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"Exploring Non-Immersive VR in Language Education: Technical and Pedagogical Preliminary Insights from a French Learning Platform."

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Abstract

Background: The application of Virtual Reality (VR) in the educational field, although consolidated in some sectors and consistent with constructivist and experiential models, remains marginal in the academic context and, in particular, in the integration into Foreign Language Teaching (FLT).

Objectives: The study proposes a critical reflection on the use of VR in teaching French, hypothesizing that immersive environments can favour the pragmatic use of the language and the development of communicative skills. The experimental objective is an *ex ante* evaluation of the VR platform *ImmerseMe*, in relation to the FAIR principles, and to the indicators for learning a foreign language according to the Common European Framework of Reference for Languages (CEFR) (levels A1-A2).

Materials and Methods: A beginner-level training unit, randomly selected from the *ImmerseMe* demo version, was analysed. Complex devices (HMD) were excluded, favoring accessible Non Immersive VR solutions. After a brief comparison with other platforms, *ImmerseMe* was evaluated according three directions: a technological and architectural analysis, a technical and pedagogical insight about its usage modes (Pronunciation, Typing, Spelling, Translation, Conversation AI), and its pedagogical coherence with the CEFR. A final overview about affective and cognitive reflects was also carried on.

Results: Significant potential in the development of pragmatic, sociolinguistic, lexical, and phonological skills emerges from the analysis, as well as beneficial effects at an emotional and cognitive level, and greater autonomy in the learning process. However, the emergence of critical issues related to accessibility, the rigidity of the ASR, the lack of personalized feedback, and the rigidity of the Conversation AI mode, which, although promising, needs development to guarantee authenticity and measurability, are noted.

Conclusion: *ImmerseMe* represents an evolutionary model for FLT, but its scientific validation depends on the ability to overcome technical and methodological limitations. The integration of VR requires conscious didactic design, scaffolding strategies, and qualitative and quantitative evaluation tools.

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Keywords: Virtual Reality; Foreign Language Teaching; CEFR; Automated Speech Recognition (ASR); Gamification.

Introduction

The application of Virtual Reality (VR), while bringing significant transformations in strategic areas such as cultural, social, and health, still encounters notable resistance in the educational and academic context. This friction is attributable to a complex interaction of heterogeneous factors, ranging from purely pedagogical reservations to binding logistical and economic issues. Despite VR being paradigmatic of constructivist and experiential models (encouraging *learning by doing* already theorized by Dewey 1938, Piaget 1971, Kolb 1984), its integration into Foreign Language Teaching (FLT) remains in a condition of substantial marginality and studies about the topic only recently began to appear.

The research hypothesis of the present study posits that the disciplined entry of VR, in contexts of didactic experimentation on the French language, can operate a real pragmatic revolution. The creation of realistic immersive environments is, in fact, capable of catalyzing the pragmatic use of the language, stimulating the user to mobilize reception and linguistic production skills in an interactive and engaging way, also enhancing the multisensory experience and promoting dynamics of *cooperative learning* (Slavin1995, Johnson, Johnson & Holubec 1996) and learning *gamification* (Kapp 2013).

The study aims to initiate a critical reflection on the potential of VR as an integrated resource in multimedia language didactics. This reflection will be integrated by the exploration of the pedagogical applicability of VR, in conformity with the FAIR principles (Findable, Accessible, Interoperable, Reusable), extended to complex digital resources.

The experimental objective consists in conducting an *ex ante* evaluation of resources based on immersive experiences in order to obtain preliminary *reports* on their potential effectiveness, measured in terms of acquisition and usability of linguistic skills in authentic contexts.

The analysis corpus was selected based on specific constraints of accessibility and pedagogical engineering, favoring applications attributable to the Non-Immersive Virtual Reality category. This choice implies the selection of experiences usable via *computer* or *laptop* equipped with only standard peripherals, with free or partial version access. Technologies that require environmental setup and complex hardware devices (such as *Head-Mounted Display - HMD*, or panoramic screens), whose use in a standard didactic context would raise insurmountable problems of logistics and costs, were excluded *ab initio*. Among the *VR Language Learning* platforms (*Immersify, Immerse Language* - now *ImmerseMe*, *Mondly VR, VirtualSpeech, Noun Town, Language Lab*), the selection was made on *ImmerseMe*

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(https://my.immerseme.co/). The examination includes a learning unit chosen in a *random* manner among those available in the *demo* version of the *Beginner* level.

The adopted evaluation method is articulated in successive phases that integrate, in a multidisciplinary manner, the analysis of the technological architecture with the verification of the pedagogical and linguistic coherence of the contents. The evaluation of *ImmerseMe* focuses on its modular learning structure (*Game Settings*), crucial for verifying correspondence with the levels and objectives of the *Common European Framework of Reference for Languages* (CEFR), particularly for the *Grands-Débutants/Débutants* (A1/A2) band of the French language.

1. Language Learning Mediated by Technology: from CALL to VR

The development of foreign language learning has followed a multifaceted path, shaped by the gradual incorporation of digital technologies into educational practices and the consequent transformation of teaching methodologies. Guichon (2012a) identifies "Technology-Mediated Language Learning" as an autonomous research domain, characterized by its own theoretical foundations, methodological approaches, and research objects, with a focus on learner autonomy, online interaction, and technology integration in hybrid learning contexts. His analysis confirms a shift toward learner-centered paradigms and the adoption of digital tools within blended frameworks (Guichon, 2012b).

The earliest structured use of computers in language instruction emerged in the 1960s through Computer-Assisted Language Learning (CALL) (Levy, 1997). Initially limited to repetitive drills and closed systems, CALL evolved alongside technological progress - such as the internet and multimedia- and communicative approaches, though its integration of Web 2.0 remained minimal (Ollivier & Puren, 2011). Today, the field encompasses diverse theoretical perspectives and practices, including mobile learning, immersive environments, artificial intelligence, and collaborative platforms (Palgrave Encyclopedia of CALL, 2023).

Open and Distance Learning (ODL) has mitigated spatial and temporal constraints, fostering autonomy and access to authentic resources (Garrison & Anderson, 2003). Since the early 2000s, blended learning has gained prominence by combining face-to-face and online instruction, enhancing engagement and outcomes through structured digital environments (Antony et al., 2022). The COVID-19 pandemic accelerated hybridization, promoting adaptive instructional designs supported by digital technologies.

Information and Communication Technologies for Education (ICTE) have redefined traditional roles, enabling autonomy, collaborative knowledge construction, and networked learning (Conole, 2013). Their effectiveness, however, depends on context, objectives, and teacher training (Whyte, 2011). Task-based approaches integrated with technology foster authentic linguistic competence, as illustrated by innovative projects documented by Yuste Frías et al. (2023).

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The recent incorporation of Artificial Intelligence (AI) marks a transformative stage. Leveraging Natural Language Processing (NLP) and machine learning, AI enables personalized learning paths, immersive environments, and adaptive content (Holmes & Gardner, 2019). Applications such as neural machine translation, multilingual virtual assistants, and conversational agents are reshaping the linguistic domain (Jurafsky & Martin, 2023), while raising ethical and accessibility concerns. Beyond automating feedback, AI supports the creation of authentic, context-sensitive materials, positioning itself as a cornerstone for reimagining pedagogical strategies toward inclusive, dynamic, and personalized learning ecosystems.

The use of virtual reality (VR) in educational contexts has recently gained increasing attention for its ability to create immersive and motivating learning environments. In the field of foreign language learning, VR enables the simulation of authentic communicative situations, supporting the contextual acquisition of linguistic skills. Recent studies have shown that even non-immersive VR, such as screen-based environments, can enhance students' motivation, engagement, and academic performance (Cowie & Alizadeh, 2025; Özgün & Sadık, 2023). However, some limitations have emerged, including reduced teacher-student interaction and the need for technological familiarity (Yan & Lowell, 2025). Furthermore, Yudintseva (2024) found that non-immersive VR can be as effective as immersive VR in promoting willingness to communicate, while imposing a lower cognitive load. These findings suggest that VR is a promising resource for language education, especially in contexts where immersive technologies are not feasible.

1.1 *ImmerseMe* Technical Overview and Competitive Context

The technical architecture of *ImmerseMe* represents a targeted implementation of Non-Immersive Virtual Reality (NI-VR) for language learning. The platform has been designed for accessibility, relying exclusively on the use of 360° videos filmed in authentic scenarios (such as train stations or marketplaces) and available on standard devices (desktop or tablet), excluding head-mounted displays (HMDs). This technical choice is strategic for reducing extraneous cognitive load (CLT), facilitating adoption by novice users and making the technology accessible in non-specialized educational settings.

In the competitive landscape, *ImmerseMe* distinguishes itself from immersive competitors (e.g., *Mondly VR* or *Noun Town*, which use 3D environments with avatars) as well as from non-immersive homologous products like *VirtualSpeech*. The key difference lies in the integration between the scenario technology and the pedagogical focus:

1. **ImmerseMe (Real 360° Video):** It utilizes the maximum visual fidelity of 360° videos to create a direct bridge between the classroom setting and reality. The pedagogical core is

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centered on guided speaking interaction (via ASR) for the execution of specific linguistic tasks (*Pronunciation, Typing*), targeting basic pragmatic competence (CEFR levels A1-A2). The objective is curricular coherence and controlled repetition, although the rigidity of the ASR and the pre-recorded nature of the scenarios may potentially limit the user's perception of autonomy (SDT) and trigger frustration (AFH).

2. **VirtualSpeech** (3D Scenario/Advanced ASR): This platform, while accessible from desktop and thus classified as non-immersive VR, focuses its resources on advanced voice analysis and the simulation of professional scenarios (e.g., presentations or meetings). The didactic goal is not basic grammar or vocabulary, but rather the refinement of soft skills, fluency, and delivery (B1+ levels). The ASR technology is employed here for granular coaching on rhythm and hesitation, indicating a distinct approach to managing Competence (SDT) and Performance Anxiety (AFH) within a high-stakes context.
3. **Noun Town** (Immersive/Gamified Vocabulary): Noun Town is typically positioned as a fully Immersive VR application (requiring HMD), primarily focused on vocabulary building through gamified mechanics and cartoony 3D environments. Unlike ImmerseMe's focus on pragmatic dialogue and authentic visuals, Noun Town prioritizes intrinsic motivation through play (SDT) and relies on visual association for learning words, rather than complex conversational output analysis**.**
4. **Language Lab** (Immersive/Experiential Vocabulary): Language Lab also uses immersive 3D scenarios but focuses on an approach where the learner must figure out instructions in the target language by manipulating virtual objects (a 'sink-or-swim' method). This method aims to reduce the anxiety of verbal *performance* (AFH) by shifting the immediate communicative pressure toward contextual comprehension and experiential discovery. While targeting lower proficiency levels (A1-B1) like ImmerseMe, it sacrifices the *authenticity* of real-world scenarios for a more exploratory, cognitive-based learning experience**.**

ImmerseMe utilizes Non-Immersive VR to offer contextual authenticity and curricular support to the novice user, whereas competitors such as *VirtualSpeech* employ it for a performance simulation and advanced feedback intended for higher proficiency levels. This distinction is crucial for the subsequent analysis of the psychopedagogical theories applied to *ImmerseMe*'s specific design.

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Feature	ImmerseMe (Non-Immersive Video 360°)	VirtualSpeech (Non-Immersive Scenario & ASR)
Point 1. Scenario Technology	Exclusive use of **real 360° videos** with controlled navigation. Maximum emphasis on **visual authenticity**.	Use of **3D environments and simulated scenarios** (often focused on meetings or presentations). Maximum emphasis on **functional fidelity**.
Point 2. Interaction & Pedagogical Focus (In-depth)	Emphasis on **guided speaking interaction** (ASR) and specific tasks (*Pronunciation, Typing*). The focus is on **pragmatic competence** (e.g., ordering coffee) in general social contexts, ensuring a linear progression according to the **CEFR (A1-A2)**. The limitation is the rigidity of the ASR **feedback**, which can hinder motivation (AFH).	Emphasis on **advanced voice analysis** (rhythm, pauses, hesitations) and *soft skills*. The focus is on **advanced professional and communicative competence** (e.g., presentations or negotiations). ASR technology is used for **granular coaching**, shifting the objective from basic linguistic correctness to **fluency and delivery**.
Point 3. Learning Objective	Acquisition of **basic communicative functions** for everyday interaction in a foreign language.	Improvement of **interpersonal and professional communication**, often targeting a B1+ level.

Tab. I Comparative analysis between ImmerseMe and a homologous product (VirtualSpeech) regarding scenario technology and pedagogical-interactive focus within Non-Immersive Virtual Reality (NI-VR).

2. *ImmerseMe*: platform access methods and preliminary information about the learning units

The platform's initial screen, dedicated to selecting the course from twelve available languages, is accessible exclusively in English, offering no possibility of modifying the interface into other languages. Consequently, the entire user experience takes place in a linguistically unique environment, potentially penalizing non-Anglophone users, limiting their autonomy and the personalization of the training path. Upon selecting the language *French*, the opening of the new interface, displayed in English, proposes three navigation buttons: *Units*, *Levels*, and *Grammar*, in addition to a search field for lessons.

The platform, developed by the company of the same name based in the United States, registered with a Colombian domain (immerseme.co), adopts a simplified classification of language levels into three categories: *Beginner*, *Intermediate*, and *Advanced*, which, although covering the entire spectrum of the CEFR, do not reflect its detailed structure or the updates introduced by the *Companion Volume* (2020) such as the new Pre-A1 level and an expansion of the descriptors for traditional levels (A1 – basic; A2 – elementary; B1 – intermediate; B2 – upper intermediate; C1 – advanced; C2 – mastery).

After selecting all available units, it is possible to proceed with the choice of a specific unit via the *Levels* drop-down menu. Within the *Beginner* level, which currently includes 257 lessons, it is possible to choose the thematic unit "Bakery," composed of four lessons. Activating the lesson "Buying a loaf of

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bread," a new web page is loaded with the title in French, *Acheter du pain*. The lesson starts via the "Start Lesson" button. A drop-down menu allows choosing among five operational or game modes (*Game Setting*): *Pronunciation, Typing, Spelling, Translation*, and *Conversation Beta* based on interaction with AI.

This structure, although simplified, is partially consistent with the recent CEFR guidelines that value oral interaction, linguistic mediation, pluricultural competence, and the action-oriented approach. Finally, the presence of an inactive "Play mode" button and a currently disabled "Play" button is noted.

3. Technical analysis of the platform

3.1 Architectural Analysis

The examination of the Game setting (*Pronunciation, Typing, Spelling, Translation*) demonstrates how the platform balances oral *fluency* with written *accuracy*.

Pronunciation Mode: Analysis of the *Phonetic Engine*

This mode is the direct expression of the platform's *Automated Speech Recognition* (ASR) technology, and it aims to overcome the specific phonetic difficulties of French for beginner learners. The user listens to the phrase produced by the native speaker actor in the VR environment (e.g., the *Boulangerie* scenario) and repeats it, receiving a score based on the correspondence between the vocal input and the target phonological model. The system allows for unlimited attempts, encouraging practice without the pressure of a human interlocutor.

Typing Mode

The mode engages a text correction module that requires the student to accurately transcribe the phrases pronounced by the native speaker in the VR environment. It is not a free production activity, but a detailed verification of auditory comprehension and orthographic correctness. The ASR acts as immediate corrective feedback, essential for the development of routine conversation types.

Spelling Mode

The system provides the phrase in the base language (e.g., English) and requires the user to type the correspondence in French, letter by letter or word by word, focusing on precision. The algorithmic *matching* is highly sensitive to typing errors and accents, elements not always detected by the ASR in *Pronunciation* mode.

Translation Mode

The user is presented with a phrase in French from the VR context and is asked for the translation into the base language (or vice versa). The *scoring* system is based on the correctness of the meaning, tolerating some syntactic variation in the translated language.

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The Teacher Dashboard: A Tool for Pedagogical Engineering

Access to a Teacher Dashboard completes the technical analysis, providing the necessary metrics to conduct a rigorous *ex ante* evaluation. This tool allows tracking student *performance* across all modes (*Pronunciation scores, Typing accuracy*, etc.), permitting the quantification of acquisition data and the analysis of discourse analysis in terms of systematic error. However, the analysis must consider the technical limits highlighted in the manuscript's conclusions. The *Conversation* (BETA) option, which promises a more open interaction based on GenAI, is marked with the warning "No points available," raising a question about its current capacity to provide quantifiable and reliable data for research purposes. The validation of *ImmerseMe* for the *Beginner* level is technically solid in verifying basic skills, but its final integration depends on the ability of pedagogical engineers to isolate and mitigate external factors (noise, *performance stress*) that can compromise training effectiveness.

3.2. Technical-Forensic Analysis of Immersive Learning Modules

Pronunciation Mode: Validation of the ASR Engine

The *Pronunciation* mode constitutes the phonetic-productive core of the VR experience. Its effectiveness is entirely dependent on the architecture of its Automated Speech Recognition (ASR) Engine.

Technical Aspect	Specialist Analysis	Routine Conversation Adequacy and Types Verification (CEFR A1/A2)
Phonetic Assessment Engine	The system performs a real-time phonological comparison between the learner's vocal input and the phonological model of the *target language* (French). The algorithm must be calibrated for tolerance to interlanguage, measuring the deviation from the *formant frequencies* and native prosody, without triggering a Systemic False Negative for non-native accents.	Verification of adequacy and routine conversation types (CEFR A1/A2).
Feedback Granularity	The feedback is not binary (correct/incorrect), but granular (assignment of a score, *scoring*), supporting the gamification approach. The option of unlimited attempts supports the experiential learning model (*learning by doing*).	Mitigates the risk of stress and inadequate results, encouraging active learning.
Peripheral Requirement	The absolute dependence on a working microphone constitutes an infrastructural constraint of *Non-immersive VR* that falls within the technical limits highlighted in the manuscript.	Represents a technical limit to widespread adoption.

Tab. II - Technical-Forensic Analysis of Parameters and Pedagogical Implications of the Pronunciation Mode (Automated Speech Recognition Engine - ASR)

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Typing Mode: Analysis of the Text Correction Module (TCM)

The *Typing* mode fulfills the function of validating written receptive competence and orthographic accuracy.

Technical Aspect	Specialist Analysis	Verification of text quality and adequacy and correspondence to level A1/A2 (basic accuracy)
Audio-to-Text Mapping	Acts as a digital dictation, requiring the faithful transcription of the audio from the VR context. The TCM performs rigorous *matching* on spelling, capitalization, and punctuation, essential for textual accuracy in French (where spelling is not phonetic).	Verification of text quality and adequacy and correspondence to level A1/A2 (basic accuracy).
Data Tracking System	The traceability of typing errors (available via the Teacher Dashboard) generates quantifiable data on the student's receptive accuracy. This *data harvesting* is fundamental for the production of preliminary reports.	Supports the *ex ante* evaluation of materials and resources based on immersive experiences.

Tab. III - Technical-Forensic Analysis of Parameters and Pedagogical Implications of the Typing Mode (Text Correction Module – TCM).

Spelling Mode: Focus on Morphological Accuracy

The *Spelling* mode refines the verification of writing competence by isolating challenges related to inflectional morphology and orthography. The mode requires the input of words or phrases, focusing on the correct use of diacritics (accents) and grammatical agreement (gender/number). The algorithmic verification is focused on specific lexical accuracy.

Translation Mode: Semantic and Pragmatic Analysis

Technical Aspect	Specialist Analysis	Verification of the adequacy of the information proposed and the communicative value of the message
Semantic Equivalence Validator	The system evaluates whether the student's translation (from the *target* language to the base language or vice versa) captures the communicative meaning of the phrase, not limiting itself to a *word-for-word matching*.	Verification of the adequacy of the information proposed and the communicative value of the message.
Indirect Pragmatic Verification	This mode indirectly verifies the assimilation of the cultural and pragmatic component, ensuring that, for example, a French courtesy expression is translated with its functional, not literal, equivalent.	Reinforces the verification of the language-cultural component interrelation.

Tab. IV - Technical-Forensic Analysis of Parameters and Pedagogical Implications of the Translation Mode (Semantic Equivalence Validator)

Implications for Data Measurement and Sustainability

The coexistence of structured modes (*Pronunciation, Typing, Spelling*) with the experimental *Conversation* (BETA) mode raises a critical paradox for research:

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- **Data Granularity vs. Authenticity:** The structured modes provide the necessary *tracking* data (via the Teacher Dashboard) for the quantification and usability of linguistic skills. However, the *Conversation* (BETA) mode, which probably uses NLP/GenAI for a non-scripted conversation in authentic contexts (a central objective of the manuscript), is explicitly excluded from the platform's *scoring* ("No points available").
- **Incomplete Validation:** This implies that the ability for *discourse analysis* and linguistic variation in freer interaction cannot be entirely quantified through the platform's automatic data. The *ex ante* analysis integrates a qualitative evaluation of the BETA interaction with the quantitative data of the structured modes, to prevent the absence of data on more complex *discourse* from leading to inadequate results.

3.3 Analysis of Web Infrastructure, Performance, and Technical Sustainability

The technical analysis of a VR-based didactic platform accessible via browser is crucial for evaluating its infrastructural sustainability and pedagogical effectiveness. A technical *deficit* in any of the underlying areas can irrevocably compromise the immersive potential and language learning.

3.3.1 Computer Security (SSL and HTTPS Protocol)

Maintaining high security standards is a non-negotiable requirement for platforms that manage sensitive data, including student *performance* and access data (GDPR/privacy).

Parameter	Technical Evaluation	Specialist Implication
Transfer Protocol	The site uses the *HTTPS* (Hypertext Transfer Protocol Secure) protocol.	Standard Compliance: Communication between the *client* (student's device) and the *server* is encrypted via Transport Layer Security (TLS)/Secure Sockets Layer (SSL). This guarantees data integrity and the confidentiality of *login* credentials and personal data in transit.
SSL Certificate	A valid SSL certificate, necessary for HTTPS enablement, is presumably active.	Reliability and Trust: The presence of the security padlock in the *browser* is fundamental for instilling trust in institutional users (schools/universities) and students, a fundamental requirement for adoption in formal didactic contexts.

Tab. V - Analysis of Security Infrastructure and Compliance with Standards (HTTPS/SSL Protocol) for Platform Adoption.

Conclusion on Security: The adoption of HTTPS/SSL constitutes a robust foundational infrastructure for security, which is indispensable for an educational platform that manages login data and, potentially, user performance data (in line with data protection regulations).

3.3.2 Speed and Loading Performance

In browser-based applications that handle 360-degree videos (like *ImmerseMe*), performance is directly related to the immersive experience and learning continuity. Lag or slow loading distorts the sense of presence and interrupts the cognitive flow.

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Parameter	Technical Evaluation	Specialist Implication
Perceived Loading Time	Generally, the *login* page loads quickly. However, the real *performance* is determined by the loading of *VR content* (360° video and ASR engine) *post-login*.	Bandwidth Bottleneck: *Streaming* VR experiences are intensive in terms of bandwidth. Any *deficit* in the *client*'s connection speed or inefficiency in video compression (*codec*) translates into reduced *frame-rate*, *stuttering*, or low resolution, compromising visual authenticity and immersion.
Code Optimization	Being a modern web application (*SaaS*), the use of *minification* techniques (reduction of CSS/JS files) and *browser caching* is assumed.	Rendering Efficiency: Optimization is crucial for reducing the *parsing* and *rendering* time by the *browser*, allowing the *client* device's CPU/GPU to dedicate more resources to *rendering* the 360° video *feed* and managing the Automated Speech Recognition (ASR).

Tab. VI - Analysis of Performance and Technical Criticalities in Rendering VR Content and Bandwidth Management.

Conclusion on Performance: The platform's effectiveness is dependent on connection quality and client-side optimization. The fluidity of the simulation is a direct factor in the validation of the pragmatic language experience.

3.3.3 Structure and Usability (*User Interface/User Experience - UI/UX*)

Usability is fundamental for didactic accessibility. A complex interface introduces an extraneous cognitive load that deviates attention from the linguistic objective.

Parameter	Technical Evaluation	Specialist Implication
Navigation Architecture	The *login* page (https://my.immerseme.co/login) is minimalist, focused on entering credentials. The internal structure (presumable) is a dashboard (*Teacher/Student Dashboard*)	Didactic Usability: The structure must include clear menus that facilitate the transition between learning modes (*Pronunciation*, *Dictation*, *Translation*, *Immersion*) without disorienting the user. The consequential logic of the *curriculum* must be immediately evident.
Content Accessibility	Contents (360° scenarios) must be clearly labeled by linguistic level (CEFR) and topic.	Reduction of Cognitive Load: An intuitive UI/UX reduces the cost of interaction, allowing the student to concentrate entirely on the linguistic output rather than system navigation.

Tab. VII - Analysis of Usability (User Interface/User Experience - UI/UX) and Navigation Architecture for Didactic Purpose.

Conclusion on Usability: A *user-friendly* interface is an essential pedagogical mediator, ensuring that the focus remains on authentic linguistic interaction (the central objective of FLT).

3.3.4. Search Engine Optimization (SEO)

Although the main platform is access-limited (*gated content*), SEO optimization is crucial for institutional visibility and the attractiveness of the main domain (*immerseme.co*).

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Parameter	Technical Evaluation	Specialist Implication
Indexing and Content Quality (Public Site)	The public site (e.g., *immerseme.co*) must be optimized for keywords related to "VR language learning," "FLT French," "Immersive education."	Visibility and Credibility: Good indexing elevates the academic and commercial profile of the platform, facilitating adoption by institutions seeking cutting-edge technological solutions.
Technical Content	Technical documentation (e.g., *Help Center* pages) is essential for indexing for specific *queries* (e.g., " requirements" ImmerseMe microphone").	Technical Validation: The presence of detailed technical content reinforces the image of an engineeristically robust product.

Tab. VIII - Analysis of Search Engine Optimization (SEO) Factors and Implications for Institutional Visibility.

Conclusion on SEO: SEO does not directly impact learning, but it is a critical vector for validation and dissemination in the e-learning market.

3.3.5. Device and Browser Compatibility (*Cross-Platform*)

The requirement for Non-Immersive Virtual Reality imposes transverse and reliable compatibility, given the variety of *hardware* in use in the academic environment.

Parameter	Technical Evaluation	Specialist Implication
Browser Compatibility	Platform compatible with the main desktop *browsers* (Chrome, Firefox, Safari).	Maximum Accessibility: The use of *web-standard* and *cross-browser* technologies ensures that the platform is effectively accessible to most students, regardless of the operating system (*Windows, macOS, Linux*), respecting the *Non-Immersive VR* constraint (use of standard devices)
Mobile Responsiveness	Compatibility with *tablets* and *smartphones* (via Chrome Android or Safari iOS).	Logistical Flexibility: The *responsive design* extends usability beyond the desktop environment, supporting blended learning and *mobile learning* models, although the complete VR experience is optimal on larger screens and with *headsets* (excluded from the *corpus* but technically supported by the platform).

Tab. IX- Analysis of Cross-Platform and Transverse Compatibility between Devices and Browsers for Non-Immersive VR Sustainability.

Compatibility Conclusion: *ImmerseMe*'s cross-platform approach makes it a scalable resource and logically consistent with the infrastructural limitations typical of educational experiments in university contexts.

4. Pedagogical and Linguistic Analysis of the Platform

The results of the pedagogical-linguistic analysis are presented through an evaluative approach aimed at determining the effectiveness and reliability of the tool, by examining its output against specific indicators.

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The following macro-categories are considered:

- **Context and Objectives**: the educational context in which the tool is employed and the training objectives;
- **Linguistic Adequacy**: encompassing observations on phonetic, morphosyntactic, semantic, pragmatic, and lexical components;
- **Cultural Dimension**: the immersive environment is considered as a facilitator for the assimilation of the cultural context;
- **Equivalence with CEFR levels, development of language skills, and types of interaction**: a comparative-contrastive analysis will be conducted to assess the adequacy of the tool's content in relation to the levels of the *Common European Framework of Reference for Languages*, the modalities and activities through which language skills are developed, and how the virtual environment may foster oral production. Additionally, it will be evaluated whether conversation and listening activities are structured to be less punitive and more gradual.

With regard to the strictly linguistic evaluation, the following parameters have been observed:

- communicative context
- communicative functions
- lexicon
- grammatical structures

The comparative analysis with CEFR objectives evaluates the following parameters:

- **Consistency with CEFR levels and skill indicators**: comparison with general language competences outlined in the *Companion Volume* for levels A1 and A2, and the corresponding content;
- **Activity Development**: analysis of activities and/or simulations for the application of competences;
- **Feedback Modalities**: type of assessment (where applicable) of the competence provided by the platform.

Following a general overview of the Game Setting options (*Pronunciation*, *Typing*, *Spelling*, *Translation*), a more detailed analysis of the selected unit will be conducted, considering the descriptors for the chosen level.

Pronunciation Mode: Analysis of Phonetic Competence

This mode is accessible through increasing levels of difficulty: *Easy 50%*, *Medium 75%*, *Fluent 100%*.

For the selected level, the *Phonetic Engine* must be configured to allow significant tolerance for interlinguistic variation (the student's accent). The primary objective is the acquisition of basic French

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phonemes (*voyelles nasales*, *semi voyelles*, /ʁ/ *uvulaire*, etc.) and correct intonation for elementary speech acts (greetings, simple requests).

Typing Mode: Analysis of Receptive and Orthographic Competence

The *Typing* mode assesses the student's ability to connect phoneme to grapheme - a critical challenge in French due to its numerous silent letters and homophones. This activity is essential for verifying morphological accuracy (e.g., noun and adjective agreement) and understanding word segmentation in rapid speech. Error data analysis in this mode (available via the Teacher Dashboard) provides a direct indicator of the quality and adequacy of the texts produced.

Spelling Mode: Focus on Lexical and Morphological Accuracy

The *Spelling* mode isolates orthographic ability, ensuring that the student develops a foundational vocabulary free from encoding errors. For beginner level, this mode is a crucial validation element for lexical accuracy and mastery of spelling rules (e.g., correct use of acute, grave, and circumflex accents). It contributes to verifying the quality and adequacy of texts in accordance with CEFR requirements.

Translation Mode: Analysis of Semantic and Pragmatic Competence

The *Translation* mode assesses semantic comprehension of functional phrases and the ability for linguistic mediation, as well as metalinguistic competence. It helps determine whether the student has understood the communicative value of dialogue (e.g., distinguishing between a polite request and a direct command). This mode serves as an indicator of the interrelation between language and cultural components, as accurate translation reflects assimilation of contextual and pragmatic meaning in interaction (e.g., correct use of *vouvoiement* or *tutoiement*).

4.1. Analysis of the Didactic Unit "Boulangerie – Acheter du pain"

Before proceeding with the analysis of the unit, we consider the CEFR descriptors (excluding the Pre-A1 level) corresponding to the *Beginner* level of the platform for the relevant skills, identifying the following correspondences:

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QCER	ImmerseMe
Pre A1	Beginner
A1	
A2	
B1	Intermediate
B2	
C1	Advanced
C2	

Tab. IX - Correspondence between CEFR Descriptor Levels and ImmerseMe Platform Simplified Level Categories.

QCER	ImmerseMe
Oral reception	Pronunciation
Written reception	Pronunciation
Oral production	Pronunciation- Spelling
Written production	Typing
Interaction	Conversation

Tab. XI- Correspondence between CEFR Linguistic Macro-skills and ImmerseMe Operational Modes (Game Settings).

Having started the *Acheter du pain* unit and selected the *Pronunciation Easy 50%* setting, we consider the CEFR descriptors for all skills.

Communicative context: The unit is set in a *boulangerie* with a costumed actor, where the *apprenant* is immersed to simulate the purchase of different types of bread. The context is authentic and everyday, ideal for A1-A2 level students to develop basic communicative skills in a culturally relevant environment.

- **Communicative functions:**
  - Greeting and courtesy: *Bonjour, s'il vous plaît, bonne journée.*
  - Expressing requests: *Je voudrais du pain, s'il vous plaît* (polite conditional form).
  - Specifying the type of bread: *Une baguette, Un pain complet, Un pain de campagne.*
  - Concluding the interaction: *Voilà, Bonne journée.*
- **Vocabulary:**
  - Thematic vocabulary: *baguette, pain complet, pain de campagne, boulangerie.*
  - Courtesy expressions: *bonjour, s'il vous plaît, voilà, bonne journée.*
- **Grammatical structures:**
  - Present conditional: *Je voudrais* (politeness form).
  - Partitive and determinative articles: *du pain, une baguette.*
  - Simple and direct sentences, suitable for beginners.
- **Structure and progression:**
  - The lesson contains 7 main phrases, branching into 3 paths (one for each type of bread).

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- Each path must be repeated to complete the lesson 100%, favoring contextualized repetition.

- **Methodological approach:**
  - Constructivism: active and contextualized learning.
  - Gamification: scores, progress, and badges motivate the student.
  - Multimodal learning: visual, auditory, kinesthetic.

- **Didactic potential:**
  - Classroom *role-play* activities.
  - Introduction to food vocabulary.
  - Development of oral skills and comprehension.
  - Preparation for real-life situations (travel, oral exams).

Correspondence with CEFR levels

The oral communicative skills appear most developed by the tool.

Level	Oral Production	Correspondence with the unit
A1	Can use simple expressions and phrases to satisfy concrete needs.	• *Je voudrais du pain s'il vous plaît* (simple and concrete request) • *Une baguette, un pain complet* (use of specific vocabulary for consumer goods) • *Bonjour, bonne journée, au revoir* (greeting and courtesy formulas
A2	Can describe aspects of daily life in simple terms.	• The student can vary the request: *Je voudrais une baguette / un pain complet / un pain de campagne*. • Use of the polite conditional (*je voudrais*) → more advanced structure than A1.

Tab. XI - Correspondence between Oral Production Descriptors (CEFR A1/A2) and Communicative Functions Present in the Didactic Unit "Acheter du pain".

Level	Oral Interaction	Correspondence with the unit

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A1	Can interact in a simple way provided the interlocutor speaks slowly and clearly.	• The unit simulates a dialogue with a shop assistant who speaks slowly (e.g., *Quelle sorte de pain voulez-vous*?). • The student responds with memorizable and predictable phrases (e.g., *Un pain de campagne, s'il vous plaît*).
A2	Can handle short social exchanges, even if usually not understanding enough to maintain the conversation.	• The unit includes seller's questions (e.g., *Voilà* as a response to a request). • The student can simulate a brief complete interaction: *Bonjour, bienvenue à la boulangerie, que puis-je vous servir aujourd'hui ? Bonjour, je voudrais du pain, s'il vous plaît Quelle sorte de pain voulez-vous ? Une baguette, s'il vous plaît.*

Tab. XII - Correspondence between Oral Interaction Descriptors (CEFR A1/A2) and the Dialogue Simulation Present in the Didactic Unit "Acheter du pain".

Level	Oral Reception	Correspondence with the unit
A1	Can understand everyday expressions and basic phrases.	• The unit's phrases are short, clear, and contextualized. • The 360° video aids visual and auditory comprehension.
A2	Can understand phrases and expressions related to areas of immediate relevance.	• Food vocabulary and purchasing situations are directly relevant. • The unit favors comprehension thanks to repetition and visual support.

Tab. XIII - Correspondence between Oral Comprehension Descriptors (CEFR A1/A2) and Auditory Effectiveness in the Didactic Unit "Acheter du pain".

As for written production skills, the *Typing* mode requires the student to correctly type the phrases heard or visualized during the unit. This is exclusively a copying exercise of phrases from a box where the text appears in watermark to be overwritten.

Level	Written Production	Correspondence with the unit
A1	Can write simple phrases related to immediate needs.	The *Typing* mode allows writing memorized phrases, such as requests and courtesy formulas (*Bonjour, bienvenue à la boulangerie, que puis-je vous servir aujourd'hui ?* *Bonjour, je voudrais du pain s'il vous plaît*)
A2	Can write short messages and connected phrases on everyday topics.	Can reinforce orthographic competence and syntactic memory, in line with A2 objectives (*Quelle sorte de pain voulez-vous ?*)

Tab. XIV - Correspondence between Written Production Descriptors (CEFR A1/A2) and Accuracy Verification via the Typing Mode in the Didactic Unit "Acheter du pain".

The *Translation* mode requires the student to translate phrases from the *source* language to the *target* language, involving lexical recognition, semantic comprehension, grammatical reflections, and linguistic transfer skills. However, this practice occurs in oral mode, requiring the student to record, in French, a phrase whose English translation is present in an underlying field. It should be considered that

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frequently, in this circumstance, the *apprenant* may face technical problems, failing to perform the recording, which will lead them to advance in the scene by resorting to the appropriate button. Finally, the *Conversation AI* mode, which does not take place in an immersive environment but through a text interaction box, allows the student to undertake a free dialogue, simulating a real conversation in French.

The AI proposes questions or stimuli related to the lesson's objective (buying bread) and responds dynamically based on the student's input, who can type or speak (with observed problems due to the malfunctioning *record* button), stimulating the student to a certain autonomy, to manage short linguistic exchanges, and to implement communicative strategies.

4.1.1 Presentation of findings

This unit allows for the development of various transversal skills, fundamental for complete and authentic language learning. Pragmatic skills emerge from the use of language in a real and functional context, such as interaction in a *boulangerie*. Sociolinguistic skills manifest in the appropriate use of courtesy formulas and in managing short, but significant, communicative exchanges. The activity also favors lexical skills, thanks to the enrichment of thematic vocabulary related to food and daily life. Finally, phonological skills are stimulated through practice in pronunciation and intonation, key elements for effective and comprehensible communication. After observing the objectives, level, and target audience for the training, the *ex ante* evaluation carried out above reveals, however, the evidence of training gaps and difficulties in skill acquisition that can be distributed across four levels:

a) Phonetic-morphological-lexical level:

- **Pronunciation and phonetics**
  - Nasal sounds (*pain, complet*) or *liaison* can be difficult to perceive and reproduce.
  - Furthermore, the lack of feedback can hinder pronunciation improvement.
  - Moreover, the conversation with AI is often not in line with the expected levels.
  - The student might not understand the AI's questions, especially if formulated with vocabulary or syntax not yet acquired.
  - In response to deliberately misleading or erroneous answers provided during the platform test, or poorly captured by the microphone, it is noted that the AI continues the dialogue without corrective feedback.
- **Grammatical structures not yet acquired**
  - Use of the conditional ("*je voudrais*")
    - Although it is a polite form, the conditional can be grammatically complex for beginners.

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- The student might confuse *je voudrais* with *je veux* or not understand the pragmatic difference between the two.

- Partitive and determinative articles
  - *du pain, une baguette* → the distinction between *du, de la, un/une* can create confusion, as *débutants* have not yet acquired mastery of French articles.

- **Specific vocabulary**
  - Words like *pain complet, pain de campagne* might be unfamiliar and incomprehensible because they are not accompanied by images.
  - The risk is that the student memorizes the phrases without understanding their meaning.
  -

b) Cognitive-didactic level:

- **High cognitive load**
  - The unit requires managing simultaneously: listening, comprehension, repetition, pronunciation, spelling, and translation.
  - For a *débutant*, this can generate cognitive overload, especially in the absence of guidance or didactic support.

- **Absence of visual support for vocabulary**
  - The unit does not always show images of the types of bread, making it harder to associate word and object.
  - For a *débutant*, visual support is fundamental for comprehension.
- **Speaker's speed and pronunciation**
  - Even if the speaker is clear, the speed can be too high for those unfamiliar with the language.
  - Some French sounds (e.g., *pain, voilà*) can be difficult to reproduce correctly.
- **Limited interaction**
  - The unit is predefined and non-adaptive: the student repeats phrases but cannot explore variations or receive personalized feedback.
  - This can lead to mechanical, inflexible learning.
- **Short-term memory**
  - The repetition mode can be too demanding for those who have not yet developed memorization strategies.

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- The lack of metacognitive strategies can make phrase consolidation difficult.

c) Methodological level:

- **Repetitiveness and motivation**
  - The need to repeat the lesson 3 times (for each type of bread) can be boring and monotonous if not accompanied by variety or clear objectives.
  - *Débutants* might lose motivation without seeing tangible progress.
  - The risk is that the student repeats mechanically without internalizing.
- **Absence of explicit supports**
  - The absence of grammatical or lexical explanations integrated into the activity flow limits comprehension.
  - The *débutant* student might feel disoriented without explicit support or didactic guidance.
- **Absence of contextual translation**
  - Translations are not available during the interaction.
  - This can create frustration if the student does not understand a phrase and lacks immediate tools to decode it.

d) Emotional level:

- **Frustration from error and low perception of competence**
  - The voice recognition system might not accept the *débutant* student's pronunciation, generating frustration and a sense of failure.
  - Without positive or corrective feedback, the student can lose confidence.
  - If the student fails to complete the unit or receives low scores, they can develop low linguistic self-esteem and be negatively influenced in motivation and future commitment.

5. Implications at a cognitive and affective level

The cognitive and affective dimensions of VR-based language learning are strongly influenced by design choices and task sequencing. In non-immersive environments, such as the desktop interface of *ImmerseMe*, cognitive load can be optimized by presenting content in a linear and predictable manner. For instance, in the *Acheter du pain* unit, learners progress through short, formulaic exchanges (*Bonjour, Je voudrais du pain, s'il vous plait*) which reduces extraneous processing and allows focus on essential linguistic structures like the conditional form *je voudrais* and partitive articles (*du pain*). This structured approach

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prevents overload, particularly for *débutant* learners who might otherwise struggle with simultaneous visual and auditory stimuli.

Conversely, the simulated bakery environment, enhanced by 360° visuals and native speaker audio, provides contextual cues that support comprehension and memory encoding. Immediate feedback in Pronunciation mode, where learners repeat phrases such as *Une baguette, s'il vous plaît* and receive a score, creates a safe space for error correction without social pressure, thereby lowering anxiety and the affective filter. Similarly, Typing and Spelling modes reinforce orthographic accuracy by requiring learners to transcribe or spell phrases like *pain complet*, promoting phoneme-grapheme mapping in a controlled setting.

Personalization further strengthens autonomy and competence. Adjustable difficulty levels (Easy 50%, Medium 75%, Fluent 100%) in Pronunciation mode allow learners to calibrate challenge according to their proficiency, while Conversation Beta - though experimental - offers opportunities for open-ended interaction, simulating authentic negotiation of meaning. For example, learners can respond to AI prompts beyond scripted dialogues, fostering strategic language use. These features collectively illustrate how VR environments, when scaffolded and adaptive, can balance cognitive demands, reduce anxiety through supportive feedback, and empower learners to take ownership of their learning trajectory.

5.1 Implications for Learning Constructs

The *ex ante* analysis of the *ImmerseMe* platform, framed within the paradigm of Non-Immersive Virtual Reality (NI-VR), necessitates an interpretation of its potential efficacy and structural limitations according to three fundamental theoretical constructs that govern technology-mediated Second Language (L2) acquisition.

5.1.1. Cognitive Load Theory (CLT)

The design of the interface is configured as a critical factor in the modulation of total cognitive load (Sweller, 1988). The architectural choice to opt for NI-VR *desktop-based* programmatically aims at the minimization of extraneous cognitive load, by deemphasizing the requirements of complex hardware management (e.g., the elimination of Head-Mounted Displays, HMDs).

Nevertheless, the simultaneity of processing required by the environment (360° visual input, auditory processing of native speech, and textual decoding of the *prompt* and *feedback*) introduces a potential for increased intrinsic and extraneous load due to high *element interactivity*. The didactic efficacy of the platform is, therefore, subordinated to the optimization of visual and textual *scaffolding*, which must operate as a mechanism for reducing *split-attention* and supporting the transformation of extraneous load

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into *germane load*, balancing the informative richness of the realistic context with the granularity of the assigned linguistic task.

5.1.2 Affective Filter Hypothesis (AFH)

According to the construct put forth by Krashen (1985), the permeability to linguistic input is inversely proportional to the perceived level of emotional stress. The NI-VR environment simulates a condition of low-stakes social interaction, thereby acting as a potential reducer of the affective filter (*performance anxiety*).

The filter is primarily mitigated by the availability of unlimited attempts and the absence of a judging human interlocutor. However, critical analysis reveals a structural vulnerability in the implementation of the Automatic Speech Recognition (ASR) system. An ASR algorithm that is excessively rigid and non-tolerant of interlanguage phonological variations (*non-native speaker accents*) can generate cognitive dissonance between the student's perception of phonetic correctness and the technological validation. This technical *mismatch* has the potential to paradoxically increase the affective filter due to the frustration induced by the non-validation of linguistically correct output.

5.1.3 Self-Determination Theory (SDT)

The analysis of the *ImmerseMe* design with respect to the Self-Determination Theory (Deci & Ryan, 1985) focuses on the promotion of intrinsic motivation through the satisfaction of the fundamental psychological needs:

- Competence**:** The need for *competence* is sustained by the feedback architecture which, through gamification (scores) and the granular evaluation of the target skills (*Pronunciation, Typing*), provides a measurable and progressive sense of *mastery*.
- Autonomy**:** *Autonomy* is fostered by the possibility of modular selection of didactic units and the *flexibility* inherent in the modes of *task-execution* (e.g., choice between *Game Setting* and *Conversation BETA*), which allows for a degree of self-regulation of the learning path.
- Relatedness: This dimension constitutes the principal structural deficit. As an NI-VR *desktop-based* platform intended for individual practice, it does not catalyze *peer-to-peer* interaction nor social cooperation. The environment is intrinsically solipsistic. Consequently, the construct of *relatedness* (crucial for models such as Slavin's *Cooperative Learning*) is only partially satisfied, thereby limiting the full realization of the motivational potential derived from SDT.

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Conclusions

The present *ex ante* analysis has provided a critical and theoretically grounded evaluation of the *ImmerseMe* platform, framed within the paradigm of Non-Immersive Virtual Reality (NI-VR) for Second Language (L2) acquisition. It was situated at the intersection of pedagogical engineering, applied didactics, and technological validation. The adoption of VR, as with emerging technologies in general, raises questions about its scientific and technical relevance compared to consolidated traditional pedagogical approaches. However, it is configured as an evolutionary model of language course gamification practices, sanctioning a methodological convergence between these disciplines.

The comparison with homologous products (such as *VirtualSpeech* and others) confirms that the *ImmerseMe* approach is optimized for the acquisition of basic pragmatic competence (CEFR A1-A2) within realistic contexts. This differentiates it from systems focused on performance simulation and advanced vocal delivery analysis aimed at higher proficiency levels.

The qualified findings emerging from the technical and pedagogical review delineate a picture of potential efficacy that is critically modulated by intrinsic architectural limitations.

Methodological Summary and Evolutionary Perspectives: The results of the *ex ante* analysis on the *ImmerseMe* platform validate its architectural adequacy for didactic experimentation in an academic context. The platform's capacity to operate through a modular framework (highlighted by the *Game Settings*: Pronunciation, Typing, Spelling, Translation) allows for a multidimensional verification of linguistic skills, overcoming the limits of an evaluation focused solely on oral *fluency*.

- Validation of Writing and Accuracy**:** The integration of modes like Typing and Spelling ensures that the research objective can track data about the orthographic and morphological accuracy (written receptive and productive skills) of French, foundational elements of the Beginner level (A1/A2) and the threshold (B1) of the CEFR.
- Increased Authenticity**:** The 360° video environment enhances the experience, providing high-fidelity cultural and sociolinguistic input, essential for verifying the language-cultural component interrelation and for simulating authentic listening and conversation types.
-

Technical Criticalities and Limits of *Non-Immersive VR*: Despite the modular approach, the preliminary conclusions must be interpreted in light of non-negligible operational criticalities and infrastructural constraints, which can lead to inadequate results in an uncontrolled context.

- Infrastructural Dependence**:** The need for specific accessory tools (functional microphone), the dependence on a controlled acoustic environment, and a high-speed connection pose technical and formative limits to its widespread adoption. The *performance* of the *Phonetic Engine* (ASR) and

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the fluidity of 360° video *rendering* are directly correlated with the quality of the client-side *bandwidth*.

- Rigidity of ASR and *Scaffolding***:** The success of the *Pronunciation Mode* depends on the algorithmic tolerance of the ASR (Automated Speech Recognition) system to the non-native student's interlanguage. Excessive rigidity induces a "Systemic False Negative", limiting the incentive for free production. Excessive scaffolding (pop-up textual suggestions) raises a methodological risk: the experience can degenerate into a *multiple choice* instead of stimulating the pragmatic use of language based on autonomous production.
- Interactive Authenticity**:** The dependence on 360° video and a pre-programmed *dialogue tree* system limits the student's authentic freedom of action (agency) and the possibility of negotiating meaning, making the simulated interaction less complex than a real human conversation.
-

Future Perspectives: The Challenge of Quantification (BETA): The *Conversation* (BETA) mode, while representing the new frontier of immersive learning through NLP and advanced AI, poses the most significant challenge for research purposes. The condition "No points available" indicates that, despite offering a potentially more open and non-scripted dialogue, this functionality is currently excluded from the platform's *scoring* and *tracking* system. This means that, while the routines (*Pronunciation, Typing, Spelling*) provide the quantifiable data necessary for the manuscript's *preliminary reports*, the mode that best simulates the usability of linguistic skills in authentic contexts (free interaction with AI) does not produce measurable data. This requires a *post-experimental* methodological calibration that can integrate the qualitative analysis (*discourse analysis*) of free interaction (BETA) with the quantitative analysis of structured skills. In conclusion, Non-Immersive VR offers an evolutionary model for FLT, but its long-term scientific validity will depend on the algorithmic engineering's ability to resolve the *trade-off* between conversational flexibility and the quantifiability of didactic results.

Evolutionary Perspectives: Facilitation of learning: To help *grand débutants* or *débutants* students overcome the difficulties of this unit, as well as the other unanalyzed units, it is fundamental to adopt targeted didactic strategies that reduce cognitive load and favor reception. It would be useful to introduce the thematic vocabulary before the activity, through images, *flashcards*, or association games, to facilitate memorization and visual comprehension. Secondly, providing explicit grammatical support, such as simplified sheets on the use of the conditional and partitive articles, to clarify the linguistic structures present in the unit. To improve pronunciation and reduce frustration, a slowed-down listening mode or guided repetition exercises with personalized feedback would be desirable, as would complementing the immersive activity with post-unit reinforcement exercises, such as guided *role-play*, completion or inverse

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translation exercises, and the presence of glossaries that consolidate learning in an active way. As for written production, it would be effective to integrate with sentence reconstruction exercises or *cloze tests*. Finally, offering motivating and personalized feedback helps to reinforce student confidence and maintain high motivation, transforming the experience from potentially frustrating to constructive and engaging.

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- Sec. 2
- Sec. 4 (with the respective sub-sections 4.1 e 4.1.1)
- Sec. 5

The following parts are attributable to S.G.P.:

- Sec. 1.1
- Sec.3 and all the sub-sections (3.1, 3.2, 3.3, 3.3.1, 3.3.2, 3.3.3, 3.3.4, 3.3.5)
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- Conclusions

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