AI-Mediated Mobile Learning in Teacher Training for Spanish as a Foreign Language: A Qualitative Study on Oral Competence Using Whatsapp

Messakimove Stephanie Ep Steiner

Assistant Professor in Language Didactics, Omar Bongo University, Libreville, Gabon

Abstract

This article analyzes the impact of AI-mediated mobile learning on the development of oral competence within the Initial training of teachers of Spanish as a foreign language (ELE) . The study was carried out during the 2024–2025 academic year at a teacher training institution in Francophone Africa, with a sample of fifteen future ELE teachers. The pedagogical approach was based on asynchronous oral production tasks using WhatsApp voice messages, integrated into a formative assessment and reflective self-assessment framework. The oral corpus was analyzed using a multidimensional rubric and an inductive thematic analysis assisted by generative artificial intelligence tools , which served as methodological support for identifying recurring discourse patterns, communicative progress, and areas of linguistic difficulty. Artificial intelligence was employed as complementary analytical support to the researcher's pedagogical judgment, within an ethical and controlled framework.

The results show significant improvements in oral fluency, discourse structure, and the use of argumentative connectors, as well as greater reflective and identity-based engagement among the participants. However, lexical and morphosyntactic interferences typical of the Francophone context persist. The study confirms that WhatsApp, combined with AI-assisted analysis, constitutes an inclusive, accessible, and transferable mobile learning environment , and provides empirical evidence for the responsible use of AI in language research and teacher training.

*Corresponding author: Messakimove Stephanie Ep Steiner, Assistant Professor in Language Didactics, Omar Bongo University, Libreville, Gabon.

Introduction

The integration of digital technologies into language teaching has gained increasing relevance in recent years, particularly in educational contexts characterized by structural limitations and reduced exposure to the target language. In the field of teacher training for Spanish as a foreign language (ELE), the development of oral competence remains one of the main challenges, due both to the reduction in face-to-face interaction time and the persistence of pedagogical approaches focused on the transmission of formal linguistic content.

In this scenario, mobile learning emerges as a pedagogical alternative capable of expanding the spaces, times, and modalities of oral practice. Instant messaging applications like WhatsApp, widely integrated into students' daily lives, offer an accessible, flexible, and multimodal environment that can be leveraged for educational purposes, especially in contexts with limited technological resources.

The incorporation of digital technologies in language teaching is part of a pedagogical transformation dynamic widely documented in international literature, which highlights its potential to diversify practices, expand spaces for interaction, and promote more active and reflective learning. In the specific field of foreign language learning, the use of mobile technologies has demonstrated positive effects on student motivation, fluency, and participation [1-4].

In parallel, the recent development of artificial intelligence (AI) applied to education opens new methodological perspectives for the analysis of qualitative data, particularly in research based on oral corpora. Beyond its instrumental use, AI allows for the identification of discourse patterns, error recurrences, and progression trends in extensive linguistic productions, acting as a complementary analytical support to human analysis and contributing to the methodological rigor of language teaching studies.

From this dual perspective (mobile learning and artificial intelligence), this study analyzes an asynchronous oral production tool using WhatsApp, implemented in the initial training of teachers of Spanish as a Foreign Language (ELE). The aim is to examine how this environment fosters the development of oral competence, metalinguistic reflection, and

identity engagement among learners, as well as to evaluate the added value of AI-assisted analysis in the systematization and comprehension of the oral corpus.

From a broader perspective, the progressive introduction of artificial intelligence in education raises new methodological and ethical challenges, as well as opportunities for the analysis of educational and linguistic data, particularly in corpus-based research. In this context, it is essential to avoid technocentric approaches and to position AI as a support for pedagogical design and didactic analysis [5-7].

As shown in Table 1, the AI-assisted analysis identified recurring discourse patterns, such as lexical and morphosyntactic interference, progress in functional fluency, and the use of discourse markers, which were subsequently interpreted from a didactic and educational perspective. This integration of technological analysis and pedagogical reflection places the study at the intersection of artificial intelligence, mobile learning, and language teacher training , contributing to current debates on the responsible integration of AI in educational research and practice.

Along these lines, recent research conducted in Gabon has highlighted the role of digitally mediated oral self-assessment as a tool for teacher professionalization, especially in environments characterized by limited resources and reduced exposure to the target language. These studies show that the thoughtful integration of mobile technologies and training approaches fosters not only the development of communicative competence but also the construction of a professional teacher identity in the age of artificial intelligence. This work builds upon this research, expanding the analysis through a systematic treatment of the AI-assisted oral corpus [8-9].

Theoretical Framework

This study is situated at the intersection of foreign language teaching, mobile learning, and artificial intelligence applied to education, articulating these three axes from a pedagogical, formative, and methodological perspective. The theoretical framework is structured around: (1) oral competence in teacher training for Spanish as a Foreign Language (ELE), (2) mobile learning and instant messaging as learning environments, and (3) the role of artificial intelligence in supporting analysis and evaluation in educational contexts

Oral Competence in Spanish as a Foreign Language Teacher Training

Communicative competence, understood as the ability to use language appropriately in diverse social contexts, integrates linguistic, discursive, and socio-pragmatic dimensions. In the teaching of Spanish as a foreign language, the development of oral competence is articulated with the descriptors of the Common European Framework of Reference for Languages, which emphasize the progression of fluency, coherence, and pragmatic appropriateness [10-13].

In initial teacher training, oral production also fulfills a professionalizing function, contributing to the construction of a discursive and reflective teaching identity [5]. Several works in language didactics underline the importance of offering trainee teachers authentic or semi-authentic situations of oral production, which promote metalinguistic reflection, awareness of their own discourse, and the articulation between linguistic and pedagogical knowledge.

From a formative perspective, reflective oral production allows the learner to analyze their discursive strategies, identify recurring difficulties and plan improvements, which places the evaluation of orality in a logic of learning under construction rather than simply measuring performance.

Mobile Learning and Instant Messaging in Language Teaching

learning (mobile) Mobile learning is defined as the pedagogical use of portable devices that allow for flexible, ubiquitous, and personalized learning. In the field of foreign language teaching, mobile learning has demonstrated its potential to expand interaction spaces, diversify practice methods, and promote learner autonomy.

Mobile learning is characterized by the temporal and spatial flexibility it offers to the learner, allowing learning processes to be extended beyond the traditional classroom. Several studies have highlighted the potential of instant messaging applications, such as WhatsApp, to promote interaction, reduce communication anxiety, and increase participation in language teaching contexts. In contexts with limited resources, these tools offer a viable alternative for democratizing access to oral practice, reducing the exclusive

dependence on the face-to-face classroom [2-4].

Several studies have shown that the educational use of WhatsApp can contribute to:

- increase the frequency and duration of oral production;
- reduce communicative anxiety, especially in shy learners;
- to encourage personal expression and peer interaction;
- to stimulate motivation and commitment to the task.

From a socio-constructivist perspective , these digital environments can be conceived as spaces for mediation and co -construction of knowledge, consistent with Vygotsky's theories and communities of practice [14-15]. In teacher training, these environments also foster the emergence of communities of practice, in which future teachers develop both linguistic and professional competencies.

Formative Assessment, Oral Self-Assessment, and Discourse Analysis

Formative assessment views error as an indicator of ongoing learning, not as a fault to be punished, which is especially relevant in the analysis of oral production. Within this framework, self-assessment is configured as a key tool for developing metacognitive reflection and self-regulation of learning, particularly in teacher training [16-17].

Oral self-assessment is a valuable tool for fostering metacognitive reflection, as it invites learners to listen to, analyze, and comment on their own discourse. In teacher training, this practice helps develop a reflective stance on language and teaching, thus strengthening professional development.

The analysis of oral discourse, however, presents significant methodological challenges, especially when working with large and heterogeneous corpora. Identifying recurrences, error patterns, or discursive developments requires a systematic approach that combines analytical rigor with pedagogical contextualization.

Recent studies developed in the Gabonese context confirm that oral self-assessment mediated by digital tools promotes professionalization and awareness of one's

own discourse in future ELE teachers [8].

Artificial Intelligence as a Methodological Support in Educational Research

Artificial intelligence applied to education has become established as an emerging field of research, especially in the analysis of educational and linguistic data in higher education [5]. In the field of language teaching, AI can play a relevant role as a methodological support tool, facilitating initial coding, the detection of discourse patterns, and the systematization of large volumes of data.

Reports and systematic reviews underscore the potential of AI to support processes of analysis, feedback, and personalization of learning, provided its use is framed within clear ethical and pedagogical guidelines [6]. In this regard, several authors warn against the need to avoid an uncritical adoption of the technology and to position AI as a support for pedagogical judgment and didactic decision-making [7].

In this study, artificial intelligence is integrated into a hybrid logic, combining AI-assisted analysis and human analysis, with the aim of:
- improve the efficiency and consistency of oral corpus treatment;
- to systematically identify recurring discourse patterns;
- to strengthen methodological rigor without losing interpretive depth.

This responsible conception of AI is part of an ethical and pedagogical perspective, consistent with the principles of educational research and the objectives of teacher training in languages.

Summary of the Theoretical Framework

In summary, the theoretical framework underpinning this study articulates three complementary dimensions: oral competence as the central axis of teacher training in Spanish as a Foreign Language (ELE), mobile learning as an environment that facilitates oral practice, and artificial intelligence as methodological support for the qualitative analysis of discourse. This articulation allows the research to be situated within an interdisciplinary space, where technological innovation is placed at the service of clear educational objectives and critical reflection on

language teaching and learning.

Methodology

This study adopts an interpretive qualitative approach, suitable for analyzing complex phenomena such as the development of oral competence, metacognitive reflection, and identity construction in teacher training contexts. The methodological design combines mobile learning, formative assessment, and AI-assisted analysis in a hybrid framework that integrates technology and human didactic analysis.

Research Design

The data analysis is based on an interpretive qualitative approach, supported by inductive thematic analysis, widely used in educational research to identify emerging patterns and meanings in discursive corpora [18].

The integration of artificial intelligence tools serves a methodological and analytical purpose, not an experimental or predictive one. AI is used to support the systematization of the data, complementing human analysis without replacing it.

The methodological design of the present study is based on previous experiences of pedagogical innovation and oral self-assessment developed in the training of ELE teachers in Gabon, which have shown the formative potential of these devices in Francophone African contexts and in educational scenarios traversed by the introduction of artificial intelligence [9-10].

Context and Participants

The research was carried out during the 2024-2025 academic year at a teacher training institution in Francophone Africa, specifically at the CAPC-PRÉPA level, intended for the initial training of future teachers of Spanish as a foreign language.

The sample consisted of fifteen students , all native French speakers and regular users of WhatsApp. Participants had at least one year of university-level training in Spanish as a Foreign Language (ELE) and demonstrated oral proficiency levels between B1 and B2 on the CEFR scale. Participation was voluntary, and adherence to basic ethical principles, such as anonymity and the academic use of data, was guaranteed.

Mobile Learning Educational Device

The learning tool was designed around asynchronous oral production tasks using WhatsApp voice messages, integrated into a formative assessment framework. Each participant produced an individual oral presentation following these phases:

- Topic selection: Students chose one of nine proposed sociocultural and educational topics (education, friendship, love, animals, online dating, among others).
- Oral production: recording a voice message of between two and four minutes using the WhatsApp application.
- Dissemination: sending the audio to the class group.
- Formative feedback: comments from the teacher and peers.
- Reflective self-assessment: analysis of one's own discourse based on guided instructions.

This device made it possible to articulate production, reflection and evaluation within the same digital environment, promoting the active involvement of students.

Data Collection and Analysis Instruments
Oral Corpus

The corpus analyzed consists of fifteen asynchronous oral productions, recorded and shared via WhatsApp. The productions were transcribed in full for analysis.

Assessment Rubric

Oral productions were assessed using a multidimensional rubric designed to capture linguistic, discursive, and pragmatic aspects. The rubric included five criteria:

- justification of the topic,
- coherence and discursive cohesion,
- pragmatic adequacy,
- fluency and pronunciation,
- linguistic correction.

This rubric was used for both analytical and formative purposes.

Use of Artificial Intelligence in Corpus Analysis

The use of artificial intelligence as methodological support in this study is in line with recent research that highlights its value for the systematization and analysis of large volumes of qualitative data in higher education [5].

Furthermore, the design of the device is based on previous experiences of pedagogical innovation and self-evaluation in the training of ELE teachers in Gabon, developed in a context marked by the progressive introduction of artificial intelligence in education [9-10].

AI was used as a methodological support tool, especially for:

- identify clusters of recurring errors;
- locate discursive sequences with stable thematic progression;
- to facilitate cross-compliance between productions.

The results generated by the AI were systematically validated and interpreted through human analysis from a didactic and linguistic perspective. At no point did the artificial intelligence replace the researcher's judgment; rather, it acted as an analytical assistant, ethically and under controlled conditions integrated into the qualitative research process.

Analysis Procedure

The analysis procedure was developed in four stages:

- Full transcript of the oral productions.
- Initial AI-assisted coding, aimed at detecting recurring patterns.
- Didactic and human linguistic analysis, focused on the interpretation of the communicative and formative meaning of the data.
- Triangulation of results, combining rubric, thematic analysis and qualitative observations.

This approach made it possible to guarantee the internal reliability of the analysis and to reinforce the coherence between data, interpretation and theoretical framework.

Ethical Considerations and Limits of the Study

The study respected the basic ethical principles of educational research: informed consent, anonymity of participants, and exclusive use of data for academic purposes.

Limitations of the study include the small sample size and the contextualized nature of the device, although these elements do not invalidate the transferability

of the results to similar educational contexts.

Results

The analysis of the oral corpus, composed of asynchronous recordings made via WhatsApp by fifteen pre-service teachers of Spanish as a foreign language (ELE), allowed for the identification of recurring discourse patterns, significant progress in oral competence, and persistent difficulties, primarily related to French interference. Data processing combined human pedagogical analysis with AI-assisted analysis, facilitating rigorous systematization of the corpus and the cross-cutting identification of regularities.

As shown in Table 1, the AI-assisted analysis identified recurring discourse patterns (lexical and morphosyntactic interference, pronominal and prepositional errors, progress in functional fluency, and increasing use of discourse markers) that, without technological support, would have required much more extensive manual intervention. These patterns were subsequently interpreted from a didactic and educational perspective.

Type of Pattern Identified	Pattern Description	Examples from the Corpus	Didactic Interpretation	CEFR Level Associated
Lexical interference	Use of false friends and calques from French	Effected by affectionate ; not negligent	Active interlanguage; requires focused correction	B1 – B1+
Pronominal error	OD/OI confusion in spontaneous production	Correcting them for the sake of correcting them	Morphosyntactic precision still unstable	B1
Prepositional error	Incorrect use of prepositions	Against another person by with	L1 influence; does not affect intelligibility	B1
Discourse markers	Increasing use of logical connectors	That is to say , on the contrary , especially	Development of argumentative competence	B1+ – B2
Functional fluency	Continuity of speech with non-blocking pauses	Audios of 2–4 minutes	Progressive automation of speech	B1 – B2
Emotional involvement	Expression of emotions and personal experiences	Themes of love, teaching vocation	Communicative authenticity and high motivation	B1+

Table 1: Discourse Patterns Identified through Artificial Intelligence-Assisted Analysis

Discursive Coherence and Discourse Organization

A first observable trend is the improvement in the overall structuring of the discourse. Most of the pieces present an introduction to the topic, an argumentative development, and, in some cases, an explicit conclusion. The students demonstrate an ability to maintain thematic progression, even when occasional lexical errors resulting from linguistic interference are observed.

These productions reflect a growing mastery of discursive competence, placing a significant portion of the participants at upper-intermediate levels of the CEFR (B1+–B2), despite the presence of formal errors.

Oral Fluency and Expressive Continuity

WhatsApp's asynchronous format fostered functional fluency, characterized by fewer disruptive pauses and

greater continuity of speech. Students were able to produce audio recordings of between two and four minutes with a steady rhythm, using non-disruptive planning pauses.

AI-assisted analysis allowed for the grouping of speech productions with similar fluency profiles, facilitating the identification of students with greater speech automation compared to those who still exhibit frequent hesitations. These results confirm the disinhibitory effect of mobile learning on oral production.

Linguistic Correction and Persistent Interference

Linguistic accuracy is the weakest aspect of the corpus. Systematic interference from French is identified, especially in the use of prepositions, object pronouns, and lexical borrowings. However, these errors do not significantly affect the overall intelligibility of the discourse.

Artificial intelligence-assisted analysis facilitated the detection of error recurrences, allowing us to distinguish between idiosyncratic and systematic errors, which is especially useful for guiding formative feedback.

Thematic Justification and Metacognitive Reflection

A particularly relevant finding is the students' ability to justify their choice of topic based on personal and professional experiences. The work produced in relation to education and the teaching role demonstrates a strong reflective and identity-based approach, a central element in initial teacher training.

The device fostered the emergence of evaluative and critical discourses, in which future teachers articulate their vision of teaching, beyond simple linguistic production.

Summary of Results

Overall, the results indicate that mobile learning via WhatsApp, supported by AI-assisted analysis:
- promotes fluency and coherence in discourse;
- It stimulates metacognitive reflection and identity involvement;
- It allows for the precise identification of patterns of progress and difficulty;
- It highlights the need to complement the device with explicit linguistic correction strategies.

Dimension Analyzed	Evidence in the Corpus	Representative Examples	Didactic Interpretation	Estimated CEFR Level
Discursive coherence	Structured discourse, clear thematic progression	Definitions and argumentative developments (friendship, education)	Good discursive competence despite occasional lexical errors	B1+ – B2
Oral fluency	Continuity of speech, non-blocking pauses	Audios of 2–4 minutes with a steady rhythm	The asynchronous format reduces communicative anxiety	B1 – B2
Language correction	French interference, pronominal and prepositional errors	" effective ", "against another person", "to define him/her"	Need for explicit linguistic feedback	B1 –
Thematic justification	Argumentation based on personal and professional experiences	Assessment of the teaching role, personal accounts	Strong reflective and identity-based involvement	B1+
Discourse markers	Use of connectors and reformulations	"that is to say", "on the contrary", "above all"	Progressive development of argumentative competence	B1+
Emotional involvement	Expression of emotions and personal opinions	Themes of love, friendship, and teaching vocation	Communicative authenticity and high motivation	B1 – B2

Table 2: Summary of the Results of the Analysis of Oral Productions (WhatsApp)

Discussion

The results obtained confirm previous findings on the positive impact of mobile learning and instant messaging on the development of communicative competence and on the motivation of foreign language learners [2-4] . The asynchronous nature of the device reduces communicative anxiety and promotes more reflective and planned oral production.

From a methodological standpoint, the results align with studies that underscore the value of artificial intelligence as a support for educational and linguistic analysis, without replacing human interpretation. This critical stance coincides with approaches that advocate for a responsible and non- technocentric integration of AI in education. Technology, far from replacing the teacher or the researcher, acquires value to the extent that it is integrated into a coherent pedagogical design, oriented towards the development of competencies and teacher professionalization [5-7].

However, the persistence of linguistic errors highlights the need to integrate mobile learning with explicit guided correction strategies, re-recording workshops, and in-person consolidation activities. In this regard, AI can also offer future perspectives for the design of more personalized feedback devices, always under pedagogical supervision.

The results obtained confirm and expand upon previous findings on the relevance of oral self-assessment and digital devices in teacher training in Spanish as a Foreign Language in Gabon. In particular, the integration of AI-assisted analysis allows for a deeper identification of discourse patterns and reinforces the analytical

dimension of approaches already explored in contexts of pedagogical innovation linked to teacher reflection in the age of AI [9-10].

Conclusions

This study demonstrates that mobile learning, combined with AI-assisted analysis, constitutes an effective educational and methodological tool for developing oral competence in the initial training of teachers of Spanish as a foreign language.

The integration of WhatsApp as an asynchronous oral production environment expanded practice opportunities, fostered personal and critical expression, and strengthened the reflective engagement of future teachers. Artificial intelligence, used as an analytical support tool and not as a substitute for pedagogical judgment, contributed to improving the rigor of the qualitative analysis, facilitating the identification of discourse patterns, and reinforcing the consistency of the corpus's treatment.

The findings of this study are part of a broader body of work highlighting the relevance of mobile learning, formative assessment, and self-assessment in foreign language teacher training [16-17]. Furthermore, the results reinforce the conclusions of recent research on the use of artificial intelligence as a methodological tool in higher education, particularly in qualitative studies based on linguistic corpora [5-6].

In line with previous research focused on pedagogical innovation and self-evaluation in the training of Spanish as a Foreign Language teachers in Gabon, this work confirms the value of AI as a tool to support analysis and teacher professionalization [19-20].

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