Wykorzystanie sztucznej inteligencji do nauczania i uczenia się języków

Podsumowanie wyników badań

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Introduction

This report constitutes the first result produced during the AIDED project, which focuses on task-based language teaching with the aid of artificial intelligence. The research conducted for this report will serve as a foundation for the project's future results, including a practical guide and an online course for language teachers.

By promoting knowledge about new technologies, we hope to help education professionals address modern challenges and feel confident in their digital skills. Our goal is to provide a practical summary of key information and make the findings from our research accessible to language teachers, as well as anyone interested in understanding the new tools. However, for those interested in a deeper understanding of the subject, each chapter includes a set of references that can serve as a starting point for further learning.

In recent years, the rapid development of AI tools has changed a lot about how we approach research and content creation. At the same time, it also provided students with new opportunities, which can be used for good or bad ends. Even before the popularisation of generative AI, many teachers felt left behind on digital development, unable to catch up with the tools used by their students. Now, the need to stay up to date with recent developments is more visible than ever.

As a group of teachers and educators working together on a European project, we wrote this document to share knowledge about AI tools, their use so far, and their potential for development. Our report describes the possibilities of using AI for language education, as well as potential challenges to take into account. We also address the legal and ethical issues linked with the rise of AI and reflect on the responsible use of new technologies.

1 Theoretical foundations

In this section of the report, we have synthesised findings relating to the general understanding of artificial intelligence, how it works and its use in teaching and learning. We review some of the major landmarks of the topic and investigate some of its less obvious areas, as seen from a teacher's perspective

What is AI

Instead of eliciting a definition of artificial intelligence from the current publications or constructing another one based on a massive number of existing formulations, we propose to consider some key characteristics visible in research.

IT companies present applications equipped with AI as agents of human-like capabilities: they “can see and identify objects. They can understand and respond to human language. They can learn from new information and experience. They can act independently, replacing the need for human intelligence or intervention.” (IBM). In the field of AI for teachers and schools, growing over the recent years, educators are thus invited to ask for support from various human-faced entities: Assistants, Creators or even Detectives. These agents are dressed up as humans in an interaction of an I and You: they “think” and they invite you to a conversation: “feel free to chat with ME.”

To a certain extent, these claims are supported by scientific research. Scholarly definitions converge in describing AI as the ability of non-human machines to act: perform, solve tasks, create, communicate and interact as it occurs with humans. Two aspects of this definition are worth attention.

Firstly, AI tools have the ability to simulate, mimic or replicate human intelligence, cognition and creativity. And secondly, these processes

conducted by machines are seen not merely as automation but as the capacity of artificial agents to engage in intelligent behaviour across various contexts.

We are therefore faced with an unprecedented situation, well reflected in an eye-catching concept of Humans-In-The-Loop (HITL). Creativity in various fields is enhanced by the symbiotic relationship of humans and machines, working together to perform certain tasks, leveraging the strengths of both. In this paradigm, human intelligence is integrated into improving the operations of AI models, which can learn from human feedback and adjust their performance. But with machines having their own agency, humans can be entirely removed from the decision-making processes in autonomous AI systems, left out of the loop. So, is the loop a trap or a flywheel empowering our capabilities? Shall we get in, or shall we stay out? These questions are of significant importance nowadays, well reflected in current publications in philosophy and the humanities.

In the field of education, the HITL has a counterpart in the concept of distributed agency in teaching and learning. Agency, understood as the capacity to act, resides not only in humans - teachers and learners - but also in AI tools. Teaching and learning move from the process involving only human actors to discourses with machines which also have something to say, to propose, to oppose and - most interestingly - to learn. Thus, agency in the educational process becomes shared in the AI-learner-teacher relationship.

An example from the field of foreign language education well illustrates the process. A teacher prompts a chatbot to propose an exercise appropriate to the class level. The chatbot misses some information and asks for more information. The teacher then uploads sample student assignments. And through subsequent interactions, adapted learning materials are produced and then used with the students. The learning outcomes are derived from the combined input of human and non-human agents.

What follows are a number of issues that should be considered by educators. What are the gains versus losses of entering the loop of human-machine

interactions? Is the distributed agency more like sharing competencies, or is it evolving in the direction of relegating our essential skills and delegating our responsibilities? The answers to these questions vary widely, ranging from an enthusiastic welcome of new, exciting technologies to a very cautious stance against potentially harmful developments. However, research clearly shows a consensus within the scholarly community on the need for educators to develop AI agentive literacy, i.e. a deeper understanding of what AI is and how it acts.

How AI Works

In order to understand the educational implications of AI, it is first necessary to grasp the technical architecture that drives it. AI systems, especially Large Language Models (LLMs), are best understood as statistical pattern recognisers and generators that predict likely outputs based on inputs. In machine learning, a model is a specific program that can learn patterns from data and use them to predict or decide on new inputs.

Before the widespread adoption of large language models in 2022, AI systems were predominantly categorising data rather than generating new information. Although generative models already existed before, the release of large-scale systems such as ChatGPT, Copilot and Gemini has shifted public and educational attention towards Generative AI. Generative AI refers to models that learn statistical patterns from large datasets and then generate new text, images, audio, code or other media that are consistent with those patterns.

Their backbone is the Transformer Model. Earlier sequence models process text step by step, which limits their ability to identify connections between distant parts of a sentence or text. Transformers, on the other hand, use a mechanism called self-attention. They pass a sentence through several layers, each time recalculating which words should pay the most attention to which other words, so the understanding of context becomes more nuanced at every step. This enables a far richer modelling of context than their predecessors.

Transformer-based models are particularly effective for tasks such as essay feedback, question generation and multi-step solution explanation in educational tools because self-attention can track relationships across long passages.

But how does an AI “write” an essay or “correct” grammar? At its core, it operates through next-token prediction. AI models do not read whole words in the same way that humans do. Instead, input text is broken into tokens, which can be complete words, sub-words or even characters.

Given a sequence of tokens, the model estimates a probability of a subsequent token. For instance, if the input is “Let’s book a ...”, the model may assign a higher probability to “hotel” than to “school,” typically selecting “hotel” as the next token. This is obviously a simplified case, but it well illustrates the probability mechanism behind AI “thinking”.

The metaphor of AI as a “stochastic parrot" has been used in discussions about language learning and AI in education. The metaphor highlights that large language models do not “understand” content. Rather, they remix and extend patterns from training data in a probabilistic way to produce outputs that sound meaningful despite lacking genuine comprehension.

As the model provides plausible continuations rather than truth, it can produce hallucinations in the form of fluent yet false statements or fabricated citations. Hallucinations are especially likely when prompts are vague or speculative, when topics are under-represented in the training data, or when users demand precise sources or numbers that the model was not explicitly trained to reliably retrieve.

For educators, the probabilistic nature of AI explains its strengths (flexible and fluent generation) and risks (incorrect or irrelevant explanations or references) in teaching and assessment contexts.
Language models that are only trained on next-token prediction often produce unhelpful, unsafe or incoherent responses. The improvements seen recently in

educational tools largely come from additional steps, such as fine-tuning and reinforcement learning from human feedback.

Fine-tuning: After pre-training on broad data, developers often fine-tune models on more specific datasets, such as curriculum-aligned examples or grading rubrics, to specialise them for particular educational tasks. This improves the models' relevance and domain appropriateness.

Reinforcement Learning from Human Feedback: In RLHF, human annotators review model outputs and compare alternative responses, such as rating one response as more helpful, accurate or safe than another. These data are then used to train the model. Reinforcement learning subsequently adjusts the original model's parameters so that, over time, it favours responses that are rated more highly by humans. This process is crucial for educational applications because it encourages models to exhibit behaviours that teachers and schools value.

For educators, these technical foundations provide a valuable insight: AI systems reflect both the statistical structure of their training data and the human feedback used to align them. Understanding this dual dependence is crucial for critically evaluating the integration of AI into teaching and learning. In summary, AI has evolved into a multimodal engine that can interact with humans. In educational settings, it has proven highly effective in tasks such as providing immediate feedback or personalising content. However, human involvement remains essential. Now, as AI enters the field of language education, teachers must safeguard their own agency and that of their students to extend their cognition rather than replace it.

2 Overview of the most relevant AI tools

In this chapter, we present the most relevant AI tools and outline their functions. To search as widely as possible, we reached both scientific publications and more popular (even if less official) sources, such as blog articles. The goal is to describe the possible scope of AI use in teaching based on the most popular tools available as of December 2025. To make using the document easier, we added links to all the tools mentioned.

Chatbots and Generative AI

Chatbots constitute the most recognisable type of AI tool. The rise of programmes such as ChatGPT has sparked many conversations about the nature of creativity and the boundaries of plagiarism in the past few years. AI chatbots can hold conversations and generate various types of text based on given instructions. They can be used to practice conversations in a chosen language and to generate exercises. At the same time, they also create new opportunities for cheating, which makes teachers distrustful of the technology's overall impact on the learning process.

Some of the most common AI tools for content creation are:

- **ChatGPT by OpenAI**. A versatile tool for generating various kinds of content, most efficient for working with text. It can produce images and voice.
- **Microsoft 365 Copilot**. Offers real-time assistance in Word, Excel, PowerPoint, Outlook, Teams, and Microsoft system settings. Can generate text, summarise documents, draft emails, generate images, and create presentations.

Other than producing text, AI can also generate images and voice. While conversational tools can generate all kinds of content, the results are usually higher quality when produced by programmes specialising in a specific field, for example:

- **Leonardo AI**. Advanced image and video generator. It can be used to produce new images and illustrations or to modify existing ones.
- **ElevenLabs**. A tool specialising in working with sound. Generates speech from text, and text from speech. Can create sound effects, like footsteps or an explosion.

A separate sub-category of AI chatbots is conversational tools created specifically for language learning, for example:

- **Langotalk**. An AI language learning app, offering conversations and role-plays for non-beginners. For written practice, the bot can provide translation and correction of typed mistakes upon request.
- **Gliglish**. A language learning app that offers the ability to communicate in numerous languages. Since it is entirely online and offers a free version, it can be spontaneously used without signing up. It specialises in speech and is not set up for text exchanges.
- **MemBot**. A chatbot within the Memrise app for language learning. It can provide accurate and realistic responses, as well as provide corrections to written messages.
- **Talkpal AI**. A chatbot that offers conversation practice. It allows users to choose the mood of the chat (serious, funny, or neutral). Offers real-time personalised feedback.

While these AI tools offer many useful functions, most lack a structured curriculum and should be used primarily as support for a face-to-face course rather than as a substitute. It is worth mentioning that all AI tools can produce errors and inaccuracies; therefore, they require careful use and attentive proofreading of the results.

Translation Tools

Automatic translation tools have long been used to work with text in foreign languages. Nowadays, they also offer real-time speech translation, opening new possibilities of communication. While they can be overused by students due to their ability to quickly translate entire paragraphs and documents, they

can also offer some valuable functions. Some of them propose several alternative phrasings, enriching the student's vocabulary. They can also be used by teachers who need to quickly generate an alternative language version of the text.

Some of the most popular machine translators are:

- **DeepL. One of the most accurate machine translation tools, known for its high-quality output and ability to produce natural-sounding text. DeepL currently supports a more limited number of languages than other major tools, but it is often preferred in educational and professional settings for its reliability with longer or more complex sentences. Like other AI-driven translation systems, it can still struggle with cultural references and highly context-dependent expressions.
- **Google Translate**. A widely known machine translation tool that leverages AI algorithms to automatically translate text or speech in real-time. It is readily accessible as a mobile app or online platform and supports over 100 languages. In the context of language learning and teaching, it is commonly used for quick translations of short phrases or sentences. As with machine translation tools generally, limitations include the difficulty in replicating cultural and contextual nuances of language.

Language Learning and Tutoring Systems

Language learning apps use AI to produce large quantities of grammar exercises, generate voice output, correct answers, and support conversations. They usually include a structured curriculum and are adapted for working with learners on various proficiency levels. Some examples of currently available language learning apps are:

- **Duolingo**. A popular language-learning platform that employs AI algorithms for personalised instruction and feedback. It provides interactive lessons, exercises, and quizzes. A paid option, Duolingo Max, includes a role-play-based chatbot, though its availability is geographically limited.

- **Mondly**. An AI language learning app that offers multiple chatbot options, including features like Mondly VR (Virtual Reality). The chatbot provides suggested answers, which can be useful for beginners.
- **ELSA Speak**. A mobile application that uses AI algorithms specifically to help users improve their English pronunciation skills. It employs speech recognition technology to analyse the user's speech and provides real-time suggestions for improvement.
- **Rosetta Stone**. A language learning software that utilises AI algorithms to deliver personalised instruction and feedback to its users. It offers interactive quizzes, lessons, and exercises across over 30 languages.

Spellcheckers

The last category of AI tools we analysed is spellcheckers. These programmes correct grammar and spelling errors in text, making them especially helpful to dyslexic students. Moreover, they can explain why something is incorrect and cite rules, which means that, used mindfully, they can improve students' understanding of grammar.

The typical examples of such tools include:

- **Grammarly**. An AI-powered writing assistance tool that helps users improve grammar, spelling, punctuation, and overall clarity in their writing. Available as a browser extension, mobile app, and desktop integration, it provides real-time feedback and tailored suggestions to enhance readability and tone.
- **LanguageTool**. An AI-assisted writing support tool designed to detect and correct grammar, spelling, and punctuation across multiple languages. The effects are generally less accurate than in Grammarly, which specialises only in English.

3 AI Use in Teaching and Learning

Artificial Intelligence (AI) has entered classrooms not as a futuristic concept but as a practical companion that quietly reshapes teaching practices. The reviewed articles for this section share a common message: AI is already influencing how students practice vocabulary, receive feedback, and build confidence in spoken communication. Rather than presenting AI as a replacement for teachers, the studies describe it as a set of tools that can support more flexible and responsive teaching. This section aims to translate academic insights into practical reflections that teachers can understand and apply. The articles do not ignore challenges, yet each one highlights meaningful ways AI can enrich learning when used thoughtfully.

As language teachers, we continuously look for ways to help students express themselves, overcome anxiety, and feel successful. AI tools, whether pronunciation apps, chatbots, or automated writing helpers, offer new possibilities for supporting these goals. What follows is a coherent overview of the articles, an analysis of their arguments, and a discussion of what these findings might mean for everyday language teaching.

Central Claims, issues and concerns

Across the articles, several specific ideas stand out. Liu (2023) argues that AI tools work best when they help students "improve accuracy through targeted support," particularly in pronunciation and grammar practice. This echoes findings from Aljanadbah et al. (2025), who discuss how adaptive systems track student performance and adjust exercises in real time. Instead of simply saying AI "personalises learning," their article details how these systems identify patterns: for example, a student who repeatedly struggles with past-tense forms receives more tasks involving those structures.
The articles focusing on chatbots, especially Wang & Vásquez (2021), present concrete outcomes rather than broad claims. Their study found that students

who used a conversational AI assistant reported “increased willingness to speak” and felt less nervous about making mistakes. Real examples include students practising ordering food, checking in at a hotel, or explaining weekend plans, all scenarios described as “safe rehearsal spaces” before speaking with humans.

Research on writing tools also offers practical insights. Fan & Ma (2022) emphasise that AWE tools help students identify specific issues, such as run-on sentences or tense inconsistencies. Their study describes learners revising their work “multiple times in a single session,” which teachers often cannot support individually during class.

The articles that discuss challenges do so with concrete detail: concerns about data protection, algorithmic bias that misinterprets certain accents, and the risk that students might rely on automated translations instead of producing their own language. Taken together, the articles give a clear, textured picture of both the benefits and limitations of AI in language learning.

Key Arguments and Practical Examples

Personalised Learning: What It Really Looks Like in Practice

Several sources highlight adaptive learning systems, but the real value lies in how these tools support students who progress at different speeds. In the example given by Mousavi & Kashefian-Naeeini (2021), students using an adaptive grammar platform improved their test results partly because the software recognised recurring errors and recycled similar items until mastery was achieved. In a typical classroom, a teacher might notice such patterns only after several assignments; AI tools detect them instantly.

Teachers could use these platforms to prepare mixed-ability groups: stronger learners move ahead without feeling held back, while others receive reinforcement without stigma. Yet the researchers remind us that repetition alone does not equal learning. Some students reported that automated exercises felt predictable, indicating the need for human intervention to enrich context and provide meaningful tasks. Teachers remain essential in deciding

when students need communicative practice, when they need explicit instruction, and when they need a break from automated drills.

AI as a Conversation Partner

One of the most encouraging findings is how AI helps reduce speaking anxiety. Several studies describe students practising real-life dialogues: booking train tickets, discussing holiday plans, or asking for directions, with a chatbot before trying similar tasks with classmates. The article by Wang & Vásquez (2021) includes student reflections such as: “It felt easier because the chatbot doesn’t judge.”

Teachers might integrate these tools before assessments or oral presentations. Students could rehearse answers in private, receive simple corrections, and arrive better prepared. Still, the articles warn that chatbots often struggle with humour, sarcasm, or culturally rich expressions. This limitation reminds us that AI offers practice, not complete communicative experiences. Teachers provide the cultural framing, emotional warmth, and contextual interpretation that machines cannot replicate.

AI Writing Support

Writing tools work particularly well for identifying small but important issues. As Fan & Ma (2022) note, students benefit from quick explanations such as “article missing” or “verb agreement error,” allowing them to revise repeatedly without waiting for teacher feedback. In classroom practice, this means students arrive at lessons with more refined drafts, freeing class time for deeper work - argument structure, vocabulary variety, and stylistic choices.

However, the authors caution that overreliance can weaken independent editing skills. Some students accept suggestions without understanding them. Teachers might encourage a reflective process by asking students to keep a brief revision log: “What did the tool correct? Why did I make this mistake?” This transforms AI from a corrector into a learning companion.

Critical Reflections

Every new technology arrives with an invitation not only to use it, but to ask what it asks of us in return. As the articles show, AI in language learning is not merely a set of tools but a mirror held up to our teaching practices. It forces us to confront questions that linger beneath the quick excitement of innovation.

One such question concerns the nature of learning itself. If students revise their writing with the help of AI again and again, is there still a place for them to learn on their own? This is not a complaint about technology but a reflection on growth: do learners become more capable thinkers, or simply more capable users of automated feedback?

Another question arises from the space between human conversation and machine simulation. A chatbot can help a student practice a dialogue, but can it help them understand tone, courtesy, or cultural nuance? When language teaching begins to rely heavily on tools that cannot feel embarrassment or empathy, we must ask ourselves what parts of communication risk fading into the background.

Fairness, too, demands our attention. When speech-recognition tools misinterpret certain accents or dialects, they expose a deeper issue: whose voices are these tools trained to hear? And more importantly, whose voices do they fail to recognise? This is not only a technical limitation; it is a reminder that education carries the responsibility of ensuring every student is heard as they are, not as the system expects them to be.

We also face the question of trust. Students increasingly turn to AI for help, but do they understand when the help expands their abilities and when it quietly replaces their thinking? Teaching has always involved guiding learners through uncertainty, showing them how to question easy answers. AI makes this guidance even more necessary, not less. Students must learn not only how to use these tools, but also how to remain authors of their own ideas.

These questions matter because they return us to the essence of education: the formation of minds that can examine, challenge, and choose. The more

powerful our tools become, the more deliberate we must be in how we teach students to use them.

Ethical Considerations and Risks

Some of the ethical considerations go above abstract reflections and proceed to show concrete examples of issues in the classrooms. One of the reviewed studies reports that a speech-analysis tool stored voice recordings longer than expected, raising concerns about how student data is handled. Another article documents cases where pronunciation scoring systems rated non-standard accents unfairly, underscoring how biased training data can disadvantage entire groups of learners. In one classroom example discussed in the literature, students using an online tutoring platform discovered that their submitted texts were used to “improve” the service, without clear consent.

Beyond privacy and bias, ethical issues include the risk of undermining learners' agency. When AI generates fluent sentences for students, the educational aim of producing original thought is threatened. The sources recommend clear classroom rules: certain formative tasks can allow AI-assisted drafting, while assessments should demand original composition and documented reflection. These policies help students learn how to use tools responsibly.

Equity is a further concern. Not all students have equal access to devices, reliable internet, or the quiet spaces needed for private oral practice. The literature repeatedly warns that digital divides can amplify existing inequalities unless institutions plan for inclusive provision. Some proposed solutions include school-based access hours, loan devices, or offline versions of key tools.

Finally, environmental and social implications surface in the research. A few articles point out that large-scale AI services consume significant energy. Responsible adoption, therefore, includes awareness of these broader impacts, favouring efficient use, lower-energy settings, or institutional procurement policies that prioritise sustainability and ethical data practices.

Conclusion

The collective insights from the research present a thoughtful, encouraging view of AI in language learning. The studies show that AI tools can help students feel more confident, revise more effectively, practice more frequently, and receive feedback that would be impossible to provide manually at scale. They also show that students genuinely enjoy using these tools, especially when the activities feel relevant to real life.

At the same time, the research makes it clear that AI cannot replace the teacher's role in creating a supportive classroom atmosphere, interpreting subtle meanings, or guiding students through complex cultural and social aspects of communication. Instead, it functions best as a set of tools that expand what is possible.

Used with intention, creativity, and ethical awareness, AI has the potential to enrich language learning and help students grow into more confident, capable communicators. For teachers, the challenge and opportunity lie in exploring how these digital tools can strengthen the meaningful work we already do. The future depends on thoughtful integration, student agency, and shared responsibility across schools and communities.

4 Potential for the Development of AI Tools in Teaching

This chapter examines the potential for future development of AI in language teaching by analysing key opportunities and identifying areas that may offer concrete benefits for both learners and teachers. We will also explore the main challenges and conditions that teachers, educators, and professionals will face in the future regarding the implementation and responsible use of AI tools in education.

Opportunities connected to the popularisation of AI use in Language Teaching

The incredible spread of AI-based tools such as language learning apps, chatbots and generative language models has made language learning more accessible than ever before, precisely because of the flexibility and accessibility these tools offer. Any learner can now practise at any time, in any location, and at their own pace, benefiting young adults, especially those balancing work, family responsibilities, and study time (Al Shammari, 2023).

AI tools have proven to be a real game-changer for inclusivity, thanks to features like speech recognition, which are particularly helpful for reassuring learners who may hesitate to speak in front of others and for helping students with visual impairments engage more independently (Hawai'i Educational Research Initiative, 2024). Multimodal interfaces and environments allow learners to access content in different ways, accommodating diverse learning needs and abilities.

One of the strongest potential uses of AI systems in education lies in personalising and adapting the learning experience. AI tools can analyse students' performance, identify patterns, and automatically adjust content, helping teachers tailor their instruction, course design, and methodological approach. As a result, students will receive learning activities that match their pace and current level, reduce frustration and enable individualised progress in learning (Al Shammari, 2023).
This means that teachers can tailor different learning experiences to neurodivergent students, using AI tools' adaptability features to offer shorter tasks and predictable structures and formats that easily adapt to learners' needs (European Schools, 2025).

AI also supports teachers in processing formative assessment and ongoing feedback, enabling them to track students' progress more accurately and create more opportunities for self-paced learning, while focusing more on interaction during classes and on clarification where needed. Platforms like

ELSA Speak or Duolingo for Schools provide visual feedback summaries of students' performances for teachers to identify recurring mistakes and areas where learners need reinforcement or clarification. Research suggests that AI may eventually serve as a long-term support tool for teachers, anticipating difficulties and recommending targeted learning strategies (Frontiers in Psychology, 2025).

It is worth mentioning the *interactive* and *immersive* learning environment AI offers, which is perhaps not used to its full potential. Virtual Reality (VR) and Augmented Reality (AR) can add another dimension to teaching and learning, especially in task-based teaching. These immersive environments can simulate real-life situations in which students can practise the use of language in real-life contexts without even leaving the classroom.
Studies suggest that these immersive environments offer not only linguistic acquisition but also pragmatic awareness and intercultural competencies.

For teachers, VR and AR technology will bring valuable opportunities in the future to create learning experiences which support students with communication challenges or neurodivergent profiles who may prefer to practise language in a controlled, predictable environment before engaging in real-life interactions.

Current identified challenges related to the use of AI tools in Teaching

Although the integration of AI tools brings promising opportunities in teaching and learning languages, it also raises a lot of questions that teachers and educational institutions must address related to technical accuracy and reliability, ethical issues, data privacy, the risk of authentic learning and, most importantly, teachers' AI literacy and preparedness as part of their new professional competencies.

These challenges are all linked to teachers' hesitation to use and integrate these AI tools into their teaching. Concerns like how learners' data is stored, shared and used or how chatbots sometimes provide incorrect or misleading answers, reduce trust and willingness to engage with AI technology. The

European Schools report emphasises the importance of clear policies and transparency before integrating these tools at the institutional level (European Schools, 2025).

Teaching is fundamentally linked to human communication and meaningful interaction, which requires emotional intelligence, cultural understanding and spontaneous teacher-learner negotiation, all aspects that most AI systems cannot fully reproduce. These are challenges that most educators must navigate carefully when combining AI tools with traditional methodology.

Overuse of AI-generated texts, translating and correcting errors may lead to a decrease in learners' ability to express themselves independently. Recent academic discussions caution against allowing AI to dominate the learning process at the expense of other competencies.

That is why teachers must know how AI fits into their teaching, and a successful integration of these tools in teaching requires teacher training as part of the educational institution's readiness.
Research identifies this lack of teacher training and readiness as one of the most significant barriers to future responsible AI implementation in education. (Yang & Kyun, 2022). Digital inequity among teachers and educators also contributes to the overwhelming feeling that AI technologies have created; therefore, professional development will remain essential if AI is to be used responsibly in classrooms.

It is also worth noting the cognitive overload these tools can cause through overuse over time. Frequent interaction with too much information at once can overwhelm learners and lead to a lack of motivation if these AI interactions become repetitive, or the danger that students become dependent on AI tools instead of developing their own strategic thinking. Guidance from teachers will always remain essential to ensure that learners develop independent, resilient approaches to language learning.

Future development of AI in teaching languages

There are two directions we have observed in reporting our research: one is AI systems becoming more human-like in their responses, and the other is the large population gaining access to immersive multimodal learning environments.
Since we are talking about generative AI and large language model systems, the future development of these systems will rely on a more natural, emotionally responsive capability in their interaction with students, for example. While these systems cannot provide genuine emotional understanding, it is believed that future tools will recognise signals such as hesitation, frustration, repetition, or uncertainty to adapt their responses to be more empathetic and encouraging towards learners.

As mentioned earlier, the integration of AI with VR and AR will most likely reshape language practice. If it is used wisely, it can not only deepen linguistic competence in real-life situations but also build cultural awareness. At the moment we are writing this report, this AI feature is not so widely used in teaching at a large scale, but the more this technology is available to students, the more it will reshape language teaching methodology, especially task-based teaching. Learners can explore real-life scenarios, simulate real cultural settings, and complete tasks similar to real situations. Moreover, the future integration of VR, AR and AI in teaching will enhance teachers' capacity to adapt their inclusive teaching practices to learners with specific educational needs. The continuous development of multimodal environments that combine visual, auditory and interactive input provides a more flexible learning experience for students with dyslexia, attention difficulties or sensory processing differences, for example.

We must not forget that these future developments point toward AI playing a supportive role rather than replacing human teaching. Research shows that AI works best when integrated within a methodological system rather than used on its own (Yang & Kyun, 2022). Therefore, a hybrid teaching approach where AI supports individual practice while teachers continue to guide

communication, language, cultural understanding, and critical thinking is most likely to be the future of language education.

Conclusions

When used responsibly, AI provides teachers opportunities to teach languages in new and engaging ways by making instruction more personalised, flexible, immersive and inclusive. However, this technology must be integrated with care, awareness of its limitations, attention to ethical and pedagogical concerns, and a commitment to keeping human expertise at the centre of language education.

Looking forward, AI tools are most likely to reach their full potential in teaching and learning when combined with human pedagogical guidance. But, for this to happen, teachers need to approach these tools with curiosity, critical thinking and care for learners, while institutions will need to invest in AI teacher training and develop clear policies for responsible AI practices.

5 Ethics and Legal Restrictions

The use of artificial intelligence (AI) has increased significantly in recent years across multiple domains, including education, the circular economy, and research. With this rapid development, two main questions arise: what legal norms apply to AI usage, and what ethical impacts should be considered? This summary relies on scientific articles and international documentation to provide an overview of AI regulation, ethical principles, and practical recommendations for handling ethical issues (UNESCO, 2021; ScienceDirect, 2025).

Legal Framework

AI regulation primarily relies on a risk-based approach, where legislation sets requirements for transparency, security, and accountability. The European Union AI Act is an example, categorising AI systems according to their risk level

and obliging developers to ensure that AI does not harm citizens' privacy or rights (European Union, 2024; Novelli et al., 2024).

In addition to AI Act requirements, AI usage is also influenced by data protection and privacy regulations, such as GDPR, which give individuals the right to control the use of their data and to limit automated decisions (European Commission, 2022; Debnath, Veeraraghavan & Hapse, 2024).

It is important to understand that legal norms do not replace ethical considerations but provide a framework for managing risks and ensuring responsibility (ScienceDirect, 2025). Several authors also emphasise the need for legal and administrative frameworks that support the moral alignment of AI with human values (Novelli et al., 2024; Ateriya et al., 2025).

Ethical Impacts and Risks

Privacy and Data Control

AI implementation raises numerous ethical issues that go beyond legal requirements. The most important topics include privacy, fairness, transparency, human autonomy, and social impact (Ethical guidelines on the use of artificial intelligence, EU, 2024; UNESCO, 2021).
In education, AI can collect and analyse large volumes of learner data, leading to privacy and surveillance risks. Young learners may feel they lack control over their data, making it essential to ensure transparency, informed consent, and autonomy preservation (Register, Khan, Giubilini, Earp & Savulescu, 2025; Laak & Aru, 2024).

Transparency and AI Models

AI models operate based on diverse datasets, which influence decision outcomes. Transparency helps prevent unfairness and increases system reliability. Students and teachers need to understand how AI models work to evaluate ethical dilemmas and risk mitigation strategies (ScienceDirect, 2025).

Legal and Ethical Interplay

The AI Act and GDPR provide a legal framework, but ethical guidelines help reduce practical risks and justify decisions. High-risk AI systems must implement security, transparency, and accountability measures (European Union, 2024; Novelli et al., 2024).

It should also be noted that legislation may not cover all ethical issues, such as cultural differences, social impact, and autonomy preservation (UNESCO, 2021; ScienceDirect, 2025).

AI Ethics in Education and Curricula

Systemic Challenges

Systematic reviews show that teaching AI ethics in education requires a structured framework, assessment methods, and teacher training (ScienceDirect, 2025). Education systems should:

- Encourage students to think critically and assess AI ethical aspects
- Train teachers for responsible AI use
- Apply assessment methods for understanding ethical dilemmas

Curricula and Ethics

ScienceDirect (2025) and Laak & Aru (2024) emphasise that AI ethics must be integrated into curricula. This means:

- Adapting curricula to include AI ethics and data protection principles
- Training students and teachers for responsible AI use
- Developing pedagogical methods and assessments for understanding ethical dilemmas

Academic Integrity, Copyright, and AI Systems

AI usage in research and academic writing raises questions about authorship, copyright, and responsibility. Generative AI can challenge conventional citation norms and academic integrity, requiring clear guidelines to define permissible AI usage, avoid plagiarism, and protect intellectual property rights (Bjelobaba et al., 2025).

AI systems should support learners' cognitive work rather than replace it, ensuring ethically achieved learning outcomes. Systems must promote reflection, metacognition, and critical thinking, avoiding overreliance on automated content (Holmes, Porayska-Pomsta & Holstein, 2021).

In addition to curriculum adaptation and teacher training, it is crucial to establish ongoing ethical monitoring and assessment within educational programs. Continuous evaluation ensures that AI tools are used responsibly, that data protection principles are upheld, and that students develop the ability to critically assess AI outputs and ethical dilemmas in real-world scenarios (ScienceDirect, 2025; Laak & Aru, 2024). Furthermore, clear institutional guidelines for academic integrity should be reinforced, ensuring that generative

AI supports learning without undermining authorship, copyright, or the development of students' critical thinking skills (Bjelobaba et al., 2025; Holmes, Porayska-Pomsta & Holstein, 2021). Embedding reflective practices and metacognitive exercises in curricula helps learners recognize the ethical implications of AI use, fostering responsible digital citizenship and lifelong ethical awareness.

Conclusions

This report invites educators, researchers, and decision-makers to view artificial intelligence not as a replacement for human teaching, but as a tool in shaping more personalised, inclusive, and engaging language learning environments. We aimed to provide a practical overview of the most relevant topics connected to the use of AI in classrooms, showing its potential as well as its limitations.

AI tools are already used in the classrooms, and can be applied even further, offering help through chatbots, translators, spellcheckers, and tutoring systems to personalise learning experiences. The examples presented in this report are not exhaustive but represent a rapidly evolving landscape. While AI can support learning through personalised feedback and practice, it requires cautious implementation because of issues such as data bias, hallucinations, and a lack of emotional intelligence.

As AI becomes increasingly embedded in educational practice, it is essential to maintain a critical and informed perspective. Ethical considerations, transparency, and human oversight must guide implementation to ensure personalised learning experiences and high-quality educational materials.

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