخفض التكلفة. مقاطع فيديو واقع افتراضي بزاوية 360 درجة. تعليم اللغة القائم على المهام.