L2-French Learners and Generative AI (GenAI): Challenges, Needs, and Design Guidelines

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In this study, we examined Second Language (L2)-French learners' experiences, challenges, perceptions, and expectations of GenAI tools for French learning by conducting a survey. Twenty-two L2-French learners from a large public university completed the survey. Results showed that students actively seek additional learning resources outside of class, yet continue to struggle with memorizing grammar and vocabulary. Although most participants reported general familiarity with GenAI tools, few had applied them to French learning. Students were interested in a customized GenAI tool that could provide personalized practice as a supplemental resource. These findings offer valuable guidance for the design and development of a GenAI-assisted French Learning system that delivers personalized grammar and vocabulary practices aligned with learners' needs.

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Abstract.

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Introduction

Technology is significantly transforming second language acquisition (SLA) by leveraging innovative tools that can enhance the educational experience (Chun et al., 2016). In this study, we adopt a learning engineering approach, situating our work within the Challenge phase of the learning engineering process, where the goal is to understand the learning problem in context and generate evidence to guide subsequent design decisions (Kessler et al., 2023). Innovative tools powered by Generative AI (GenAI) (e.g., ChatGPT, Gemini, Llama, etc.) have opened new avenues for personalized and interactive learning environments (Baskara & Mukarto, 2023). In the context of SLA, these developments build on a history of leveraging natural language processing (NLP) in SLA personalization (examples include Amaral et al., 2011; Heift et al., 2010). Therefore, adapting from traditional NLP methods to the GenAI models is natural and well-motivated. Research shows that these AI-driven technologies have been used in SLA to provide real-time feedback, personalized tutoring, and interactive conversational practice, displaying the potential to enhance SLA experience (Barrot, 2024; Bin-Hady et al., 2025; Sa'ad et al., 2023; Woo & Choi, 2021). Despite the growing body of research on AI in SLA, a notable gap remains in understanding the learner- and context-specific evidence needed to justify design decisions for AI-supported French learning systems. Existing SLA research overwhelmingly centers on English (Law, 2024; Morrison, 1996). This imbalance is further reinforced by the fact that most large language models (LLMs) are predominantly trained on English-dominant corpora (Tao et al., 2024), raising questions about their validity and reliability when applied to SLA contexts beyond From a learning engineering perspective, this gap underscores the need for early-stage, context-sensitive needs analyses to guide design decisions (Goodell et al., 2023; Thai et al., 2023).

Accordingly, this study represents an initial, human-centered phase within a broader learning engineering cycle focused on developing a GenAI-assisted French learning system. To support L2-French learners, we first need to understand how students learn French outside the classroom, their experiences with GenAI tools, the tools they currently use, the challenges they encounter, their perspectives on GenAI, and their preferences for using GenAI in language learning. Gaining knowledge on these perspectives, the research can assist in developing AI-driven solutions that align with students' needs and may enhance the effectiveness of French language education. To address this, in this paper, we surveyed 22 participants to understand user needs, challenges, and expectations related to using GenAI tools for French learning with the goal of informing subsequent system design and iteration.

Method

Measurement

We developed a questionnaire to collect information about students' backgrounds, French learning experiences, and perceptions of GenAI tools to inform the challenge of designing a GenAI-assisted French learning system. The instrument consisted of five sections: 1) Student demographics included academic standing, enrollment status (full-time/part-time), native language, and major; 2) French learning experiences included asking students which French class they enrolled in, what strategies they used to learn French outside of class, and what challenges they encountered while learning French; 3) Usage of GenAI tools included whether they had used GenAI and, if so, how they applied these tools to French learning; 4) Perception of GenAI tools, included asking students' views on the effectiveness or limitations of GenAI tools for supporting French learning; and finally, 5) Needs and expectations of GenAI tools included asking students which areas of French learning they would like

GenAI tools to support and what features they would find beneficial. The questionnaire included multiple-choice items, multiple-select checkbox questions, and open-ended questions to elicit both quantitative and qualitative data.

Participants

A total of 29 French students at a large, public university provided consent to participate in the survey. Seven respondents were excluded from analysis as they completed only the demographic section, resulting in a final sample of 22 participants. Most participants (n = 20) were enrolled in a lower-division French course. The sample included six freshmen, five sophomores, three juniors, six seniors, and two students who selected “other”. The majority of participants were full-time students (n = 19). English was the predominant native language among participants (n = 19). Participants represented a diverse range of academic majors: six in the Humanities (e.g., French, History), four in the Natural Sciences (e.g., Biochemistry, Chemistry), six in the Social Sciences (e.g., Anthropology, Psychology), two in the Arts, and four in other disciplines.

Procedure and Analysis

The survey was distributed twice, once in Fall 2024 and again in Spring 2025, to students enrolled in French 101, 102, 201, and 202. This study received approval from the Institutional Review Board (IRB), and all participants provided informed consent before completing the survey. Participation was voluntary; students could decline to answer any questions.

Frequency counts were calculated to summarize participants’ responses to multiple-choice and multi-select questions. Thematic coding was performed on open-ended responses by two researchers and agreed upon to identify recurring learner needs, challenges, and contextual constraints relevant to subsequent design decisions (Vaughn & Turner, 2016).

Results

To better understand the learning challenge faced by L2-French learners in this context, the following results summarize evidence collected to inform design considerations for a GenAI-assisted French learning system. Findings are organized under four categories that reflect key inputs to the learning engineering process for system design: 1) French learning experiences, 2) Use of GenAI tools, 3) Perceptions of GenAI tools, and 4) User needs and expectations for a GenAI tool designed to support French learning.

French learning experiences

Students reported a variety of methods used outside of class to support their French learning. Among the 15 respondents, most engaged with native French content (e.g., books, movies, music) (n = 11) and language-learning apps such as Duolingo (n = 8). Other approaches included speaking with native French speakers (n = 3), watching videos or podcasts (n = 2), using flashcards (n = 2), utilizing supplemental French textbooks or dictionaries (n = 2), and private tutoring (n = 1). Students also reported several challenges in learning French. Among the 19 respondents, 12 mentioned memorization as a major challenge, with specific struggles related to remembering grammar rules (n = 4), verb conjugation (n = 4). Additional challenges included understanding spoken French (n = 4), limited speaking practices (n = 3), pronunciation (n = 3), lack of motivation (n = 2), overwhelming class content (n = 2), insufficient learning resources (n = 1), and inadequate guidance in planning their learning (n = 1).

Use of GenAI Tools

We asked participants whether they had used GenAI tools such as ChatGPT and Gemini. Although most students (n = 17) had used GenAI, more than half (n = 12) reported that they had not used these tools specifically for learning French. Follow-up

questions were asked to five students who had used GenAI for French learning. Among these students, four reported using ChatGPT or its variants, and 1 reported using Gemini.

Students most commonly reported using GenAI to prepare for exams (n = 4) and to complete homework or assignments (n = 3). Regarding how they used GenAI to learn French, most described using it as a tutor (n = 4) or as a practice platform (n = 3). When asked which task(s) they used GenAI for, students indicated writing (n = 4), reading (n = 4), grammar support (n = 4), speaking (n = 3), vocabulary learning (n = 3), and listening (n = 2).

Perception of GenAI Tools

We asked students about their perceptions of the effectiveness of GenAI tools for French learning. When asked whether GenAI tools could be effective, eight students responded that they are unsure, six responded yes, two responded no, and the remaining students did not respond. Students who responded yes or unsure (n = 14) were then asked how GenAI could support their learning. The most reported benefit was generating practice exercises (n = 12), followed by providing explanations to their questions (n = 11), giving feedback (n = 8), answering questions (n = 6), and supporting self-directed learning (n = 6). Students who responded no or not sure (n = 10) were also asked in what ways GenAI may be ineffective. The most common concerns were that GenAI may introduce academic dishonesty (n = 8) and provide inaccurate answers or confusing explanations (n = 7). Additional concerns included the limited usefulness of GenAI materials (n = 5), the ease of obtaining answers without effort (n = 5), and the time required to use GenAI (n = 1).

When asked whether they would be interested in using GenAI tools more frequently if they were tailored to French learners, 10 students responded yes, four were unsure, two responded no, and the others did not respond. We further asked students to explain their interest or lack of interest in customized GenAI French learning tools; 10 students responded with varied reasons. The primary reason for interest was the potential for personalized learning experiences (n = 6), including 1-on-1 tutoring. One student indicated they “would be more successful if I was able to learn 1-on-1 more often, rather than in a group,” in part because they would feel “significantly less nervous speaking with [GenAI].” Moreover, participants also indicated the need for more personalized and relevant practices. One student expressed the need to “include more examples of the topic we are working on”, and another indicated practices aligned to the concepts they care about and their learning experiences “would make it much more convenient.”

In contrast, the primary negative comments expressed by participants focused on biased GenAI outputs, ethical concerns, and environmental impacts. One student indicated that it was “too easy for generative AI to start spouting false statements,” and another indicated a concern about “AI replacing human input and generating incorrect and biased information.” Finally, another student noted they were “uncomfortable using AI because of its negative energy and environmental impacts”. Additionally, six students indicated some hesitation about AI tools. For example, one that viewed the GenAI tool as “a supplementary tool, not a main method of learning.” Another student said, “It will not be as effective as a human teacher; it is the next best option.”

Needs and Expectations of a French-Learning GenAI tool

We first asked students which areas of French learning they most needed support from a GenAI tool. Among the 19 respondents, 12 students identified grammar as their primary area of need. Students frequently described challenges related to verb conjugation; for example, one student noted difficulty with “distinguishing the uses of different tenses and remembering how to conjugate them.” Others emphasized struggles with complex grammatical structures, such as “making sure tenses and gender/plurality agreements are accurate.” In addition to grammar, five students reported needing support with pronunciation. One student expressed a desire for a tool that could “tell me how I’m forming my mouth to get the sounds right.” Additional areas of need included vocabulary (n = 3), speaking (n = 2), cultural context (n = 2), listening (n = 1), and learning planning (n = 1).

We further asked students what features they would include if they were to design a GenAI tool for French learning. Among the 18 responses, the most frequently mentioned feature was practice questions (n = 7). In particular, students wanted personalized practice opportunities aligned with their current levels of performance and class goals. For instance, one student wanted the tool to "generate exercises on things I mess up with most," while another requested opportunities to "practice phrases and words that are used in the class." Students also expressed interest in detailed explanations of grammar, vocabulary, or pronunciation (n = 5). One student described a desire for "grammar practice with detailed feedback and explanations," while another indicated that the tool should "tell me how my sentences are wrong and how I should fix them." Other desired features included integration with other media or software (n = 5), conversational practice with the GenAI (n = 3), a peer collaboration tool (n = 1), contextualized learning (n = 1), and listening practice (n = 1).

Discussion and Conclusion

In this paper, we examined learning challenges faced by L2-French learners in the context of emerging GenAI tools through a user needs analysis. Guided by a learning engineering approach (Kessler et al., 2023), we characterized learner needs, constraints, and contextual factors to inform the design of a GenAI-assisted French learning system.

Our findings primarily indicate that students actively seek supplemental materials beyond class, particularly to address difficulties with grammar and vocabulary memorization, which were areas identified as the greatest need for GenAI support. These results suggest prioritizing grammar- and vocabulary-focused assistance, potentially incorporating evidence-based strategies such as spaced repetition (e.g., Settles & Meeder, 2016). Second, students viewed GenAI's primary value as generating personalized practice aligned with their learning progress and course content, with practice generation and adaptivity emerging as the most desired features. Last but not least, students raised concerns about academic dishonesty, inaccurate information, replacing human tutors, and environmental impact, indicating awareness of GenAI's broader societal and ethical implications. This implies that the system must consider ethics: ensure accuracy, protect academic integrity, minimize environmental impact, and serve as a complement to—rather than a replacement for—human instruction.

In conclusion, the results of this study identified learner-centered challenges that may facilitate the design of AI-assisted French learning systems. While limited by sample size and potential interpretive bias, the findings provide rich insights into L2-French learners' experiences and expectations in the era of GenAI. Future work will focus on designing, developing, and evaluating a multi-agent AI-assisted French learning system that delivers personalized grammar and vocabulary practice grounded in these findings.

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