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Artificial Intelligence in French and Spanish Foreign Language Education: A Systematic Review and Future Perspectives

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Article Info	Abstract
Date submitted: 03/03/2025 Date accepted: 17/04/2025	The integration of artificial intelligence (AI) into foreign language education has gained increasing attention, yet research on its application beyond English remains scarce. This systematic review examines the use of AI in French and Spanish foreign language education from 2018 to 2025, analyzing empirical studies conducted in (high) school and higher education settings. Following the PRISMA framework, a total of 14 relevant studies were identified and thematically categorized. The findings highlight that AI applications, particularly chatbots and automated writing tools, are primarily used to enhance writing skills cultural learning and critical thinking. While AI offers
Date published: 24/04/2025	opportunities for personalized learning, increased engagement, and improved feedba mechanisms, challenges remain, including the risk of uncritical AI reliance, the need to digital competencies among educators and learners, and tensions between hum creativity and AI-generated outputs. The review underscores the necessity for furth research, particularly qualitative and longitudinal studies, to explore the long-te effects of AI on language acquisition. Future investigations should focus on producti skills, multilingualism, and the application of AI in lower intermediate levels and spec needs education. By systematically synthesizing existing research and identifying gap this study contributes to a more informed and evidence-based integration of AI in foreign language teaching.
Review Article	Keywords: artificial intelligence, foreign language education, French, Spanish, systematic review

1. Introduction

Multilingual AI tools are gaining increasing attention in the field of foreign language teaching (Strasser, 2020, p. 2). These tools open innovative digital possibilities for both educators and learners, encompassing areas such as lesson planning and implementation, the development of task formats, text creation, design and correction, the explanation of linguistic phenomena, individualized practice and comprehension, as well as action-oriented communication and the enhancement of communicative competencies (Grünewald, 2023; Müller & Fürstenberg, 2023). Nevertheless, the effective use of AI systems in this context necessitates not only functional proficiency but also a critical and reflective stance to assess the quality and appropriateness of AI-generated outputs (Korell et al., forthcoming, 2025).

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Empirical studies on foreign language teaching and learning from an AI-related perspective, particularly those extending beyond English, remain scarce both nationally and internationally (Zhu & Wang, 2024). This article seeks to address this research gap by presenting the findings of a systematic literature review on the use of AI applications by teachers and learners in French and/or Spanish lessons within (higher) education contexts.

2. Literature Review and Research Questions

This research overview highlights key findings from recent review studies within the domain of foreign language teaching and learning from an AI-related perspective. The focus is primarily on review studies published in 2024. Earlier research overviews, which have already been summarized, are available in Huang et al. (2022), Huang et al. (2023), Ji et al. (2023), Liang et al. (2023), and Zhu & Wang (2024), among others.

Most review studies investigate specific conversational AI technologies in the context of foreign language teaching and learning (Ji, Han & Ko, 2023). Recent research primarily examines the attitudes, intentions, and perceptions of teachers and learners regarding the use of ChatGPT for foreign language instruction (Bao & Li, 2023; Korell et al., forthcoming, 2025; Li et al., 2023). Some studies also address various educational settings, including foreign language teaching in schools (cf. Ji et al., 2023), higher education (Crompton & Burke, 2023), and specialized educational contexts (Hopcan et al., 2022; Lee & Kwon, 2024).

The study by Kartal and Yesilyurt (2024) provides a comprehensive overview of the historical development of research in AI-supported language teaching and applied linguistics. A total of 185 relevant articles were analyzed using the bibliometric software tool VOSviewer. The early years of the survey period were marked by foundational work on intelligent tutoring systems (ITS) and machine learning (ML), reflecting the nascent stage of AI in language education. Over time, the focus shifted to more specialized areas, including automated writing assessment, lexical richness, and the integration of robotics into language learning. In recent years, particularly from 2020 to 2022, research has increasingly concentrated on chatbots, conversational agents, and dynamic assessment. The findings reveal a highly multidisciplinary and interconnected field, with four primary research clusters identified: AI, natural language processing (NLP), robotic language learning, and chatbots. Notable themes include the growing use of intelligent tutoring systems, the role of syntactic complexity and vocabulary in second language (L2) learning, and the exploration of robots and gamification in language education. The study further underscores the potential of NLP and AI technologies to enhance personalized feedback and teaching strategies for language learners.

Zhu and Wang (2024) provide a comprehensive analysis of 125 empirical studies on the application of artificial intelligence (AI) in (foreign) language teaching, published between 2013 and 2023. Since 2022, there has been a significant increase in the volume of publications related to AI in the field of (foreign) language learning. The majority of these studies originate from Asia and North America and predominantly employ experimental-quantitative research methods. This approach typically involves the use of test instruments in experimental and control groups to assess the effectiveness of AI tools (cf. Zhu & Wang, 2024; Korell et al., forthcoming). The studies primarily focus on AI-based feedback and the evaluation of written texts, the development of speaking skills and pronunciation, as well as vocabulary acquisition. The key language skills examined are writing, speaking, and reading. The most commonly used AI tools include automated writing evaluation systems, machine translation, and chatbots. Notably, English is the target language in nearly all of the 125 studies. Only two studies address French, and just one explores Spanish in the context of AI-supported language learning (Zhu & Wang, 2024; Korell et al., forthcoming).

No systematic review study could be identified, either nationally or internationally, that explicitly focuses on the use of AI applications in the teaching of French and/or Spanish in (higher) education. To address this gap, the following research questions were formulated to conduct a systematic review and assess the current state of AI application in the teaching and learning of French and/or Spanish:

- (1) What is the current state of research in the field of AI and French and Spanish language learning? (e.g., study design, countries/regions, journals, research methodologies, AI applications)
- (2) What research priorities can be identified?
- (3) What opportunities and challenges are associated with the use of AI applications in French and Spanish language learning?
- (4) What research gaps require further exploration?

3. Research Methods

The systematic literature search method employed in this study adheres to the principles of the PRISMA framework (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (Page et al., 2021). The PRISMA guidelines provide a detailed checklist, and a four-phase flowchart designed to ensure transparency in methodology and reporting. The following section outlines the systematic review procedures implemented in this study.

3.1. Data Source and Article Selection Process

To ensure comprehensive coverage of relevant publications, the search was limited to the period between 2018 and 2025¹, as the number of studies explicitly addressing French and Spanish learning from an AI-related perspective increased significantly from 2023 onwards. The literature search primarily focused on empirical studies conducted in the context of foreign language instruction at (high) schools. To this end, 59 distinct keyword combinations in four languages (German, English, French, and Spanish) were used (Table 1). These were entered into the following databases: Fachportal Pädagogik, ERIC ProQuest, Google Scholar, Web of Science, Scopus, Science Review, ScienceDirect, and Dialnet.

Table 1.

Non-specific thematic combinations	 artificial intelligence artificial intelligence language learner artificial intelligence language learning inteligencia artificial inteligencia artificial aprender idiomas escuela intelligence artificielle en école language teaching research
Combinations related to the learning	artificial intelligence french
of the French language	• artificial intelligence french class
	artificial intelligence french learning
	artificial intelligence french lesson
	artificial intelligence french reading
	artificial intelligence in french classes
	• artificial intelligence language learning french school
	artificial intelligence learning french
	artificial intelligence school language learner french
	• chatgpt apprendre français
	• chatgpt artificial intelligence language learning french school
	chatgpt cultural learning french
	chatgpt français langue
	• chatgpt (francés)
	• chatght french

Keyword combinations (listed thematically)

¹ Articles that have been accepted but not yet published were also included in the search period.

	 chatgpt french learning chatgpt french reading chatgpt french reading school chatgpt french reading school chatgpt french school chatgpt french teaching chatgpt learning french chatgpt listening comprehension french Inteligencia artificial aprender francés intelligence artificielle cours de français intelligence artificielle français Künstliche Intelligenz im Französischunterricht
Combinations related to the learning	• artificial intelligence school spanish
of the Spanish language	artificial intelligence spanish
of the Spanish language	• artificial intelligence spanish class
	• artificial intelligence spanish listening
	artificial intelligence spanish reading
	 artificial intelligence in spanish classes
	• artificial intelligence spanish learner
	artificial intelligence spanish learning
	artificial intelligence spanish lesson
	artificial intelligence spanish teaching
	chatont apprendre espanol
	chatgpt upprendic espanor chatgpt cultural learning spanish
	chatgpt contain fearing spanish chatgpt espagnol
	• chatgpt (español)
	chatgpt (ospanior) chatgpt listening comprehension spanish
	• chatgpt spanish
	• chatgpt spanish learning
	• chatgpt spanish learning school
	• chatgpt spanish reading
	• chatgpt spanish reading school
	chatgpt spanish school
	chatgpt spanish teaching
	chatgpt spanish wirting
	inteligencia artificial aprender español
	inteligencia artificial español
	Künstliche Intelligenz im Spanischunterricht

In addition, various high-ranking journals are analyzed manually, as presented in the following table (Table 2).

Table 2.

Journals (listed alphabetically)

- Computers and Education
- Computers and Education: Artificial Intelligence
- Computer Assisted Language Learning
- Didáctica
- Didactique du FLE
- Didactofrancia
- Education and Information Technologies
- Electronic Journal of Foreign language and Teaching
- Education Sciences

- Educational Technology Research and Development
- Journal for Foreign Languages
- Journal of Educational Psychology
- Journal of French Language Teaching
- Journal of Spanish Language Teaching
- Journal of Language Teaching
- Languages
- Language Assessment Quarterly
- Language Learning Technology
- Lengua y Literatura
- Interactive Learning Environments
- International Journal of Language Education
- Reading in a Foreign Language
- ReCaLL
- Revue TDFLE
- Sustainability
- System
- Taylor and Francis online

3.2. Inclusion and Exclusion Criteria

Specific inclusion and exclusion criteria were defined a priori to precisely identify the studies relevant to the review. The systematic review of the articles for selection was based on the following parameters, which are outlined in Table 3.

Table 3.

Inclusion and exclusion criteria

Inc	clusion Criteria	Exc	clusion Criteria
•	Addressing the topic of AI in an educational context	•	No thematic reference to AI and foreign language
•	Relation to AI and (high) school foreign language		teaching/learning
	teaching/learning (specifically: French/Spanish)	•	Publication period before 2018
•	Publication period: 2018 to 2025	•	No empirical data basis
•	Empirical studies	•	Publication language other than those specified in the
•	Publication languages: German, English, French, or		inclusion criteria
	Spanish ²		

3.3. Data Analysis and Coding

The data analysis was carried out in various phases. After determining the publication type (empirical studies in journals), a bibliometric review was conducted. This type of analysis is a method within the framework of systematic reviews, in which specific publication indicators (e.g., publication type, publication year, authors, relationships between publications) are examined (Zhu & Wang, 2024). Therefore, the most significant word combinations included bibliometric information about the publication (e.g., specific AI technology applications and competencies).

The search was conducted by entering 59 word combinations (see section 3.1). The use of non-specific word combinations (e.g., 'artificial intelligence French/Spanish class', 'artificial intelligence language learning') led to broad results, which is why the word combinations were continuously refined in their structure (Table 1).

The search yielded a total of 188,086 results. After reviewing the titles, most studies and editorials were excluded (n=187.956). Titles categorized as thematically inappropriate, and duplicates identified in the

² Search results published in other Romance languages despite exclusive input in German, English, French, and Spanish were included, provided they focus on French and/or Spanish language learning from an AI-related perspective.

initial step were removed for further analysis (Fig. 1). This was followed by a review of 132 articles based on their abstracts and conclusions, using the criteria defined in Table 3. The selection was then assessed based on research methods, sample size, research design, clarity of objectives, and persuasiveness of conclusions. A further 118 articles were excluded in accordance with the inclusion and exclusion criteria. Finally, the corpus consists of 14 search results to be included. Eleven of the 14 articles focus on AI-related learning and teaching of Spanish, while seven of the 14 results address the teaching and learning of French, with overlaps between articles covering both languages.



* Journals mentioned by Zhu and Wang (2024)

** n=7 (French); n=11 (Spanish)

*** Possible duplication, as some articles focus on teaching and learning multiple languages/both examined Romance languages.

Fig. 1. Flowchart

The remaining contributions were analyzed thematically. This is a widely used methodology in qualitative research aimed at recognizing and coding data patterns. The primary objective of coding is to achieve a more in-depth understanding of the content of the contributions and to extract relevant information to address the research questions (cf. Du & Daniel, 2024). The results were first coded independently through inductive analysis, then consolidated, and finally reviewed for thematic and sub-thematic analyses (Table 4).

Table 4.

Coding Scheme

Category	Dimention		
Methodology	M01: qualitative		
	M02: quantitative		
	M03: mixed methods		
Learner Types	L01: University		
	L02: School		
Beneficial impact roles	BIR1: Support for writing processes (stylistics, punctuation)		
-	BIR2: Enhancement of receptive and productive skills		
	BIR3: Improvement of teaching and learning processes (general)		
	BIR4: Assistance in handling cultural content		
	BIR5: Increasing engagement rates		
	BIR6: Support for the translation process		
	BIR7: AI as a text corrector and for text revision		
Challenges	C1: Concrete approaches and methods for integrating AI into foreign language		
-	teaching and their inclusion in educational policy documents		
	C2: Uncritical use of AI applications		
	C3: Changes in teaching and learning conditions, as well as shifts in skills (foreign		
	language-specific digital competencies)		
	C4: Tension between human creativity and AI		
	C5: Challenges in understanding and developmental gaps in AI applications ³		
	C6: Lack of skills in prompting		
	C7: Targeted training and further education needs for foreign language teachers in the		
	field of AI		
Opportunities	O1: Support for personalized teaching and learning processes		
	O2: Encouragement for reflection on cultural content		
	O3: Enhancing enjoyment and increased motivation		

To categorize the contributions thematically, they are assigned coding numbers in Table 5.

Table 5.

Author and Year- Example Study coding scheme

Author and Year	Example Studies
Vázquez-Cano et al. (2021)	JA01
Mageira et al. (2022)	JA02
Pardo-Ballester (2022)	JA03
Civit et al. (2023)	JA04
De Vincente-Yagüe-Jara et al. (2023)	JA05

³ This indicates that AI applications are not yet capable of carrying out all instructions. Therefore, C4 is closely related to C3. Proper use of prompts often results in more precise outcomes. Since the articles approach the topic from different perspectives, two distinct codes have been assigned. Development gaps refer to aspects that AI applications are still in the process of learning, such as in the case of Duolingo, where more complex tasks and vocabulary learning units need to be developed.

Maimone & Jolley (2023)	JA06
Vázquez-Carno et al. (2023)	JA07
Datskiv et al. (2024)	JA08
Smith, Jiang, Peters (2024)	JA09
Virall et al. (2024)	JA10
Irion, Korell, Ißler (forthcoming, 2025)	JA11
Korell et al. (forthcoming, 2025)	JA12
Korell & Keidel (forthcoming, 2025)	JA13
Korell, Irion & Ißler (forthcoming, 2025)	JA14

In Table 6, the individual search results are categorized systematically using the coding scheme carefully defined in Table 4. The categories were selected to ensure that all identified articles can be appropriately placed within the respective category.

Table 6.

Beneficial impacts of chatbots, opportunities and challenges in the example studies

Themes	Example Study
BIR1: Support for writing processes (stylistics, punctuation)	JA01, JA05, JA07, JA08, JA09, JA10, JA11,
	JA12
BIR2: Enhancement of receptive and productive skills	JA01, JA05, JA09, JA10, JA12
BIR3: Improvement of teaching and learning processes (general)	JA04, JA05, JA12
BIR4: Assistance in handling cultural content	JA02, JA13
BIR5: Increasing engagement rates	JA04
BIR6: Support for the translation process	JA03, JA06
BIR7: AI as a text corrector and for text revision	JA11, JA14
C1: Concrete approaches and methods for integrating AI into foreign	JA02, JA03, JA04, JA07, JA08, JA10
language teaching and their inclusion in educational policy	
documents	
C2: Uncritical use of AI applications	JA03, JA07, JA10, JA12, JA13
C3: Changes in teaching and learning conditions, as well as shifts in	JA01, JA02, JA06, JA08, JA13
skills (foreign language-specific digital competencies)	
C4: Tension between human creativity and AI	JA02, JA03, JA05, JA11, JA14
C5: Challenges in understanding and developmental gaps in AI	JA09, JA10
applications	
C6: Lack of skills in prompting	JA07, JA14
C7: Targeted training and further education needs for foreign	JA06, JA12, JA13
language teachers in the field of AI	
O1: Support for personalized teaching and learning processes	JA04, JA05, JA06, JA10, JA11, JA12, JA14
O2: Encouragement for reflection on cultural content	JA02, JA12, JA13
O3: Enhancing enjoyment and increased motivation	JA01, JA09

4. Results

4.1. The Landscape of Research

The distribution of articles that address the teaching of French and/or Spanish using AI was coded in Chapter 3. This coding facilitates the visualization of the analysis results and their presentation in the subsequent sub-chapters.

4.1.1 The Number of Publications by Year

The analysed articles were published between 2018 and 2025, with a noticeable increase in publications since 2023. Fig. 2 presents the analyzed publications by year of publication.



Fig. 2. Publications by year (n=14)

Articles published between 2018 and 2020 were excluded from the study, as they primarily focus on English language learning using AI. There are considerably fewer empirical studies in the context of Romance languages (Zhu & Wang, 2024), suggesting a substantial increase in articles in this field in the coming years.

4.1.2 Publication Outlets and Journals



Fig. 3. Publication outlet $(n=9)^4$

The following figure presents the journals in which the analyzed articles were published. Notably, the studies were not necessarily disseminated through journals explicitly dedicated to foreign language learning but rather appeared in general educational technology journals.

⁴ One article (JA09) was manually retrieved from the journal *Language Learning and Technology* website and is therefore not listed in the table. Four unpublished articles (JA11, JA12, JA13, JA14) are also excluded, as they are not yet available in databases.



Fig. 4. Journals (n=13)⁵

4.1.3 Collaborations in AI for Language Education Research

Of the 14 articles included all but one were co-authored. The number of contributors is illustrated in Fig. 5. Most scientific work is conducted in author teams of approximately three to four members.



Fig. 5. Collaborations in AI for language education research (n=14)

4.1.4 Nationalities of Cooperation

The publications originate from various countries. Most were published in Spain (n=4), primarily at the universities of Seville and Madrid, in the USA (n=4) and in Germany (n=4). Each of the other countries represented in Fig. 6 contributed one publication. Apart from JA05, all studies were conducted at the

⁵ JA14 is not listed here, as the article has not yet entered the publication process.

national level. JA05, however, resulted from a collaboration between researchers from Brazil and the United Kingdom. Notably, no studies were carried out in francophone countries, and research on teaching French is less prevalent than research on teaching Spanish.



Fig. 6. Nationalities of cooperation (n=14)

4.2. Research Design

Of the 14 studies reviewed, the majority employed a qualitative, text-based approach (n=5), followed by quantitative (n=4) and mixed-methods approaches (n=4). Figure 7 below illustrates the results.



Fig. 7. Research approaches (n=14)

Regarding data collection instruments, surveys (questionnaires) and written assignments were predominantly used. This review includes both open and closed questionnaires, as well as text-based tasks such as writing summaries and analyzing AI-based translations. Interviews were used only occasionally or as a supplement, while video-based observations were rare. Figure 8 illustrates the distribution of data collection instruments.



Fig. 8. Data Sources (n=17)

Some studies employed multiple data analysis methods. In most cases, the analysis was descriptivestatistical (n=8). Qualitative content analysis methods were applied in approximately seven studies. The exact distribution and overall use of analysis methods are shown in Figure 9.



Fig. 9. Data analysis (n=17)

4.3. Learner Types and Participants

Different age groups are analyzed in the selected studies, with a distinction made between school and university. School learners are categorized in the 14-18 age group. The 'school' category also includes

studies focused on teacher training (e.g., JA06). The 'university' category primarily consists of student teachers aged 19-50+, with most participants in the 20-30 age group (see Fig. 10).



Fig. 10. Learner types (n=14)

The analyzed studies encompass various study groups, with manageable group sizes typically selected. To present the individual groups clearly, categories are summarized in Figure 11. The distribution of the participant groups is shown in Figure 11.



Fig. 11. Participants (n=14)

4.4. AI Technology and Language Topics

Most of the included studies analyzed chatbots as an AI application. An overview of all AI applications is presented in Figure 12.



Fig. 12. AI-Technologies (n=16)

ChatGPT was analyzed as a chatbot in most of the articles. Figure 13 presents the analyzed chatbots graphically.



Fig. 13. Number of chatbots analyzed (n=12)

The studies analyzed cover different areas of competence. The majority focus on writing competence using AI applications, followed by studies on 'cultural learning and AI,' critical thinking in the context of a

reflective and meaningful approach to AI applications, and teachers' awareness of AI-produced content for specific learning objectives. Additional competences examined in this context are shown in Figure 14.



Fig. 14. Language Topics (n=17)

5. Discussion

5.1. Research Landscape

The analysis results provide a comprehensive overview of the research landscape regarding the use of artificial intelligence (AI) in French and Spanish language instruction.

The increase in scientific publications since 2023 reflects a growing interest in the integration of AI technologies into foreign language teaching and learning. This rise is likely driven by the increasing availability of AI tools, such as ChatGPT, and their application in education. The temporal scope of the analyzed studies, limited to the period from 2021 to 2025, seems appropriate, as it captures the latest developments and technologies. However, the relatively small number of empirical studies, particularly within the context of Romance languages, is notable. This underscores the need for further research, especially given the significant role of foreign language teaching in French and Spanish in the global context (Zhu & Wang, 2024).

The articles analyzed were predominantly published in educational technology journals, highlighting the interdisciplinary nature of the research. However, it is also evident that such articles have thus far been underrepresented in journals explicitly focused on foreign language learning. This distribution may suggest that the discussion of AI in language learning has not yet been fully integrated into the field of foreign language didactics.

The strong tendency towards collaborative research projects, typically involving three to four participants, reflects the need to pool expertise from various disciplines. The collaboration between researchers from Brazil and the United Kingdom (JA05) is particularly noteworthy, as it demonstrates how transnational cooperation fosters innovative approaches. However, the low proportion of studies from francophone countries and those focused on the teaching of French remains a notable gap.

The geographical distribution of the publications reveals a clear focus on Spain and the USA. The higher frequency of analyses on Spanish lessons compared to French lessons may be attributed to the wider global

reach of Spanish. Nevertheless, this disparity is unfortunate, as French remains one of the most important global languages of instruction.

5.2. Research Design and Methods

The analysis of the examined studies provides key insights into the methodological approaches, target groups, and areas of expertise explored in relation to the use of AI in foreign language teaching. The key findings are discussed below and categorized within the context of current research.

The distribution of research approaches reflects a tendency to systematically measure the effectiveness of AI-supported interventions.

The data collection instruments are primarily composed of written tasks and questionnaires, which are often preferred due to their ease of use and broad applicability. Written tasks allow for a direct analysis of the effects of AI applications on writing skills. However, a potential bias emerges, as the results can heavily depend on the specific task and its assessment criteria. Supplementary data collection methods, such as oral interviews or lesson observations, which could provide deeper insights into the learning processes, were used infrequently or not at all.

The data were primarily analyzed using descriptive-statistical and qualitative content analysis methods.

The studies analyzed encompass a broad age range of participants and were conducted in both university and school settings. The inclusion of teachers as a target group in some studies (e.g., JA07) is particularly noteworthy, as they play a crucial role in implementing AI-supported technologies in the classroom.

The focus on chatbots as AI technology highlights their popularity in foreign language teaching and learning. They facilitate interactive exercises and provide personalized feedback, offering significant potential, especially in the area of writing skills. However, it is notable that other AI technologies, such as adaptive learning platforms or automatic translation tools, were less frequently analyzed.

In terms of the skills covered, the focus is on writing skills, followed by cultural learning and critical thinking. This aligns with the specific strengths of the AI applications analyzed, whose features, such as text analysis and linguistic correction, are particularly suited to these areas. However, other skill areas, such as listening comprehension and speaking skills, remain underrepresented.

5.3. Beneficial Impact Roles and Opportunities

The analysis of the current state of research reveals that the use of AI in French and Spanish lessons can positively impact various areas of learning. These effects can be systematically illustrated using the Beneficial Impact Roles (BIR) and Opportunities (O) defined in Chapter 3, along with the associated competences (see Fig. 14), and will be discussed below.

5.3.1 Enhancing Writing Skills

A recurring theme is the role of AI in enhancing writing skills, particularly regarding precision and linguistic flexibility. Studies such as JA01 and JA06 emphasize that AI applications, such as chatbots, can improve punctuation as well as the fluency and adaptability of writing processes. JA09 also focuses on creative writing using AI tools. AI applications can offer linguistic inspiration and serve as a source of feedback for existing text products. This improvement is attributed to the ability of AI tools to directly address weaknesses through immediate feedback and adaptive support. At the same time, iterative work with AI tools fosters increased learner autonomy, as students can independently analyze and correct their mistakes, thereby strengthening self-efficacy and boosting learner motivation and engagement.

5.3.2 Assistance in Handling Cultural Content

The integration of cultural learning content is another positive aspect facilitated using AI. Studies such as JA02 and JA13 address the teaching of cultural sensitivity and the development of cultural competence in French and Spanish lessons. AI offers the opportunity to provide materials that offer learners insights into cultural nuances and values. JA13 emphasizes how AI can be used to sensitize learners to the complexity of cultural expressions, thereby promoting their ability to adopt differentiated perspectives.

By embedding cultural contexts, AI-supported tools such as ChatGPT or Duolingo enable learners to engage with foreign language and cultural topics. This not only broadens vocabulary but also fosters a deeper understanding of cultural nuances and encourages learners to critically reflect on them.

5.3.3 Implementation of Learning Analytics

Another key area where AI demonstrates its advantages is the use of learning analytics to optimize the learning process. As JA04 illustrates, the analysis of learning progressions by AI systems enables the targeted adaptation of teaching strategies and materials. In the field of foreign languages, in particular, this can help identify individual strengths and weaknesses of learners, creating personalized learning paths, thereby individualizing the learning process and specifically addressing learners' needs.

5.3.4 Promoting Critical Thinking and Analytical Skills

Studies JA03, JA06, and JA10 highlight the role of AI in promoting critical thinking and analytical skills. JA06 and JA10 primarily address the potential of teachers to critically examine the use of machine translation, thereby fostering analytical skills in evaluating AI-generated content. JA12 further emphasizes how AI can stimulate analytical thinking by presenting complex problems and encouraging discussion.

A prominent example is the critical engagement with machine translation, used by both teachers and learners to analyze linguistic structures and assess their appropriateness in context. These tasks not only enhance linguistic sensitivity but also foster the ability to recognize and reflect on the limitations and possibilities of AI-based tools.

5.3.5 Enhancing Productive and Receptive Skills

The integration of productive and receptive skills is particularly emphasized in JA09 and JA10. The use of applications such as Duolingo facilitates comprehensive training in both oral and written expression, as well as reading and listening comprehension. It is highlighted that the gamification approach of such platforms plays a crucial role in motivating learners and enhancing their enjoyment of language learning by catering to their individual needs.

5.3.6 Support in Academic Writing Processes

Finally, studies such as JA08 demonstrate that AI can also provide valuable support in the domain of academic writing. Prospective teachers benefit from the opportunity to use AI tools to develop complex writing strategies and enhance lexical density. By critically analyzing AI-generated texts, they can refine their own writing skills and deepen their competence in engaging with academic texts.

5.4. Challenges

The integration of AI into French and Spanish teaching and learning not only offers advantages but also presents several challenges that warrant critical consideration. These challenges concern both the didactic and methodological design of lessons as well as the learning processes and competencies of the participants. The issues identified in the studies reviewed are discussed below.

5.4.1 Unreflected Use of AI-Tools

One of the main issues is the uncritical or thoughtless use of AI tools by both learners and educators. Studies such as JA03 and JA10 emphasize that machine translation tools, such as Google Translate, can lead learners to rely on the results without questioning their accuracy or cultural appropriateness. This attitude carries the risk of neglecting linguistic and cultural subtleties, which may result in superficial language proficiency in the long term.

JA08 highlights another aspect of this challenge by addressing the uncritical use of AI-generated content, such as summaries. Learners often accept the AI-generated results without verifying them, which can hinder their ability to analyze and reflect independently. In this context, JA13 underscores the importance of

fostering critical thinking and cultural sensitivity in learners to ensure the responsible use of AI technologies.

5.4.2 Changes in Teaching-Learning Environments

The introduction of AI-based tools is significantly transforming traditional teaching and learning environments. JA01 emphasizes that while the use of chatbots can increase the flexibility of lessons, it also necessitates the adaptation of both teachers' and learners' foreign language-specific digital skills. The study reveals that teachers often lack adequate preparation to effectively harness the potential of these technologies.

JA02 and JA07 illuminate how these changes also impact teachers' assessment skills. The automated analysis of texts and the generation of AI-supported feedback can alter the teacher's role in the assessment process, which may lead to uncertainties and skill gaps. Furthermore, JA08 highlights the need for targeted training for future teachers to address the evolving demands in the classroom, particularly in relation to writing processes and media literacy.

5.4.3 Misinterpretations in the Use of AI Tools

The use of AI tools is not always intuitive and entails the risk of misinterpretations. JA05 highlights that AI tools occasionally process instructions inadequately, resulting in incorrect or misleading outputs. Specific details provided in prompts, such as word limits, are often not accurately implemented by the AI (JA05). This can lead to frustration and uncertainty among learners, particularly in complex tasks such as text production or translation.

JA09 and JA10 further emphasize that the use of AI does not necessarily contribute to language acquisition. While learners may rely on automated assistance, the independent development of linguistic competencies and a deeper understanding of the learning content often remain underdeveloped. This raises concerns about an over-reliance on AI and a lack of critical engagement with the generated content.

5.4.4 Conflict between Human and Artificial Creativity

A central issue in the discussion is the potential tension between human creativity and the standardized suggestions generated by AI applications. JA02 and JA06 illustrate that while AI can assist in text production, it cannot fully replicate creative and personal forms of expression. As a result, learners may align their writing too closely with AI-generated patterns, potentially at the expense of their own creativity. JA11 particularly emphasizes that creativity is intrinsically linked to emotional and genuinely human abilities, which cannot be replaced by AI. Since transformation and revision processes appropriate to the text type must largely be carried out by the learners themselves, the role of human agency remains indispensable. One approach to integrating AI into creative text production is the concept of AI co-texts.

6. Conclusion: Research Questions, Limitations and Future Research

This study provides a first systematic insight into empirical research published up to 2025 that examines the teaching and learning of French and Spanish from an AI-related perspective. To date, only limited findings are available for these two foreign languages. The selected studies predominantly adopt a quantitative approach, were primarily conducted in the USA and Spain, and focus equally on school and university contexts. They analyze AI applications from both a process- and product-oriented perspective. The research primarily concentrates on writing processes, critical thinking, and cultural learning. Empirical data is predominantly collected through questionnaires and analyzed using descriptive and statistical methods. The findings highlight both opportunities and challenges. Opportunities are particularly identified in the areas of writing skills, learning motivation, and personalized learning environments. Challenges include the uncritical and inductive use of AI as well as potential conflicts between human creativity and AI.

In the context of the present study, several limitations must be acknowledged. First, the collected studies may not fully capture the current state of (high) school French and Spanish learning from an AI-related perspective. Although all analyzed studies were sourced from central databases and complemented by a manual search in relevant journals, some significant studies may have been overlooked. Second, the focus on empirical studies published in journals led to the exclusion of other formats (e.g., qualification papers, conference proceedings), which might have offered additional insights. Third, this study is subject to a certain time lag. To ensure flexibility regarding the research timeframe, accepted but not yet published articles were included.

Based on previous research and the limitations of the present study, implications for future research are derived. There is a pressing need for further empirical studies that specifically investigate the teaching and learning of Romance languages from an AI-related perspective. Beyond the competencies addressed thus far, continued focus should be placed on productive skills, cultural learning, multilingualism, language learning competence, and language awareness. Qualitative studies - such as videographic lesson observations, screen recordings, and interviews - are particularly valuable for capturing teaching and learning processes as well as the internal perspectives of participants.

Furthermore, there is a fundamental need for longitudinal studies that examine the long-term effects of AI applications on learners' language skills. Comparative studies would also be beneficial in assessing different AI applications in foreign language teaching and providing insights into their relative effectiveness. Additionally, further research should explore the use of AI applications in foreign language instruction at the lower intermediate level, particularly for young learners and students with special educational needs.

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Conflict of interest

The authors declare that this study does not involve competing interests.

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