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Secondary School German Teachers' Perceptions of Artificial Intelligence Tools in Language Teaching: A Qualitative Study

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Abstract

This qualitative study investigates the perceptions of secondary school German language teachers regarding the integration of artificial intelligence (AI) tools in language education. As AI technologies such as ChatGPT, Google Translate, and Duolingo gain prominence in classrooms globally, there is a growing need to understand their influence on less commonly taught languages, including German. The study focuses on ten German teachers working in Algerian secondary schools and explores their views on the pedagogical roles, benefits, limitations, and ethical implications of AI tools in their teaching practice. Data were gathered through semi-structured interviews, allowing participants to express their experiences and reflections in depth. The findings indicate that teachers recognize the potential of AI tools to enhance vocabulary acquisition, improve pronunciation, and increase student motivation. However, they also voice concerns about translation inaccuracies, loss of linguistic nuance, cultural insensitivity, and the risk of student overdependence on technology. Furthermore, teachers emphasize the necessity of maintaining a human-centered approach, where AI complements rather than replaces traditional pedagogical strategies. The study highlights the importance of teacher agency in integrating AI into language education and contributes to the growing body of knowledge on AI in medium-resource language contexts. It calls for targeted training and policy support to optimize AI use in language classrooms.

Keywords: Artificial Intelligence; German Language Teaching; Secondary Education; Teacher Perceptions.

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Introduction

In recent years, artificial intelligence (AI) has rapidly entered the world of education, transforming the way languages are taught and learned. Tools such as Chat GPT, Google Translate, Grammarly, and Duolingo are becoming increasingly popular among teachers and students alike. These platforms offer instant translation, writing assistance, vocabulary practice, and interactive learning experiences—all of which can support foreign language instruction.

However, while these technologies are widely used for global languages such as English or French, questions remain about their effectiveness when it comes to teaching other foreign languages like German. German, though considered a well-established European language, is still less supported in many AI systems, especially in terms of idiomatic expressions, grammar complexity, and cultural accuracy. Teachers may find these tools helpful in certain areas, but unreliable in others. Their real-world perspectives are essential to understanding how AI tools are influencing daily classroom practice.

In Algeria and similar contexts, where German is often taught as a third or fourth language, the role of AI becomes even more relevant. With limited local resources and increasing student interest in technology, teachers are finding new ways to integrate digital tools into their lessons. But do these tools actually help—or do they introduce new challenges?

As AI tools become more common in education, there is a growing need to understand how teachers perceive their usefulness and limitations. While much research has focused on English or widely spoken languages, little attention has been given to German language instruction in non-German-speaking countries. This creates a gap in our understanding of how effective and appropriate these technologies are for teaching German at the secondary school level, particularly from the point of view of teachers who use them.

This paper seeks to answer the following research questions :

1. How do secondary school German language teachers perceive the role and benefits of AI-based tools in language teaching?
2. What limitations and challenges do these teachers identify regarding the use of AI-based tools in their teaching practice?

From these questions, two hypothesis are constructed as follow :

1. Secondary school German language teachers perceive AI-based tools as beneficial for supporting vocabulary learning, translation, and increasing student engagement.
2. These teachers express concerns about the accuracy, cultural sensitivity, and potential overreliance on AI tools by students in language learning.

1. Literature Review

1.1 The Rise of AI in Language Education

Artificial intelligence is reshaping language education in exciting ways. AI-powered tools don't just teach they personalize learning and engage students interactively. Chen, Li, and Zhang (2023) explain that AI "has the potential to revolutionize how learners engage with new languages, adapting to individual needs and accelerating skill acquisition" (p. 105). Platforms like Duolingo, Grammarly, and Google Translate have become staples in many classrooms globally. Johnson and Martinez (2022) add that instant feedback from AI tools boosts learner motivation, making practice more rewarding.

AI's ability to provide immediate assistance with vocabulary, grammar, and pronunciation empowers learners to practice independently, while teachers can better manage large classes (Li & Wang, 2024). Smith and Johnson (2023) highlight that AI's adaptive algorithms respond in real-time to each learner's strengths and weaknesses, increasing learning efficiency. Moreover, Lee, Park, and Kim (2021) found that conversational AI chat bots significantly help learners improve speaking skills by simulating real-life conversations. Hernandez and Kim (2022) also noted improvements in pronunciation through AI-driven speech recognition.

1.2 Effectiveness of AI Tools for Medium-Resource Languages

Despite these benefits, AI's effectiveness varies by language, especially for medium resource languages like German, where available linguistic data is moderate. Müller and Becker (2023) describe German's complex grammar and cultural nuances as major challenges causing errors in AI translations (p. 79). This means while AI is great for foundational skills, human expertise is still needed for advanced learning.

Garcia and Lee (2024) agree, stating AI supports vocabulary building and grammar drills but often falls short in fostering writing cohesion and cultural competence (p. 51). Wang and Chen (2022) found that limited training data causes AI to miss important contextual cues in medium-resource languages, which hampers deeper language understanding.

1.3 Teachers' Perceptions of AI in Language Classrooms

Teachers are essential in shaping how AI tools function in education. Nguyen (2023) emphasizes that teachers are not passive users but active adapters of AI, molding it to their goals and classroom realities (p. 61). In German classrooms, their insights reveal practical benefits and concerns.

Schmidt (2024) found that teachers appreciate AI's help with repetitive vocabulary drills but worry about students becoming too dependent on technology, which might reduce deep learning (p. 40). Kumar and Patel (2023) also raise ethical concerns around privacy and bias in AI data (p. 230). On the positive side, Brown and Evans (2023) showed that teachers with AI training feel more confident and successful using these tools (p. 88). Perez and Choi (2023) similarly argue that effective pedagogy must balance AI use to avoid over-reliance.

1.4 Challenges and Ethical Considerations

Beyond technical limitations, ethical and cultural concerns loom large. Kumar and Patel (2023) argue that AI systems must be culturally sensitive and transparent to avoid perpetuating bias or linguistic imperialism (p. 225). This is crucial when teaching German outside its native environment, where cultural subtleties might be misunderstood or misrepresented.

Garcia and Lee (2024) caution that excessive AI dependence could weaken learners' critical thinking and problem-solving skills (p. 55). O'Connor and Singh (2022) stress the importance of protecting learner privacy and ensuring fairness in AI tool development. Yang and Huang (2023) warn against stereotyping risks embedded in AI language teaching tools, urging for careful cultural considerations. Zhao and Gao (2024) highlight that AI can enhance intercultural competence but only if designed thoughtfully.

1.5 Future Directions in AI for Language Teaching

Looking forward, researchers suggest ways to improve AI's role in language education. Li and Wang (2024) recommend integrating teacher and learner feedback into AI model development to make tools more accurate and culturally relevant (p. 112). Schmidt (2024) advocates for professional development

programs to build teachers' AI literacy, helping them maintain pedagogical control while benefiting from technology (p. 47).

Tanaka, Müller, and Schmidt (2023) propose greater collaboration between language experts, educators, and AI developers to create smarter, context-sensitive tools. Wilson and Zhang (2023) suggest gamification combined with AI can further engage language learners, while Xu and Liu (2022) emphasize the positive impact of AI-based writing assistants on ESL students' writing skills.

2. Methodology

To better understand how German language teachers perceive the use of AI tools in their classrooms, this study followed a qualitative approach. Since the goal was to capture personal experiences and nuanced opinions, qualitative methods allowed for deeper conversations than a standard survey might have.

2.1 Participants and Sampling

The study involved **10 secondary school teachers of German**, all working in local Algerian schools. These participants were **intentionally selected** because they had some experience using or experimenting with AI-based tools like ChatGPT, Google Translate, Duolingo, or similar platforms. The aim was not to generalize to all teachers, but to hear directly from those who are actively navigating this new digital territory in their teaching.

2.2 Data Collection

To gather these insights, **semi-structured interviews** were conducted. This format offered a balance between structure and flexibility teachers could share their thoughts freely while the interviewer ensured key topics were covered. Interviews typically lasted between 30 and 45 minutes and were held either in person or online, depending on the teacher's preference. With permission, all conversations were recorded to allow for accurate analysis later.

The questions focused on how teachers use AI tools, what they find helpful or problematic, and how these tools are shaping student learning. This open format encouraged rich, honest reflections.

Before starting, each participant received a clear explanation of the study's purpose and how their information would be used. Informed consent was obtained, and participants were assured that their identities would remain confidential. Pseudonyms were used in the final report, and all data were stored securely.

2.3 Data Analysis

After the interviews, the recordings were carefully transcribed word-for-word. Then, using thematic analysis (following Braun and Clarke's method), patterns and common ideas were identified across the different responses. This helped highlight not just what individual teachers thought, but also the broader themes emerging from their shared experiences.

2.3.1 Most Commonly Perceived Benefits of AI Tools

Through in-depth interviews with 10 secondary school German teachers, several patterns emerged about how AI tools are currently perceived and used in real classrooms. While most teachers saw value in these tools particularly for vocabulary and engagement they also raised meaningful concerns about translation quality, student overreliance, and ethical issues. The following table summarizes the key themes that emerged from interviews with secondary school German teachers regarding their experiences and perceptions of AI tools in language teaching. It highlights both positive aspects and concerns, illustrated with direct quotes from participants:

Table1: Most Commonly Perceived Benefits of AI Tools

Theme	What Teachers Said	Sample Quote
AI helps with vocabulary	Most teachers found AI tools especially useful for vocabulary acquisition.	"Duolingo is great for drilling vocabulary—my students really enjoy the repetition."
Boosts engagement	Tools like gamified apps helped increase motivation and participation in class.	"They're more excited to use apps than textbooks—it feels more interactive to them."
Mistranslations are common	Many teachers warned about inaccurate or literal translations from AI platforms.	"Google Translate gives weird results in German—especially with idioms."
Cultural context is missing	Teachers noted that AI tools often ignore or simplify cultural aspects of language.	"You lose the cultural layer when AI just spits out a direct sentence."
Students rely too much on AI	A concern emerged about students becoming overly dependent on tech for writing and grammar.	"Instead of writing their own sentences, they just copy-paste from ChatGPT."
Teachers feel unprepared	Some felt they lacked proper training to guide students effectively in using AI tools responsibly.	"No one trained us to use these tools—we're figuring it out as we go."

This collection of teacher insights really captures the mixed feelings educators have about AI tools in the classroom. On the positive side, it's clear that AI shines when it comes to vocabulary practice and engagement. The enthusiasm around apps like Duolingo shows that students respond well to interactive, game-like learning something that traditional textbooks often struggle to deliver. It's refreshing to see how technology can bring a fresh energy into language learning, making it feel less like a chore and more like a challenge or a fun activity.

However, the concerns teachers raise are just as important. Mistranslations and the lack of cultural nuance remind us that AI, while powerful, is still far from perfect. Language isn't just about words; it's about culture, context, and meaning things AI often misses. This means that students could end up with a superficial understanding, which might be misleading or even frustrating. The worry about students leaning too heavily on AI for writing highlights a deeper issue: the risk of losing essential skills like creativity and critical thinking in favor of convenience.

Finally, the feeling of being unprepared among teachers is a big red flag. If educators don't get proper training or support, they might struggle to integrate AI in ways that truly benefit students. This "learning on the fly" approach can lead to missed opportunities or misuse. Overall, these quotes remind us that AI is a tool one with great potential but also with clear limitations and that human guidance is still crucial to make the most of it.

2.3.2 Main Themes Identified in Teachers' Responses

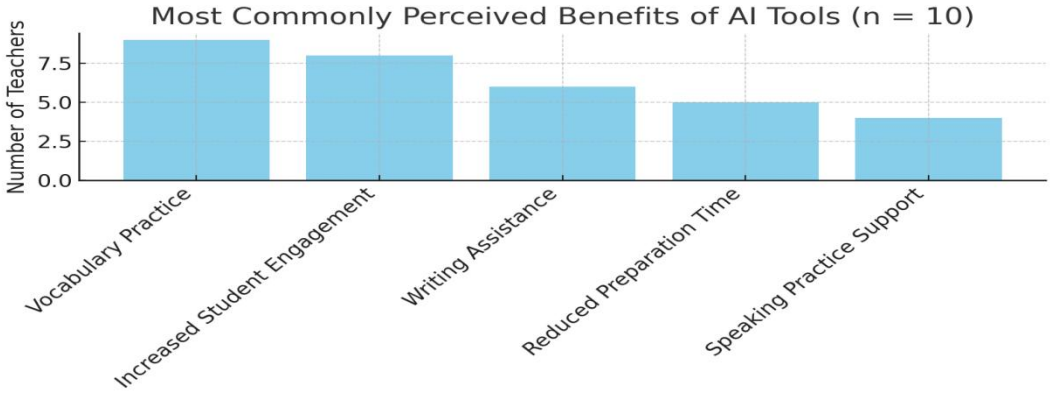
This table presents the benefits of AI-based language tools as reported by the teachers. It shows which features such as vocabulary practice and increased student engagement were most frequently appreciated.

Table 2: Main Themes Identified in Teachers' Responses

Benefit	Number of Teachers
Vocabulary Practice	9
Increased Student Engagement	8
Writing Assistance	6
Reduced Preparation Time	5
Speaking Practice Support	4

The data are visually shown in the following bar graph:

Figure 1: Most Commonly Perceived Benefits of AI Tools (n = 10)



Almost all teachers really liked how AI tools help with vocabulary learning. Many also noticed that students seemed more motivated, especially when using interactive apps like Duolingo.

For most teachers, the biggest advantage of these tools is definitely vocabulary practice, with increased student engagement coming in a close second. Writing help and saving time on lesson prep are also appreciated, though a bit less so. Support for speaking practice was mentioned less often but still seen as useful.
Overall, teachers value these tools mostly for helping students build vocabulary and stay more involved in class.

2.3.3 Most Cited Challenges with AI Tools

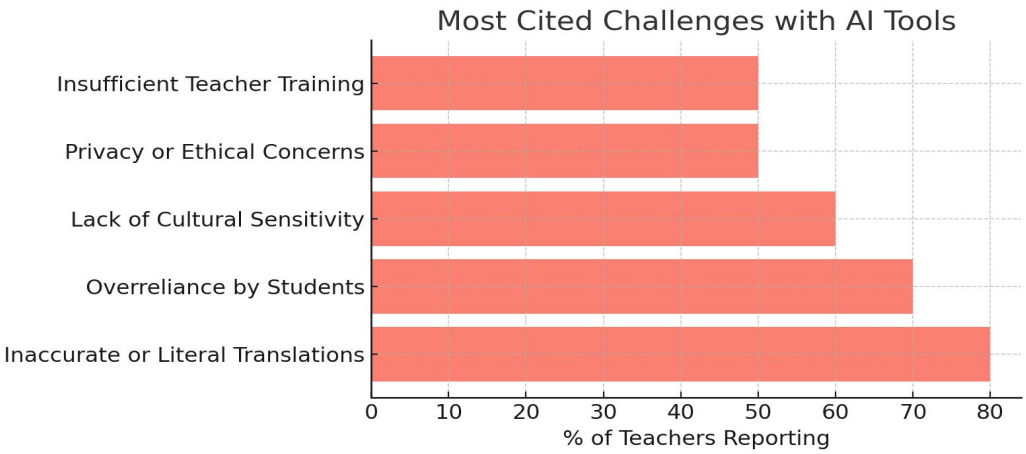
This horizontal bar chart depicts the challenges and limitations of AI tools identified by the teachers. It emphasizes issues like mistranslations, overreliance by students, and ethical concerns, reflecting common worries in the classroom context.

Table3: Most Cited Challenges with AI Tools

Challenge	% of Teachers Reporting
Inaccurate or Literal Translations	80%
Overreliance by Students	70%
Lack of Cultural Sensitivity	60%
Privacy or Ethical Concerns	50%
Insufficient Teacher Training	50%

The statistics are clearly shown in the following figure:

Figure 2: Most Cited Challenges with AI Tools



Although AI tools are widely used in classrooms, many teachers remain cautious—especially when it comes to students misusing them or relying on content that isn't always accurate. About half of the teachers also feel they haven't had enough training to fully and confidently bring these tools into their teaching.

A big concern, shared by 80% of teachers, is that the tools often produce inaccurate or too literal translations. On top of that, 70% worry that students might lean on these tools too much instead of developing their own skills. Cultural sensitivity is another issue for 60% of teachers, as these tools sometimes miss important cultural nuances. Privacy and ethical concerns are raised by half of the teachers, who also feel unprepared to handle these challenges effectively.

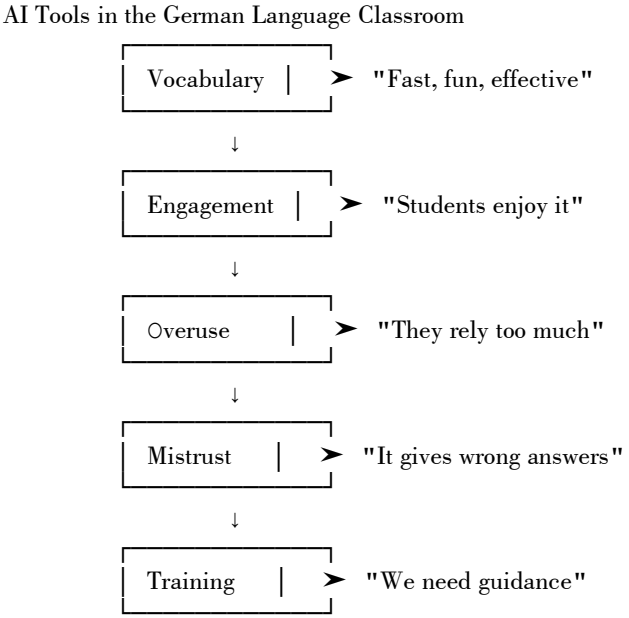
In short, while AI tools offer clear advantages, teachers still face real hurdles that need attention to make sure these tools are used in the best and most responsible way possible.

2.3.4 Teachers Experience AI in Class

This section aims to thoroughly investigate how teachers use and perceive AI tools within their classrooms. It seeks to understand their firsthand experiences, including the advantages they observe, such as improving student engagement or easing lesson preparation, as well as the challenges they face, like inaccuracies in AI outputs or concerns about overreliance by students. The goal is to capture the overall impact of AI on their teaching practices, their confidence and readiness to integrate these technologies, and how these experiences shape their attitudes toward adopting AI in education.

This figure captures how teachers emotionally and practically experience AI tools in their German language classrooms. It begins with the excitement over vocabulary support and student enthusiasm, but then moves into more cautious territory concerns about students relying too much on the tools, not trusting their accuracy, and teachers feeling the need for proper training. It reflects the journey from curiosity to critical reflection.

Figure3: Conceptual Overview – How Teachers Experience AI in Class



Teachers see AI tools as a double-edged sword while they offer speed and excitement; they can also disrupt deeper learning when not used thoughtfully. So, the findings of this study reveal that secondary school teachers of German generally see AI tools as helpful additions to their teaching practice particularly for supporting vocabulary learning, translation, and student engagement. Many appreciated how tools like Google Translate and ChatGPT made lessons more dynamic and accessible, especially for tech-savvy students. However, teachers also expressed caution. A recurring concern was that students often relied too heavily on these tools, using them as shortcuts rather than learning aids, which could hinder deep language learning. Moreover, teachers highlighted issues with accuracy especially when it came to the complexities of German grammar, idiomatic expressions, and cultural context. These limitations made them hesitant to fully trust AI in high-stakes teaching situations.

Importantly, nearly all participants emphasized the need for targeted training and professional development to better integrate AI into their classrooms. Ethical concerns also surfaced, including worries about data privacy, plagiarism, and the potential impact of AI on students' critical thinking skills. Overall, the teachers' perspectives reflected both hope and hesitation recognition of AI's value, balanced by a thoughtful awareness of its current shortcomings.

3. Research Limitations

While this study provides valuable insights into secondary school German teachers' perceptions of AI-based tools, several limitations should be acknowledged. First, the sample size was relatively small (10 participants), which limits the generalizability of the findings. The insights gathered are rich and context-specific but may not fully represent broader experiences across different regions or school systems.

Second, the study focused on teachers in a specific educational and cultural context namely, Algerian secondary schools where German is often taught as a third or fourth language. Teachers in other countries or settings with more robust digital infrastructure or different language priorities might express different views.

Third, the data collection relied on self-reported perceptions through interviews and open-ended questionnaires. While this allowed for authentic and reflective responses, it may have been influenced by social desirability bias or limited by participants' familiarity with certain AI tools.

Lastly, rapid developments in AI technology mean that perceptions may evolve quickly. Tools are improving constantly, and teachers' experiences with them could shift over time making it important to view these findings as a snapshot rather than a static conclusion.

Despite these limitations, the study offers an important starting point for understanding how teachers in underrepresented language contexts perceive the growing influence of AI in their professional practice.

4. Recommendations for Future Research

Building on the findings and limitations of this study, future research should aim to include a larger and more diverse sample of teachers from various regions, school types, and educational systems to better understand how different contexts influence perceptions of AI tools. Since this study focused on German language instruction, comparative studies involving other less commonly taught languages such as Italian, Russian, or Mandarin, as well as core subjects, could shed light on how AI performs across different linguistic and curricular settings.

Additionally, longitudinal research is needed to explore how teachers' views and uses of AI evolve over time, particularly as AI technologies advance and training opportunities increase. It is also important to investigate students' experiences with AI tools and their impact on actual language proficiency to provide a more complete picture of AI's role in learning. Given teachers' expressed interest in professional development, future studies should examine the design and effectiveness of AI literacy programs that empower educators to use these tools thoughtfully and creatively.

Lastly, continued attention to the ethical and cultural dimensions of AI in education is essential, especially regarding cultural sensitivity, representation of minority languages, and privacy concerns in non-Western educational contexts.

Conclusion

This study examined how secondary school German teachers perceive the use of artificial intelligence (AI) tools in language education. Grounded in the growing presence of AI platforms like ChatGPT, Duolingo, and Google Translate in classrooms, the research aimed to explore how these tools are influencing teaching practices, what benefits they bring, and what concerns they raise. The findings, gathered from a small yet insightful sample of teachers through semi-structured interviews and open-ended questionnaires, offer a nuanced picture of both optimism and caution. Teachers generally saw AI tools as useful for vocabulary acquisition, quick translations, and student engagement—particularly in large or resource-limited classrooms. These benefits reflect the global shift toward more personalized and tech-assisted learning environments. However, the study also brought to light several concerns: the risk of overreliance among students, the limitations of AI in handling cultural and grammatical nuances in German, and the need for teacher training to ensure these tools are used effectively. In reviewing the core objective—to understand how teachers perceive the role, benefits, and limitations of AI in German language teaching—the research has met its goal. It clarified that while AI is increasingly present in language classrooms, its effectiveness depends heavily on how it is integrated, guided, and balanced with pedagogical judgment. Teachers are not merely users of technology but thoughtful mediators who shape how AI is experienced by learners. By bringing these voices to the forefront, the study reinforces its central thesis: AI tools can enhance language education, but only when thoughtfully applied and supported by informed educators. This conclusion highlights the importance of professional development, critical use of technology, and ongoing dialogue between teachers, developers, and policymakers in shaping the future of language learning.

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