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Generative Artificial Intelligence Integration in Foreign Language Education in Higher Education: A Systematic Literature Review

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Abstract

This systematic literature review examines the opportunities and challenges of integrating generative artificial intelligence (GenAI) into foreign language education within higher education (HE). Using the PRISMA guidelines, this systematic literature review (SLR) set out to identify the benefits and risks of GenAI, analyze its current utilization, and provide actionable implications and recommendations. The PICo framework guided the research questions, search query, and inclusion and exclusion criteria for this SLR. 152 studies were included for analysis. The quality of each study was evaluated using the Effective Public Health Practice Project (2010) (EPHPP) Quality Assessment Tool for Quantitative Studies and the Critical Appraisal Skills Program (2023) (CASP) Qualitative Research Checklist. The included articles were analyzed and coded using in vivo coding and axial coding. 14 themes were identified. Five themes cover how GenAI can personalize learning experiences and feedback, provide affective support, improve students' language skills and proficiency, support teachers, and foster creativity and critical thinking. Four themes cover how GenAI integration in HE presents numerous ethical issues, threats of over-reliance on technology, and limited human connections. These themes also cover some implementation challenges that this integration faces and how it can negatively affect feedback, critical thinking, creativity, and students' well-being. Three themes cover how GenAI is currently being used by educators and students to practice the four skills, provide assessment and feedback, and make the learning and teaching process more dynamic. The last two themes lay out a few effective strategies for implementation and implications for educators and students.

Keywords: Generative artificial intelligence; foreign language education; higher education; technology in language teaching and learning; systematic review.

Introduction

Generative Artificial Intelligence (GenAI) tools are emerging quickly, creating new opportunities and challenges for higher education (HE) foreign language education. AI is considered one of, if not the most likely technology to have a high impact on teaching and learning in HE in the near future (Crompton et al., 2020). This claim is backed up by the fact that AI technology has been shown to significantly impact every industry it pervades (Chen et al., 2020). Recently, AI has been increasingly present in education in various ways and forms (Chu et al., 2022; Crompton & Song, 2021; Stockwell, 2024). This is echoed in the fact that nearly all HE students have access to an AI tool (Alenazi, 2024).

Sleator and Hennessey (2023) found that almost half the students at Cambridge used GenAI. Many of them used it to translate texts from foreign languages to English, and some even used it to translate medieval languages. The number of HE students who regularly use GenAI has been steadily on the rise with more than half reporting regular GenAI use and nearly half reporting paying for advanced GenAI features (Bharadwaj et al., 2024; Dempere et al., 2023; Stone, 2024). Additionally, a significant number of students express positive attitudes towards using GenAI in HE (Khasawneh, 2023; Sarwari et al., 2024). It is becoming more and more apparent that we have reached the point of no return with AI integration in HE (Aghaee et al., 2024).

Understanding the opportunities these technologies present is imperative for those developing policies and practitioners implementing policies in efforts to modernize language curricula and provide students with a better quality of education. The review also seeks to examine carefully the ethical implications and equitable access of these technologies to facilitate effective implementation and policy development. In addition, this review synthesizes ongoing research and informs evidence-based decisions surrounding the role of GenAI in foreign language education policies and practices in HE in the future.

Purpose of the Study

This review is needed because, while there are growing discussions and individual studies exploring the use of AI in education, a comprehensive and systematic review specifically focused on GenAI in foreign language education within HE is currently lacking. The scope of the review is especially relevant to developing multilingual countries where language barriers present obstacles for international research collaboration and development. Additionally, existing reviews address AI in education broadly (Daniel et al., 2025; Goekcearslan et al., 2024), or focuses on other areas like STEM fields or K–12 education (Aravantinos et al., 2024; Casal-Otero et al., 2023; Kavitha & Joshith, 2024; Rizvi et al., 2023).

The research questions, literature search parameters, and inclusion criteria for this SLR are based on the PICo framework: ‘P’ for Population, ‘I’ for Interest, and ‘Co’ for Context (Nishikawa-Pacher, 2022; Stern et al., 2014). For the purpose of this SLR, the population is foreign language learners; our interest is the use or integration of GenAI tools and applications in foreign language education, and our context is HE institutions. The adoption of the PICo framework led to the formulation of two primary research questions and two secondary research questions. The primary research questions are as follows:

RQ1: What are the key opportunities presented by the integration of GenAI for foreign language education in HE?

RQ2: What are the main challenges and potential risks associated with integrating GenAI into foreign language education?

The secondary research questions are as follows:

RQ3: How are GenAI tools currently being utilized in foreign language education within HE settings?
RQ4: What are the implications of these findings for policy and practice in HE?

Method

The process of study selection is outlined below in Figure 1 (Haddaway et al., 2022) in accordance with the PRISMA guidelines (Page et al., 2021). The first author undertook the tasks of data search by executing the search query outlined below on the designated databases, first screening, and retrieving the data. Following the search query execution, the results were exported to the referencing management software Zotero (Corporation for Digital Scholarship, 2025). Duplicates, book chapters, and retracted articles were removed. Then, the remaining items were exported to rayyan.ai, a web-based management tool for systematic reviews where the initial screening took place.

Inclusion and exclusion criteria were developed using the PICo framework outlined above (see Table 1). The inclusion criteria for the SLR include empirical studies employing quantitative, qualitative, or mixed-methods approaches that are published in peer-reviewed journals or conference proceedings. Studies must focus on HE and foreign language education and be published in English, French, or Arabic. The exclusion criteria exclude studies lacking empirical evidence, such as opinion pieces or editorials; studies not focused on HE or foreign language education; articles that have not gone through the peer-review process, book chapters, and studies published in languages other than English, French, or Arabic. No specific timeline was established for the literature search, as scholarly output on the integration of GenAI into foreign language education in HE did not gain significant traction until GenAI tools became widely accessible in 2021 and 2022.

The search query was developed based on the PICo framework. It was used for a search across the following academic databases: Scopus, Web of Science, and Springer Nature. The choice of making these the primary databases for this study is based on their coverage of high-quality peer-reviewed journals and their reputation for maintaining high academic standards, which enhances the reliability and credibility of the search strategy. The final Boolean search query was: TITLE-ABS (“generative AI” OR “artificial intelligence” OR “GenAI” OR “large language model*” OR “LLM*” OR “ChatGPT” OR “Bard” OR “grok” OR “gemini” OR “DALL-E” OR “midjourney” OR “stable diffusion” OR “AI tool*” OR “AI application*” OR “AI writing tool*” OR “AI grammar checker*”) AND TITLE-ABS (“foreign language education” OR “second language learning” OR “EFL” OR “English as a foreign language” OR “ESL” OR “English as a second language” OR “L2 learning” OR

Table 1 *Inclusion and Exclusion Criteria*

Criteria	Inclusion	Exclusion
Type of Studies	Empirical studies: quantitative, qualitative, or mixed methods	Articles lacking empirical evidence
Publication Type	Studies published in peer-reviewed journals or conference proceedings	Book chapters
Population and Context	Studies focused on higher education and foreign language education	Studies not focused on HE or foreign language education
Language	English, French, and Arabic	Languages not in the inclusion criteria

"second language acquisition") AND TITLE-ABS ("higher education" OR "universit*" OR "college" OR "tertiary education") AND TITLE-ABS ("opportunit*" OR "challenge*" OR "benefit*" OR "risk*" OR "impact*" OR "effect*" OR "threat*" OR "advantage*" OR "disadvantage*" OR "language skill*" OR "communication skill*" OR "writing skill*" OR "speaking skill*" OR "reading comprehension" OR "vocabulary acquisition" OR "grammar learning") AND NOT TITLE-ABS ("computer science" OR "engineering" OR "machine learning" OR "deep learning" OR "neural network" OR "convolutional") AND (LIMIT-TO (DOCTYPE , "ar" OR "cp")) AND (LIMIT-TO (LANGUAGE, "English" OR "Arabic" OR "French"))

The first and second screening steps were strictly guided by the inclusion and exclusion criteria outlined in the review protocol (Griche & Bennis, 2025). The first author began screening titles and abstracts to exclude irrelevant papers. The same author undertook the task of retrieving the papers but failed to retrieve two items. The second screening step was undertaken by both authors independently to determine eligibility based on the inclusion and exclusion criteria. After achieving consensus all the included items were exported to QDA Miner, a qualitative data analysis software (LaPan, 2013), for the coding process.

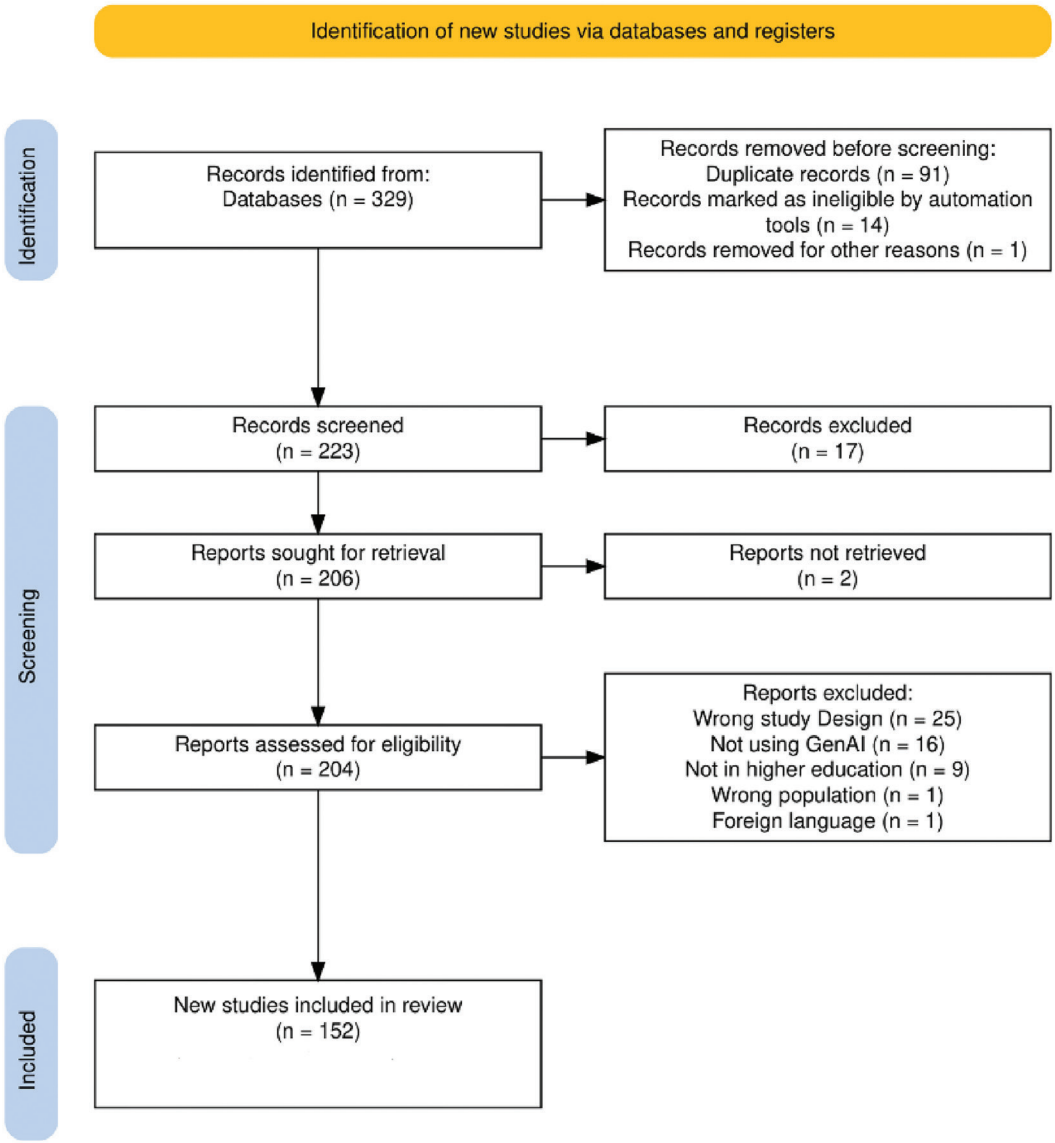

Figure 1 *PRISMA Flow Diagram for Systematic Reviews (Haddaway et al., 2022; Page et al., 2021).*

Two different tools were utilized to assess the methodological quality of the included studies: the Effective Public Health Practice Project (EPHPP) Quality Assessment Tool for Quantitative Studies (Armijo-Olivo et al., 2012; Thomas et al., 2004) and the Critical Appraisal Skills Programme (CASP) Qualitative Research Checklist (Critical Appraisal Skills Programme, 2023). Although it was initially created for assessing studies in health research, the EPHPP tool offers comprehensive design features and is increasingly being used in humanities research for its relevance. Quantitative studies were analyzed using the EPHPP, while qualitative studies were analyzed using CASP. Mixed methods studies were analyzed using both the EPHPP for the quantitative part and CASP for the qualitative part.

The analytical framework of this SLR is rooted in Grounded Theory methodology, not merely as a form of analyzing qualitative data but rather as a systematic approach to describe and explain the inclusion of GenAI in foreign language education. The goal of employing Grounded Theory in this SLR is to discover themes rooted directly in the empirical material found within the reviewed articles without imposing any of the researchers' preexisting notions (Flick, 2018).

Coding

After importing the included articles into QDA Miner, they were coded using inductive coding methods to answer the exploratory research question in the present paper. Inductive coding means that the data was approached with an open mind without any preexisting notions, letting the data guide the process (Saldaña, 2021). This approach was selected as it will allow current trends, opportunities, and challenges of GenAI integration in foreign language learning in HE to emerge from the data. In vivo coding was used in the first coding cycle to produce words or phrases used by the researchers from the analyzed data (Strauss, 1987).

In vivo coding lays out the ground for future coding cycles, as instead of producing broad themes, it provides dimensions that could be analyzed in relation to each other and to the context they arise from (Saldaña, 2021; Strauss, 1987). Following first cycle coding, axial coding was employed in the second coding cycle to link and relate the output of first cycle coding and enable the construction of main themes that will provide answers to our research questions (Bryant & Charmaz, 2019). The grouping and interpretation of axial coding was informed by Second Language Acquisition (SLA) theories such as Krashen's hypotheses (Krashen, 1988), Vygotsky's Zone of Proximal Development (ZPD; Vygotsky, 1978), and Swain's Output Hypothesis (Swain, 1985) to interpret how initial codes can be grouped to form axial codes and themes and explain data patterns.

To enhance methodological credibility and rigor, extensive transparency measures were integrated throughout the analysis. First, analytic memos were recorded continuously in a shared document that both authors had access to in addition to the codebook. Memos served as preliminary notes that captured the first author's initial thoughts and reflexivity regarding the development of codes and the definition of categories from the empirical material. Additionally, to offset the lack of a standardized test for assessing intercoder reliability and to increase the level of reliability and rigor of the analysis, the authors made frequent use of "shop talk" (Flick, 2018; Saldaña, 2021). The dialogic exchange was used in tandem with the memos as a mechanism to clarify emerging themes, identify new insights, and establish stronger relationships between themes in the data.

For the purposes of our literature review, Grounded Theory was used to extract the opportunities and challenges that GenAI presents in foreign language education in HE, current practices, and ethical and practical implications from the reviewed sources without allowing the authors' own notions to influence them. Following this, SLA was then used to interpret, contextualize, and understand these codes. Drawing on both theoretical frameworks allows this review to present the empirical evidence

from the reviewed sources while also offering a theoretically grounded interpretation by the authors. Although the Technology Acceptance Model (TAM) is widely used to examine users' attitudes toward educational technologies, it was not adopted as a primary analytical framework in this review. The aim of the present SLR was not to model intention to use or predict technology adoption, but rather to synthesize pedagogical, cognitive, and affective implications of GenAI integration in foreign language education in HE. Consequently, SLA theories were prioritized to interpret learning-related outcomes. Additionally, because of Grounded Theory's methodological emphasis on the emergence of themes directly from the data, this choice allows opportunities and challenges to emerge without the influence of any models.

Findings

The quality assessment of all the included studies was used to evaluate the quality of the data used in the synthesis of this SLR. Given that only one qualitative study was found to have a weak quality score and only three mixed-methods studies had a weak qualitative component (see Table 2), the overall methodological quality of the included studies was high as the number of studies with a weak quality score is not high enough to dilute the quality of the data. Consequently, all studies were treated equally in the development of the themes to ensure inclusivity.

Table 2 *Quality Assessment Results*

Study Design	No. of Studies	EPHPP Strong (%)	EPHPP Moderate (%)	EPHPP Weak (%)	CASP Strong (%)	CASP Moderate (%)	CASP Weak (%)
Quantitative	51	34 (66.67)	17 (33.33)	0	NA	NA	NA
Qualitative	33	NA	NA	NA	27 (81.82)	5 (15.15)	1(3.03)
Mixed Methods	68	34(50.00)	34(50.00)	0	39 (57.35)	26 (38.24)	3(4.41)

RQ1: Opportunities Presented by GenAI Tools

After the first and second rounds of coding exploring opportunities of GenAI integration in foreign language learning in HE were done, five main themes emerged. These themes are personalized learning and feedback, affective support, enhanced language skills and proficiency, creativity and critical thinking, and teacher support. These themes provide an understanding of how GenAI could be used to advance foreign language teaching in HE. The themes are outlined below in figures with their corresponding axial codes and in vivo codes.

Personalized Learning and Feedback

Personalized learning and personalized feedback were the most common themes in the examined studies. This theme is structured around five axial codes that have emerged from various in vivo codes. The axial codes are self-regulated and autonomous learning, interactive and collaborative learning, personalized learning pathways, assessment support, and personalized and real-time feedback (see Figure 2).

Students reported enhanced motivation, personalized guidance, and improved application of strategies, emphasizing the value of interactive self-regulated learning (SRL) support from chatbots. This support provided dialogic feedback, problem-solving guidance, and concrete examples that fostered the development of their SRL reading strategies (Pan et al., 2025). Beyond SRL, GenAI tools have shown significant potential in collaborative and interactive learning contexts (Al-Othman, 2024). For

instance, GenAI can act as a virtual group member in collaborative tasks, generate visual aids for writing activities, and narrate students' stories (Emerson, 2024). Additionally, studies highlight how GenAI can gamify certain learning tasks, making them more interactive and engaging, while also creating simulations and real-life learning scenarios. These features contribute to immersive, engaging, and practical learning experiences (Hou, 2025).

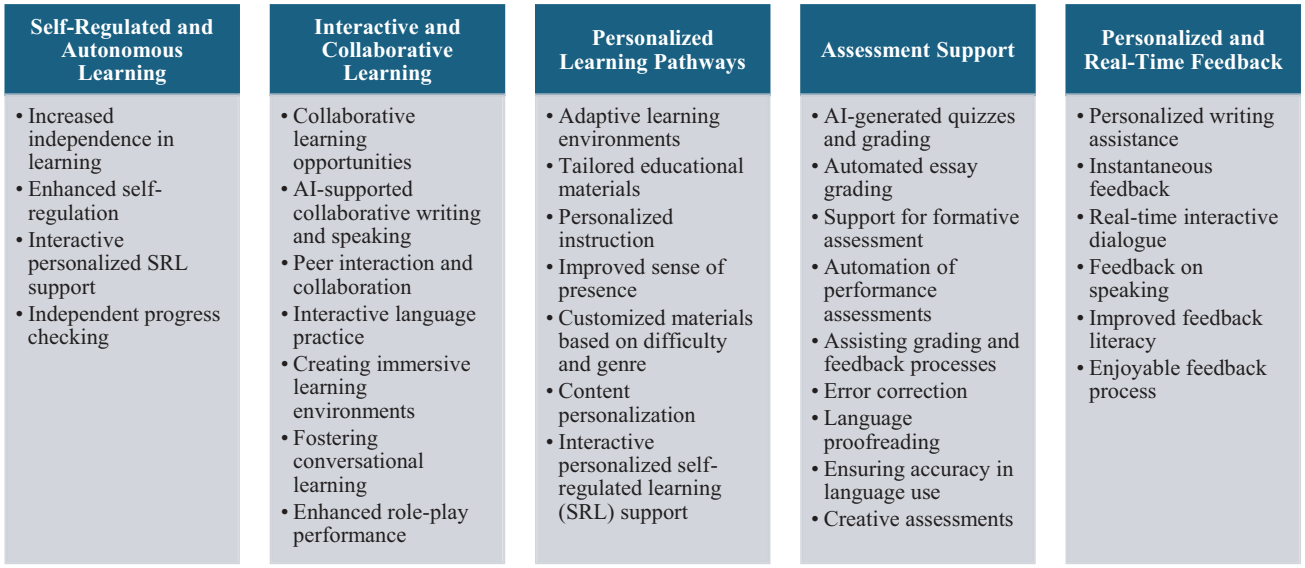

Figure 2 *Personalized Learning and Feedback Codes*

Examined papers also indicate that GenAI-assisted role-play can effectively facilitate students' speaking performance, demonstrating comparable outcomes to traditional peer role-play methods (Chen et al., 2025). It improves students' overall performance, English speaking skills, interaction mindset, and leads to a reduction in L2 errors (Darmawansah, Hwang, et al., 2025). Additionally, it can be used with large datasets to identify patterns and generate tailored learning materials to cater to different contexts (Ma, 2025; Wu & Dong, 2025). Furthermore, students demonstrate more dynamic engagement when seeking real time feedback from GenAI chatbots during GenAI-assisted role-play tasks (Van Horn, 2024).

Personalized and real-time feedback was one of the most common codes across numerous studies that investigated its potential effect on the development of the four skills. Despite usually being lengthy (ElEbyary et al., 2024), feedback provided by GenAI was found to increase students' writing performance, proficiency, and motivation (Mohammed & Khalid, 2025; Özdere, 2025; Polakova & Ivenz, 2024). Similarly, GenAI can be used to provide students with feedback on speaking and listening skills (Khoudri, 2024; Sayed et al., 2024; Zou et al., 2023), and grammar (Mohammed & Ja'ashan, 2024; Zhou et al., 2025). In a sense, GenAI provides students with opportunities to modify and restructure their interactions in a simulation of negotiation of meaning in an attempt to make GenAI output more comprehensible, potentially giving students more opportunities for comprehensible input than traditional contexts (Krashen, 1988; Pica, 1994). Furthermore, GenAI unlocks a lot of potential for assessment. It paves the way for continuous formative portfolio assessment (Khasawneh et al., 2025). It can also assist educators with designing assessment activities (Klimova et al., 2024) and evaluating students' work (Zaiarna et al., 2024) since the quality of GenAI-assisted peer evaluation was found to be at a similar level to that of experts (Liu et al., 2025). However, while GenAI assessment can be comparable to human experts, it was found to be context sensitive and inconsistent across departments (Ennadir & Habiballah, 2025).

Affective Support

Another major theme that emerged was the potential of GenAI to provide students with more affective support and create a better learning environment (see Figure 3). GenAI promises to foster a supportive judgement and stress-free learning environment (Yamaoka, 2024). This has the potential to reduce foreign language anxiety (Alsager, 2024; Feng & Wang, 2025), increase engagement (Ajabshir, 2024; Asmar et al., 2025; Pikhart et al., 2024), willingness to communicate (Deng et al., 2024), enjoyment (Zhang et al., 2024), and confidence (Van Horn, 2024; Yamaoka, 2024; Zhang et al., 2024).

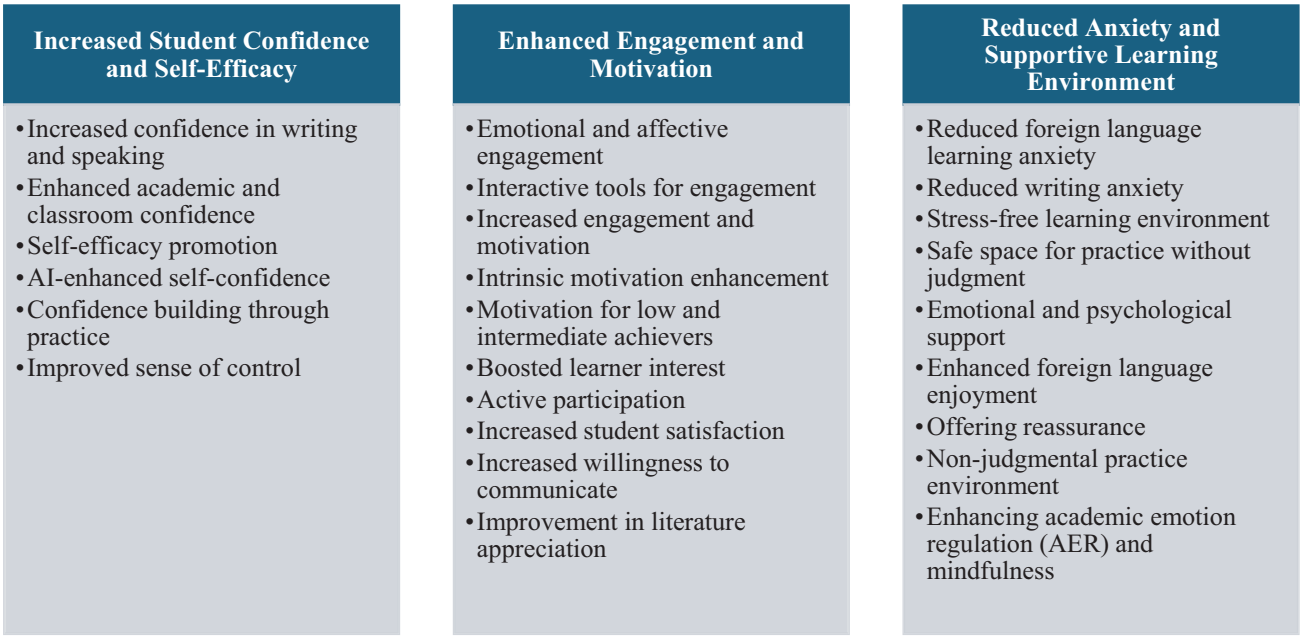

Figure 3 *Affective Support Codes*

From the point of view of Krashen's Affective Filter Hypothesis, this particular axial code suggests that GenAI lowers emotional barriers by lowering stakes and providing non-judgmental interactions, allowing for more effective input acquisition (Krashen, 1988). GenAI holds significant potential to enhance the development of communicative competence among EFL learners by alleviating affective barriers to English acquisition while simultaneously offering opportunities for authentic communicative interaction and individualized learning experiences (Busso & Sanchez, 2024). Students report back that GenAI chatbots have a positive impact on their cognitive and emotional engagement (Zhou & Hou, 2024). They are more engaged with reading processes and express positive emotions such as being interested and having fun which alleviates a sense of boredom when compared to a typical classroom (Pan et al., 2025). The technology also has a lot of potential for providing students with practice environments that mirror real life public speaking scenarios to help reduce their public speaking anxiety (Chen, 2024).

Language Skills and Proficiency Improvement

Results that indicate improved language skills were observed across numerous studies (see Figure 4). Various codes emerged as support for the potential of GenAI to support vocabulary acquisition and retention (Jomaa et al., 2025). Additionally, it can enhance students' writing skills and quality

by helping them improve their writing style creativity, coherence, and organizational skills (Moussa & Belhiah, 2024). Similarly, integrating GenAI in speaking and listening tasks improved students' receptive and productive skills (Khoudri, 2024). Moreover, GenAI shows potential in aiding students with reading comprehension, text simplification, and summarization (Celik et al., 2024; Darwin et al., 2024).

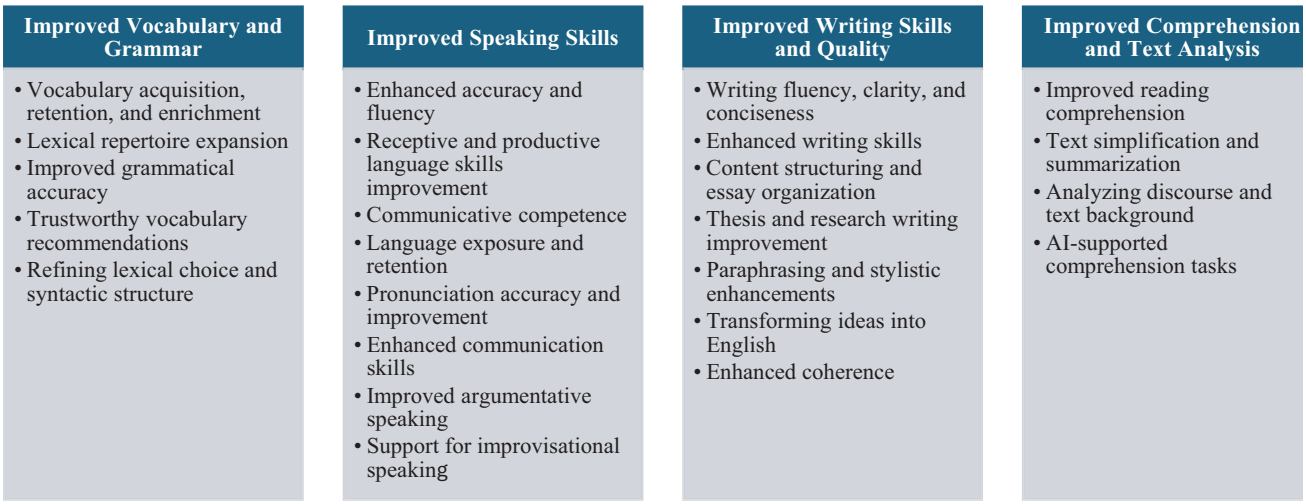

Figure 4 *Improved Language Skills and Proficiency*

Creativity and Critical Thinking

While there are some major concerns about the effect of GenAI technology on creativity and critical thinking, which will be discussed below, a few codes indicate that GenAI can be used to foster creativity and help build up critical thinking in students (see Figure 5). Through collaborative argumentation, GenAI has the potential to help students develop critical thinking skills (Darmawansah, Rachman, et al., 2025). With the help of GenAI, students can generate and develop ideas through brainstorming (Salam, 2024; Xiao & Zhi, 2023). They can also generate images that can be used as visual aids for class presentations (Neff et al., 2024). Alternatively, students can use AI-generated images as visual stimuli to inspire and guide their writing process and help them use more specific or descriptive language (Muslimin et al., 2024).

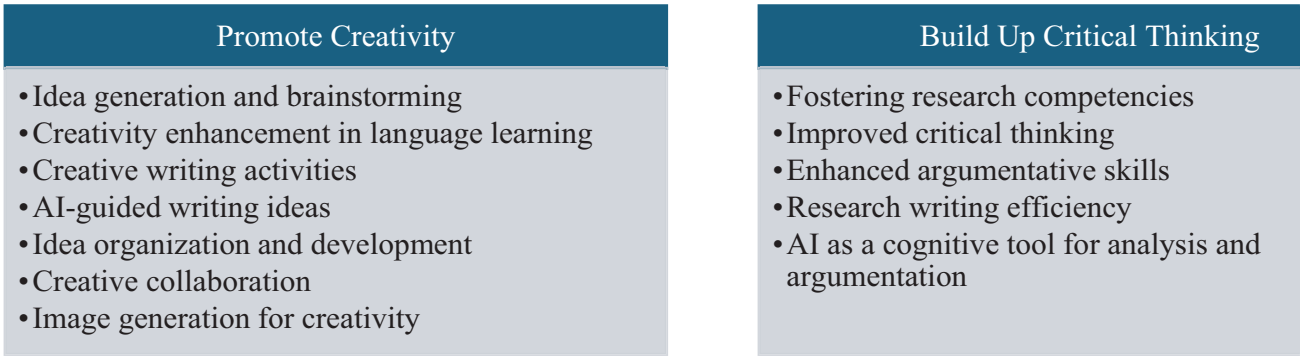

Figure 5 *Creativity and Critical Thinking Codes*

Teacher Support

In addition to supporting students in various ways, a number of codes point to GenAI's ability to support teachers as well. Specifically, a number of uncovered codes indicate that GenAI can save teachers a considerable amount of time on routine and repetitive tasks (see Figure 6). It can also be used to automate administrative tasks, thus increasing teachers' efficacy (Rasul et al., 2023). Moreover, it enables educators to create customized content and learning materials tailor-made for specific students (Baltezarević & Baltezarević, 2024). Additionally, the permeation of GenAI in HE incentivizes educators' continuous professional development (Abisheva et al., 2024), and digital technology knowledge and skill development (Xue, 2025).

Digital and AI Literacy for Teachers

- Enhancing teachers' digital awareness
- Improving digital technology knowledge and skills
- AI literacy competence
- Continuous professional development in AI
- Digital applications in teaching

Teacher Productivity and Automation

- Enhanced lesson planning
- Reduced teacher workload
- AI-generated teaching materials
- Increased teaching efficiency
- Language activity and task design
- Content creation for lessons
- Time-saving benefits
- Automated administrative services
- Assistance with professional emails and technical reports

Figure 6 *Teacher Support Codes*

RQ2: Challenges and Risks of GenAI

Along with the numerous opportunities that it promises, integrating GenAI in foreign language education in HE will also bring considerable challenges as well. The identified themes that cover some of these challenges are over-reliance and limited human connections, ethical issues, limited critical thinking and creativity, limited quality and effectiveness of feedback, impact on students' well-being, and implementation challenges. Implementation challenges encompass a number of socio-technical barriers to successful GenAI integration, including inaccurate or unreliable AI outputs, technical limitations and connectivity issues, preparedness and training, resistance to change, and access and equity issues. These codes illustrate the complex social, technical, pedagogical, attendance and psychological challenges students, educators and institutions must face to ensure they can achieve successful GenAI integration.

Over-Reliance and Limited Human Connections

The most common code discussing challenges was over-reliance (see Figure 7). Heavy and sole use of GenAI in classrooms and complete neglect of traditional learning resources risk promoting academic laziness and isolationism among students (Liu & Fan, 2025; Salam, 2024). Similarly, perpetual cognitive offloading could result in students being paralyzed when they don't have access to GenAI technology. Additionally, there are concerns about stripping the learning experience of its humanness with monotonous GenAI learning that lacks human interactions (Dillon, 2024; Jamshed, Almashy,

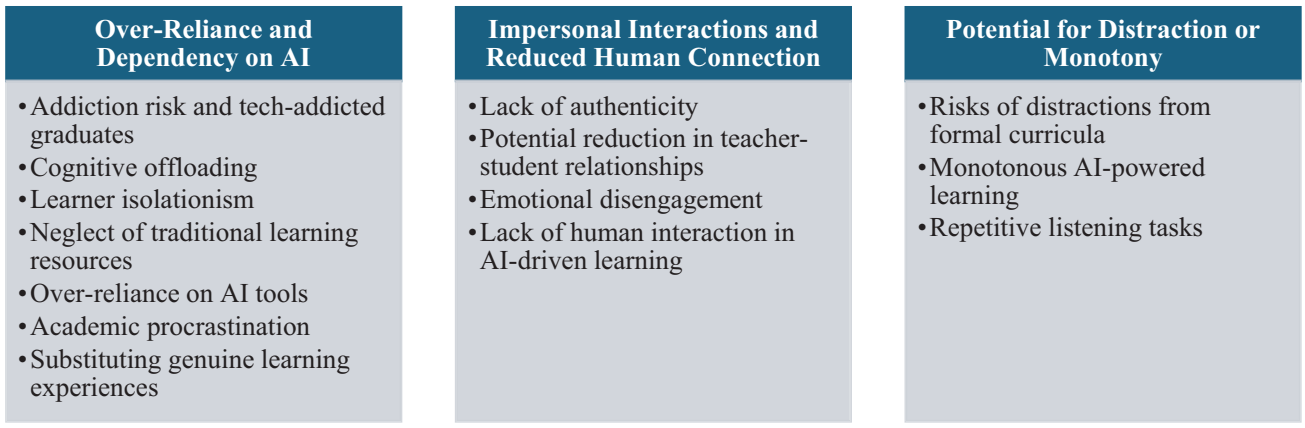

Figure 7 *Over-Reliance and Limited Human Connections Codes*

et al., 2024), resulting in HE institutions that produce graduates who are addicted to technology and emotionally disengaged (Alruwaili & Kianfar, 2025; Klimova et al., 2024).

Ethical Issues

GenAI integration in HE cannot be addressed without considering ethical issues, with plagiarism at the forefront (see Figure 8). GenAI tools have increased educators' skepticism about the authenticity of students' work, resulting in false accusations in instances where AI detection tools incorrectly flagged human-written texts as AI-generated, eroding student-supervisor relationships (Elkhatat et al., 2023; Farazouli et al., 2024). Additionally, they can disseminate biases learned from their training data and underlying algorithms that reflect stereotypes and cultural biases, reinforcing social inequality (Alzubi et al., 2025; Mohamed, 2024). Moreover, GenAI can create echo chambers of content, restricting exposure to alternative viewpoints and minimizing the ability to think critically and inhibiting objectivity (Darwin et al., 2024).

Figure 8 *Ethical Issues Codes*

Implementation Challenges

First and foremost, there is the issue of equitable access to technology. Regional restrictions, resource limitations and affordability might deny scores of people access to quality GenAI tools, further

exacerbating the preexisting digital divide and inequality (Xu & Jumaat, 2024). Similarly, infrastructure limitations such as internet access, server capacity and logistical challenges could worsen the aforementioned access issue (Jamshed, Alam, et al., 2024; Muniandy & Selvanathan, 2024).

In addition to ethical issues, GenAI's integration is also hampered by other social, technical, pedagogical, attendance, and psychological challenges (see Figure 9). Technical limitations extend to the accuracy and reliability of GenAI output as well. Inconsistency, irrelevant output, as well as outdated, inaccurate, misleading or superficial output have been identified as areas of concern (Alshammri, 2024; Virlan & Tomak, 2024, 2025). Adding to the problem is the lack of digital skills training for both educators and students, digital literacy gaps, and unfamiliarity with GenAI technology which may lead to cognitive overload and behavioral issues that impede the integration (Alenazi, 2024; Jamshed, Alam, et al., 2024). This particular problem is compounded by fears of reduced roles and job loss (Zhou & Hou, 2024).

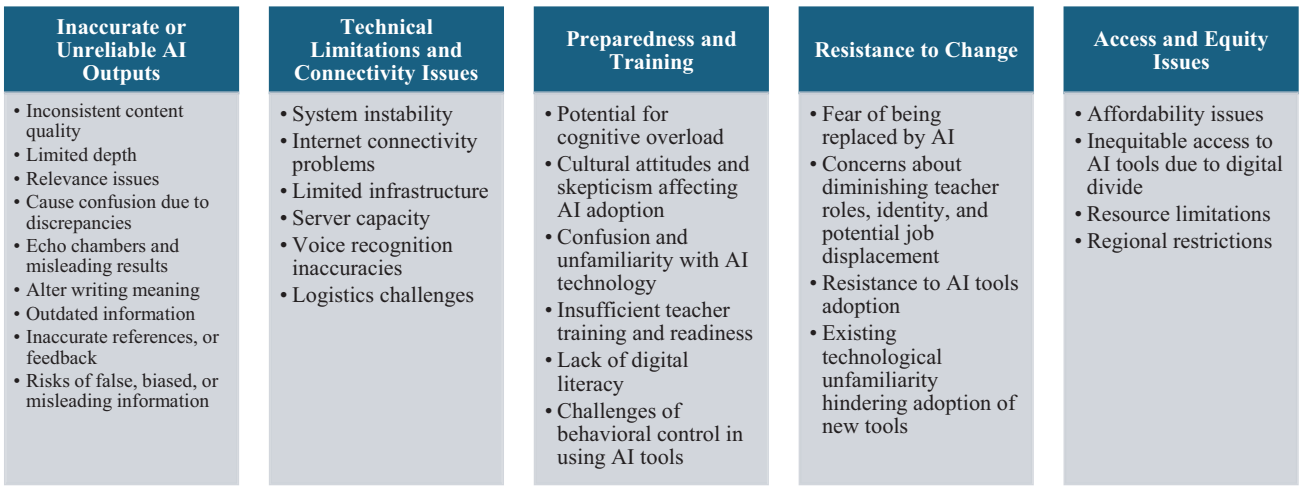

Figure 9 *Implementation Challenges Codes*

Feedback, Critical Thinking, Creativity, and Students' Well-Being

Remaining challenges related to axial codes point to limited critical thinking and creativity (see Figure 10), limited feedback quality and effectiveness (see Figure 11), and impact on students' well-being (see Figure 12). Despite finding numerous codes that reveal the opportunities GenAI can provide in fostering critical thinking and creativity, a handful of codes uncover concern about GenAI limiting students' critical thinking and stifling creativity, especially in the long run. Students and educators are concerned GenAI AI would negatively affect originality and writing style, replace in-depth analysis with superficial or general analysis, restrict them to certain limited perspectives, and hinder their ability to express themselves using their own words (Al-Alami, 2024; Alkamel & Alwagieh, 2024; Ennadir & Sabour, 2025; Liang & Wu, 2024).

The apparent contradictions cannot be reduced to the instruments of the studies but could potentially be explained by different perceptions of GenAI output as a uniform treatment or as an interactional variable whose developmental impact is mediated by learner behavior, classroom ecology, and task design. When learners juxtapose their original input with GenAI's output, they lower their affective filter and notice gaps between input and output, making GenAI function in their ZPD and triggering true interlanguage change. This is supported by Strobl et al. (2024) who found that GenAI substantially

enhanced learners' noticing of both content and linguistic deficiencies in their own written output. Conversely, when students import GenAI-rewritten output as is while experiencing pressure, cognitive overload, or heightened anxiety, they fail to produce meaningful output; thus, the text may improve, but their language does not. Thus, over-reliance on GenAI output without requiring students to produce their own output might reduce their comprehensible output, leading to superficial processing and fossilized errors (Swain, 1985) which in turn could lead to stifled critical thinking and creativity in the second language.

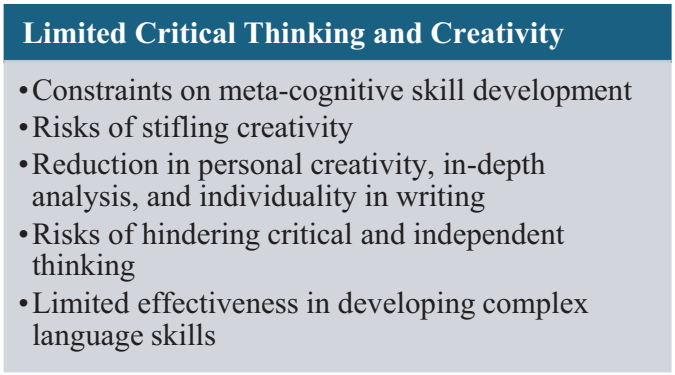

Figure 10 *Limited Critical Thinking and Creativity Codes*

Despite being one of the most promising areas of GenAI application in HE, GenAI feedback is not without its challenges. Studies show that sometimes GenAI tools struggle with complex tasks, leading them to provide inconsistent and superficial feedback (Ajabshir, 2024; Seo, 2024). Other times, it can produce outright inaccurate feedback leading students to spend a significant amount of time verifying the accuracy of the provided information (Fan et al., 2024). Some studies also report that GenAI tools can misinterpret students' input and produce feedback that is completely irrelevant to the student´s inquiries (Waziana et al., 2024).

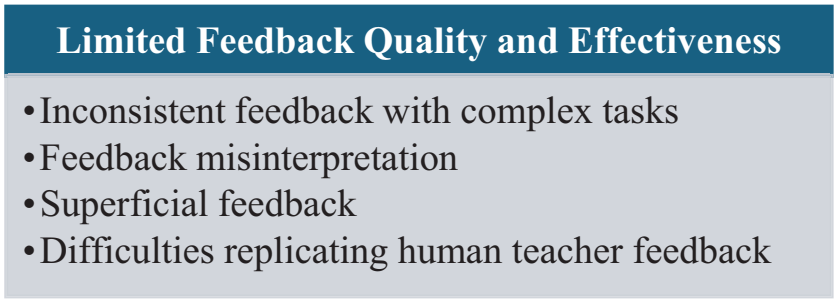

Figure 11 *Limited Feedback Quality and Effectiveness Codes*

The inconsistency in the results of feedback quality across studies in this SLR could be due to a handful of reasons. Different GenAI models and versions were used across studies. Earlier or basic tool iterations may have been responsible for less reliable results. Another possible factor that could have played a role is task complexity. Some studies used simple tasks such as sentence or short paragraph feedback, while others used more complex tasks such as feedback on academic essays. Additionally, user prompting skills may affect the quality of feedback from these tools and lead to variations in the findings. Alternatively, it may also be methodological, as when compared to each other, a number of studies had slightly smaller sample sizes than the rest.

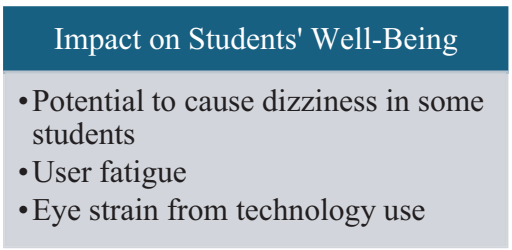

Figure 12 *Impact on Students' Well-Being Codes*

While GenAI positively contributes to emotional and psychological support in some contexts, it can simultaneously cause physical strain, especially with heavy use or prolonged sessions. A few studies mention negative effects of certain GenAI-powered tools on students' physical health, such as dizziness, fatigue, and eyestrain, especially in cases where students have to use devices like mobile phones and virtual reality headsets for extended periods of time (Wang et al., 2022; Zhou et al., 2025). Developers should therefore prioritize ergonomic and health-conscious design in GenAI-powered educational technologies to mitigate the potential physical drawbacks associated with extended use. Such design considerations are essential to ensure that the pedagogical benefits of GenAI are not undermined by preventable physical strain.

RQ 3 Current GenAI Practices

While the first research question answers what *could be*, this question answers what *is*. It uncovers how GenAI is currently being used. The three main themes that have emerged from the analysis reveal that GenAI is mainly being used to practice the four skills. It is also being used by educators to provide students with personalized feedback and assessment, while students use it to assess their own progress and get feedback on assignments before submission. The third theme reveals that GenAI is being used to make the learning process more dynamic and personalized.

Practicing the Four Skills

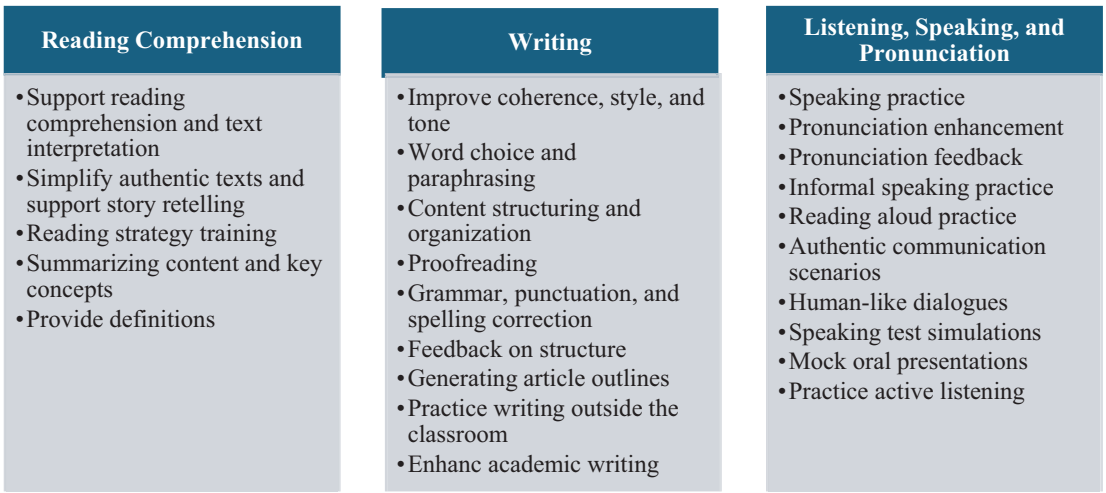

Figure 13 *Practicing the Four Skills Codes*

In order to practice reading comprehension, students use GenAI to look up definitions, provide background info and key concepts, summarize texts, and aid with their interpretation. When it comes to writing, students use GenAI to generate outlines and brainstorm ideas, organize texts, and paraphrase (Xu & Jumaat, 2024). They also used it to proofread and provide feedback, correct grammar, punctuation and spelling, improve coherence, style, and tone, and practice outside the classroom (Mizumoto et al.,

2024; Wu et al., 2024; Yamaoka, 2024). Students also use GenAI to practice active listening (Zheldibayeva, 2025), and for read aloud practice (Khoudri, 2024). To practice speaking, students use GenAI to simulate oral presentations, speaking tests, and authentic communication scenarios (Guan et al., 2024; Lee & Davis, 2024).

Assessment and Feedback

GenAI is already being used in assessment and feedback to reduce educators' workload and allow them to focus on critical tasks (see Figure 14). GenAI is being used to automate grading and evaluation, assist educators with portfolio assessment, keep track of students' progress, and create adaptive and interactive tests (Khasawneh et al., 2025). It is also used to provide students with instant feedback on various things such as grammar, pronunciation, speaking, and writing (Huang & Mizumoto, 2024; Polakova & Klimova, 2024).

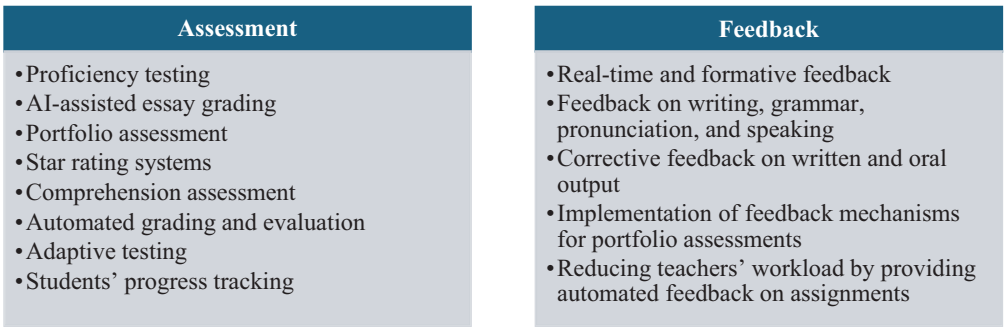

Figure 14 *Assessment and Feedback Codes*

Dynamic Learning and Teaching

A sizeable number of codes covered how GenAI is being used to make the learning process more personalized and interactive (see Figure 15). A few educators mentioned that they use it to gamify certain tasks, generate images to serve as discussion materials, plan lessons, and create customized and culturally relevant teaching materials (Jamshed, Allehyani, et al., 2024; Muslimin et al., 2024). Additionally, the technology is also used to support blended learning and flipped classrooms (Lin & Mubarok, 2021; Zhou et al., 2025). Some educators use it to assist students with podcast production in project-based tasks, decode video transcripts, generate language learning games and create mind maps (Khoudri, 2024; Risang Baskara et al., 2024).

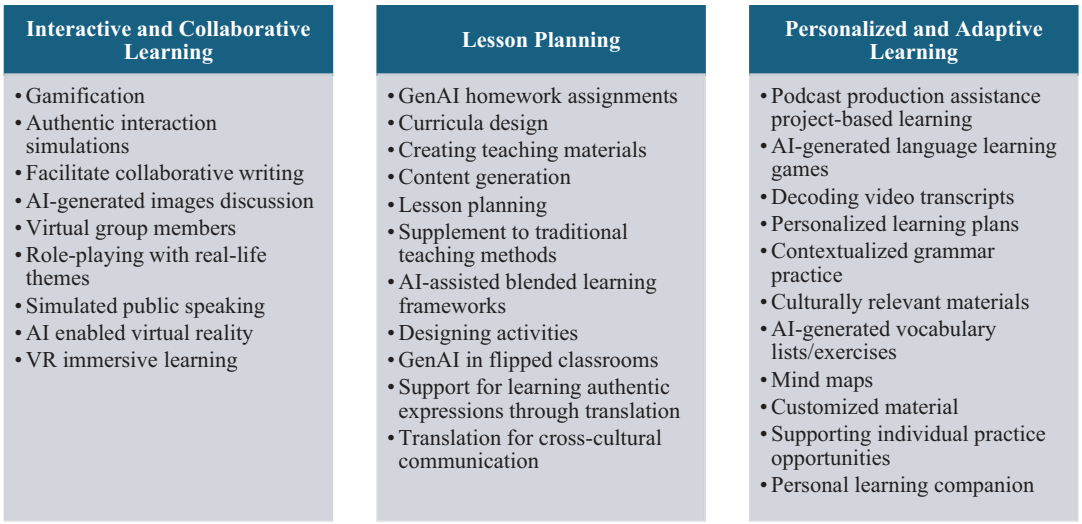

Figure 15 *Dynamic Learning and Teaching Codes*

RQ4: Implications for Policy and Practice

Effective Strategies for Implementation

One crucial axial code that emerged deals with the importance of balancing GenAI and human interaction, emphasizing that GenAI should be used as a supplemental supporting tool. Various codes indicate that human input should be maintained, and educators should interact with GenAI to be able to detect GenAI content. Another axial code points out the need for redesigned curricula, gradual implementation, and professional development that's aligned with GenAI integration strategies. The third axial code reveals a need to develop infrastructure that's able to support GenAI integration. It also points to a dire need for improved GenAI accuracy and user-friendly and engaging user interfaces.

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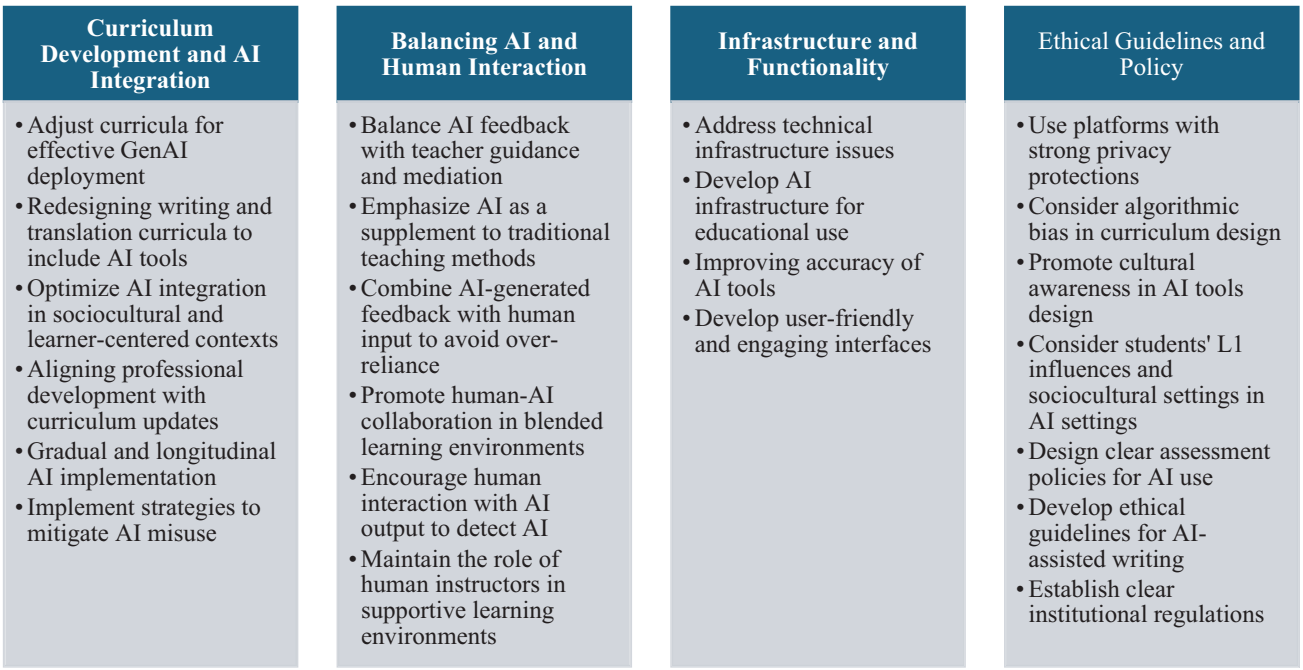

Figure 16 *Effective Strategies for Implementation Codes*

One crucial axial code that emerged deals with the importance of balancing GenAI and human interaction, emphasizing that GenAI should be used as a supplemental supporting tool. Various codes indicate that human input should be maintained, and educators should interact with GenAI to be able to detect GenAI content. Another axial code points out the need for redesigned curricula, gradual implementation, and professional development that's aligned with GenAI integration strategies. The third axial code reveals a need to develop infrastructure that's able to support GenAI integration. It also points to a dire need for improved GenAI accuracy and user-friendly and engaging user interfaces.

The final axial code points out that institutions should develop clear AI use and assessment policies and guidelines and communicate them to students and faculty. Importance should be given to data

protection, and only platforms with strong data privacy should be considered. GenAI tool designers should take various cultural backgrounds into consideration to mitigate cultural bias. Similarly, algorithmic bias should be taken into consideration when redesigning curricula for GenAI-supported language learning.

Implications for Educators and Students

The next few axial codes cover various implications for students and teachers (see Figure 17). First, teachers are required to rethink traditional assessment methods. Redesigned assessment methods should focus on creative and critical thinking and should rely on alternative methods that are resistant to GenAI-assisted cheating. Additionally, institutions should provide educators with training on GenAI tools and prompt engineering, support curricula redesign, and organize training and workshops on ethical GenAI use and plagiarism prevention.

Assessment Redesign	Teacher Training and Professional Development
• Redefine assessment methods to focus on creative and critical thinking • Develop interactive AI-assisted evaluation systems • Implement alternative assessments (e.g., oral presentations, learning portfolios) • Faculty training on assessment redesign	• Train educators on AI tool usage and prompt design • Investment in ongoing teacher AI training programs • Support teachers in redesigning curricula • Workshops, and seminars led by AI ethics experts • Training on ethical use • Teacher guidance on over-reliance and plagiarism prevention

Figure 17 *Implications for Teachers Codes*

In addition to supporting educators, institutions should support students by first addressing any concerns they may have with GenAI integration. Educators should encourage students to critically interact with GenAI. They should integrate AI and digital literacy into the updated curricula to address data privacy issues and future job market expectations. Students should be encouraged to use GenAI tools to their advantage and become more autonomous learners who are in charge of their learning process.

Critical Thinking and AI Literacy	Student-Centered and Supportive Environments
• Encourage critical language awareness • Integrate AI literacy and prompt literacy into curricula • Develop digital literacy to address privacy issues • Cultivate autonomous learning abilities through AI tools • Raise students' awareness of AI limitations and appropriate applications • Encourage digital literacy to address employer expectations • Promote critical engagement with AI output	• Address student concerns with AI adoption • Encourage AI-assisted student-centered approaches • Consider individual differences in technology acceptance and proficiency levels • Build environments that nurture AI literacy and enjoyment • Supporting self-directed and autonomous learning • Promote sustainable language learning through AI • Encouraging student-led engagement with AI

Figure 18 *Implications for Students Codes*

Gaps and Future Research

Future research should focus on longitudinal studies that investigate the long-term impact of GenAI on language learning. Future studies should also focus on larger sample sizes at national levels. Additionally, in light of various contradictory findings, future research should focus on isolating contextual factors to identify factors that positively impact GenAI integration and those that negatively impact it. More research is needed on the psychological impact associated with GenAI use. Additionally, emphasis should be placed on sustainable education practices in an age where GenAI has permeated education and industry.

Limitations

The present systematic literature review focused solely on articles published in peer-reviewed journals indexed in credible indexes and did not include any grey literature. Including articles from grey sources such as journals indexed in less reputable yet reliable indexes and including preprints could have revealed other findings or further reinforced current ones. Additionally, owing to time constraints, coding was conducted by one of the authors. Ideally, two or more authors should conduct coding phases independently and run intercoder reliability tests to give more credibility to the results. Relying on a single coder for this SLR, while efficient, raises concerns about the coder's bias skewing the conclusions of the SLR to their own preconceived notions. To mitigate this limitation, the authors prioritized methodological transparency throughout this SLR to enable and facilitate replicability.

Conclusion

While previous SLRs focus on AI integration in education in general, the present study narrows the scope to focus solely on GenAI in HE to uncover findings specific to foreign language learning. The findings reveal that GenAI presents a double-edged impact on foreign language education, offering both opportunities and challenges. Whether an aspect of GenAI is considered an opportunity or a challenge is largely contingent upon the way the technology is used. The coding process uncovers 14 themes that aim to answer four research questions. The first five themes cover opportunities of GenAI use in HE, and they cover personalized learning and feedback, affective support for students, language skills and proficiency improvement, creativity and critical thinking, and teacher support. Similarly, four themes emerged to answer the second research question that deals with challenges presented by GenAI, and they cover over-reliance and limited human connections, ethical issues, implementation challenges, feedback, critical thinking, creativity, and students' well-being.

The secondary research questions are answered with five different themes. The first three themes deal with laying out current GenAI practices. They cover the use of GenAI, practice the four skills, assessment and feedback, and dynamic learning and teaching. The two remaining themes provide important implications and recommendations for stakeholders, and they cover effective strategies for implementation and implications for both educators and students. The themes and codes unravel opportunities such as adaptive personalization, instant corrective feedback, scalable personalized content, affective support, anxiety mitigation, enhanced vocabulary retention, enhanced writing and speaking proficiency, learner motivation, and instructor productivity.

Conversely, algorithmic bias, non-transparent data governance, output inaccuracy and erosion of authentic human experience compromise cognitive and critical thinking skills, and deepen digital inequities. Enabling opportunities and mitigating challenges therefore hinges on enacting clear ethical policies, investing in privacy-preserving infrastructure, reconceptualizing curricula and assessment, positioning GenAI as supplementary rather than a surrogate, sustaining professional development in

prompt literacy, mitigating cultural and algorithmic bias, and training students and faculty in critical AI literacies and data-protection awareness. Additionally, the discrepancies found across studies suggest a substantial need for nuanced, context-based interpretations of the role of GenAI in HE. Contradictory study outcomes may reflect differences in learners' technological expertise and AI literacy, affordances of particular AI models, or varying pedagogical perspectives on automated tools and human agency. To better understand some of these discrepancies, future research focused on comparative and longitudinal studies could isolate the contextual factors that render GenAI educationally valuable or counterproductive.

Use of Generative AI

No AI tools were used for the generation of research hypotheses or the writing of conclusions. The final manuscript was authored and reviewed by the listed authors. An AI-powered grammar checker has been used to check certain parts of the article.

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