

From Google Translate to ChatGPT: Opportunities and Challenges of AI-Based Translation Tools in Learning and Pedagogy



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Abstract

The advent of Artificial Intelligence (AI) has ushered in a new era in education, particularly in the realm of language learning. AI-based translation tools have become ubiquitous, offering immediate linguistic support and facilitating communication across language barriers. These tools include Google Translate, DeepL, Microsoft Translator, and the generative AI ChatGPT. Their accessibility has transformed classroom practices by enabling both students and educators to engage with foreign-language texts more confidently and enable autonomous learning among students enabling them to use immediate and accessible platforms such as ChatGPT for translations. However, they also reveal challenges: AI translations often lack idiomatic accuracy and cultural nuance, and students may rely on these tools at the expense of developing critical thinking and traditional translation skills. Drawing on case studies, classroom observations and comparative analysis on human vs AI translations, this study explores how educators can strategically integrate digital translation tools without compromising efficient learning and understanding, cultural nuances and critical thinking among the students. The research highlights the necessity of a balanced pedagogical framework that recognizes AI as a facilitative tool rather than a replacement for human judgment. Ultimately, the study demonstrates that, when integrated thoughtfully, AI-based translation tools can promote inclusivity, innovation, and deeper engagement in globalized classrooms, preparing students to navigate multilingual and multicultural contexts effectively.

Keywords: Chatgpt, Artificial Intelligence, Digital Tools, Education

Introduction

The integration of Artificial intelligence into education has significantly transformed the language learning environments and is continuously redefining the role of translation in classrooms for learning foreign languages. Digital tools such as Google Translate, DeepL and more recently, ChatGPT, have become widely accessible resources for students as well as educators. This paper aims to examine the pedagogical implications of using AI-based models and how they function as translation tools in language learning and intercultural

education. While these tools enhance accessibility, provide immediate linguistic support and seems to increase learning efficiencies of students autonomously. Despite these advantages it makes us question the utility of AI models in language learning setups as overreliance on AI may hinder students' development of cognitive translation skills, reduce engagement with cultural nuances, and limit opportunities for critical analysis.

Thus, we need to ask this very pertinent question: How can AI-based translation tools be integrated into language learning and intercultural educa-

tion in ways that enhance comprehension and learner autonomy, without compromising critical thinking, cultural understanding, or traditional translation skills? How do AI models impact student engagement and language acquisition? What are the comparative strengths and limitations of AI generated translation versus human translations in terms of accuracy and cultural nuances? What pedagogical strategies can educators employ to use AI effectively in classrooms?

Literature Review

AI in education is widely recognized for its capacity to personalize learning, enhance accessibility, and enable efficient academic support (Holmes et al., 2019). In the context of language learning, AI technologies have become integral due to their ability to provide real-time linguistic assistance and adaptive feedback.

AI in Language Learning

AI technologies have revolutionized language learning by providing personalized and adaptive learning experiences. Tools like Google Translate, DeepL, and ChatGPT enable learners to access instant translations, supporting comprehension of complex texts and facilitating cross-linguistic communication. Research indicates that AI tools enhance vocabulary acquisition, improve reading comprehension, and foster learner autonomy (Godwin-Jones, 2019).

Recent studies have explored the potential of AI in higher education, particularly in non-native English-speaking environments, to assist students with academic texts (Li & Wang, 2021). These tools are increasingly incorporated into classroom activities such as essay writing, peer feedback, and collaborative translation exercises, creating dynamic learning environments.

AI and Cultural Learning

Harrison (2020) highlights a crucial yet often overlooked dimension of digital translation tools: their role in shaping intercultural understanding. He argues that translation is never a purely linguistic act, it is deeply cultural, embedded in worldviews, historical experiences, and so-

cial practices. This resonates strongly with my own classroom observations, particularly when students rely on Google Translate or ChatGPT to interpret French texts that contain idiomatic, humorous, or culturally conditioned expressions. While the AI-generated translation may be linguistically correct, it often feels detached from the cultural fabric of the original text.

For instance, when teaching French newspaper articles or literary excerpts, I have seen students confidently accept AI-generated outputs without sensing that an important cultural reference or sometimes even the author's tone has been lost in translation. This reinforces Harrison's point: AI tools excel at processing language patterns but struggle to convey the cultural identity embedded in linguistic choices.

Kumar and Singh (2022) further expand on this concern by warning that AI tools do not merely reflect languages, they reflect the data they were trained on. This means they may inadvertently reproduce cultural biases, stereotypes, or imbalanced representations of certain communities. In an educational environment that values inclusivity and intercultural understanding, these inherited biases can subtly influence how students perceive the cultures they are studying. This issue becomes especially relevant in Indian higher education contexts, where students may already have limited direct exposure to French cultural realities. An AI-generated stereotype or misleading translation could reinforce misconceptions rather than challenge them.

AI in Pedagogy

Garcia and Pena (2011) propose a balanced perspective that aligns closely with my own teaching experience. They argue that machine translation, when used thoughtfully, can be a productive pedagogical resource. Their work reminds us that the problem is not AI itself, but *how* it is integrated into learning environments. If students use these tools passively- copying and pasting translations without questioning, analysing, or comparing- the pedagogical value diminishes. The learning process becomes mechanical rather than reflective.

However, when educators frame AI as a starting point instead of an end product, the classroom dynamic shifts. In my French translation classes, for example, I often ask students to use Google Translate or ChatGPT to generate an initial translation. Then, as a group, we unpack its inaccuracies, discuss missing cultural nuances, and explore why certain stylistic choices matter. Students quickly realise that translation is not simply about exchanging words between languages but about negotiating meaning, intent, and cultural perspective.

Garcia and Pena's insights validate this approach: AI works best when embedded within a pedagogical structure that encourages comparison, critique, and revision. Through this process, learners develop not only linguistic proficiency but also essential analytical and intercultural skills. Rather than diminishing human expertise, AI becomes a tool that enriches classroom dialogue and fosters deeper awareness of how languages work.

Theoretical Analysis

Artificial Intelligence: Artificial intelligence refers to a computer's ability to perform tasks which require intellectual processes such as learning and unlearning pattern to obtain optimum results. The term artificial intelligence was first coined by John Mcharthy known as father of AI, "*The science and engineering of making intelligent machines*". This term has since then been modified because of the changing dynamics and role of this technology in various domains. The Dartmouth conference (1956) which is often credited with the launch of AI included a conjecture "*Every aspect of learning or any other feature of intelligence can in principle be so precisely describes that a machine can be made to stimulate it*". In today's time with the advent and accessibility of technology AI has become an integral part of not just computer operations but our day-to-day tasks not barring learning at all institutional levels. AI operations consist of computational systems which can easily perform complex tasks associated typically with human intelligence

such as reasoning, perception, decision making, problem-solving and translations as well.

The above-mentioned definitions clearly highlight the ever-evolving role of AI and diverse perspectives which are associated with practical applicability of today's intelligent technology.

Language Acquisition and Cognitive Processing: From a psycholinguistic perspective, language learning is not a passive process of absorbing vocabulary and grammar; it is an active cognitive engagement that involves pattern recognition, inference-making, hypothesis testing, and contextual interpretation (Ellis, 2015). When learners read a foreign-language text, their brains do far more than decode words, they construct meaning by drawing on prior knowledge, cultural cues, and semantic associations.

However, in my classroom practice, I have observed that students often bypass these mental processes when they rely excessively on AI-generated translations. For example, instead of attempting to infer the meaning of a French expression through context, many students immediately turn to Google Translate or ChatGPT for a ready-made answer. While this approach offers instant clarity, it limits opportunities to develop essential cognitive skills such as semantic prediction, syntactic analysis, and mental imagery, skills that play a critical role in long-term language acquisition.

Ellis (2015) argues that these cognitive mechanisms are foundational to second-language development because they help learners internalize language patterns rather than memorizing translations. When AI tools provide the "finished product," the learner's cognitive engagement becomes shallow, leading to surface-level comprehension instead of deeper linguistic understanding. Thus, the challenge is not the presence of AI, but the possibility that students may outsource too much cognitive work to these tools, weakening their analytical ability over time.

Discussion

With the advent of Artificial Intelligence, it has been critically being integrated in academia. AI

in education enhances learning, improves accessibility, boosts student engagement and supports teachers in formulation of pedagogical approaches ultimately making the educational process enriching and efficient. AI technology can be tailor made in order to accommodate heterogenous groups of students and yet create an engaging learning ambiance for everyone and to cater to everyone's learning requirement.

Post COVID-19 digital revolution has improved the accessibility for students with limited proficiency can access academic materials and participate fully in classroom discussions. Features such as automatic captioning, text-to speech and language translation helps the students to learn autonomously as well as creates inclusive learning environments. These tools can be used by all students irrespective of their background, mother tongue, or cognitive abilities. In language learning AI is most prominently used to generate Machine translations. By offering translations of culturally diverse texts AI tools encourage engagement with global perspectives (Harrison, 2020).

For example, an Indian student learning French can instantly translate a French newspaper and articles in English for better understanding of language and learning new vocabulary as well as its use. Apart from this gaining insight into contemporary debates, cultural norms, and social issues from another part of the world. This process encourages engagement with global perspectives and nurtures openness to diversity. However, while AI tools democratize access to texts, they do not always fully capture cultural nuances, idiomatic expressions, or context-specific meanings. Thus, learners are prompted to critically reflect on both the possibilities and limitations of machine translation in intercultural settings. As Harrison (2020) argues, intercultural competence is not only about understanding words but also about grasping the embedded cultural values and perspectives. Therefore, the pedagogical challenge lies in using AI translations as entry points to intercultural exploration, followed by guided classroom discussions, comparative analyses, and human interpretive interventions. This

dual approach ensures that students develop not just linguistic skills, but also the ability to navigate cultural differences with sensitivity and awareness.

Challenges

Despite their advantages, AI translation tools present several pedagogical and linguistic challenges that educators have to address critically. One of the most pressing concerns is translation accuracy remains a critical concern, particularly for idiomatic expressions, specialized terminology, and culturally nuanced content. While AI can handle literal translation with reasonable precision, it often struggles with nuanced expressions such as proverbs, colloquialisms, or specialized terminology in fields like law, medicine, or literature. For instance, a French idiom such as "*avoir le cafard*" may be rendered literally as "*to have the cockroach*" rather than the culturally accurate meaning, "*to feel depressed*."

Furthermore, overreliance on AI can impede the development of cognitive translation skills and critical thinking. When learners depend excessively on machine-generated translations, they may bypass the intellectual processes involved in understanding syntax, context, and cultural background. This reliance can result in a superficial engagement with the target language, reducing opportunities for authentic learning and long-term retention.

Additionally, AI translations may unintentionally reflect cultural biases embedded in training data, impacting intercultural education (Kumar & Singh, 2022). Since large language models are trained on vast corpora sourced from the internet, they inherit the assumptions, stereotypes, and imbalances present in those datasets. For intercultural education, this is particularly concerning, as students may unknowingly internalize distorted representations of cultures, identities, or historical narratives.

Human vs AI Translations: Comparative analyses of human and AI-generated translations highlight significant differences in both process and outcome. AI translation tools excel in terms

of speed, cost-efficiency, and general linguistic accuracy, making them valuable for immediate comprehension or quick reference. For example, AI can efficiently translate straightforward sentences such as *"The student is reading a book"* into multiple languages with minimal error. However, when faced with idiomatic expressions, culturally embedded references, or stylistically rich texts, AI often produces literal renderings that miss the deeper meaning.

Human translators, by contrast, offer interpretive depth and cultural sensitivity, which are essential in producing accurate and contextually appropriate translations. They can recognize subtleties such as irony, metaphor, or socio-cultural references that AI typically overlooks. For instance, the French idiom *"poser un lapin"* literally translates as *"to put down a rabbit,"* but the culturally accurate meaning is *"to stand someone up."*

This difference demonstrates why human insight remains indispensable in educational contexts. Human translators contribute not only linguistic accuracy but also intercultural mediation, ensuring that learners engage with both the language and the cultural worldview it conveys (Baker, 2018). Pedagogically, integrating AI tools with human translation practices offers a balanced approach: students can first use AI to obtain a quick draft translation, then refine and analyze it with human guidance. This process fosters both efficiency and critical analysis, allowing learners to benefit from technological speed while also cultivating higher-order thinking and intercultural competence.

Thus, the integration of AI and human translation methods in classrooms does not diminish the value of human translators; instead, it underscores the need for collaborative pedagogical strategies that merge computational accuracy with cultural and interpretive depth.

Integrating AI Tools in Translation Pedagogy:

The integration of Artificial Intelligence (AI) tools in translation pedagogy requires a structured, pedagogically sound approach that balances technological efficiency with human interpretive skills. While AI can automate repetitive linguistic

tasks and provide immediate feedback, its optimal use in classrooms must emphasize critical engagement rather than passive reliance.

First, educators can employ AI translation tools as preliminary aids to expose students to multiple linguistic possibilities. For instance, a translated text generated by Google Translate or ChatGPT may serve as a starting point for discussion, where students are asked to identify errors, idiomatic mismatches, or cultural gaps (Garcia & Pena, 2011). This method fosters analytical thinking and highlights the distinction between literal and interpretive translation.

Second, AI tools can be integrated into comparative exercises where students evaluate human and machine translations side by side. Such comparative analysis cultivates awareness of contextual sensitivity, enabling students to understand why human translators choose particular lexical or syntactic structures (Baker, 2018).

Third, educators can design project-based learning tasks in which AI tools act as collaborators rather than authorities. For example, students could translate a culturally rich French literary passage with the assistance of AI, then refine it collectively, focusing on idiomatic accuracy and intercultural nuance. This process reinforces the role of human creativity and judgment in translation practice.

Finally, AI can be used for formative assessment by tracking students' progress across multiple drafts. Translation platforms that log edits enable instructors to identify common patterns of error and provide targeted feedback.

In this way, the integration of AI in translation pedagogy does not diminish human expertise but instead enhances students' critical and intercultural competencies, aligning with broader educational goals of fostering digital literacy and intercultural communication skills.

Conclusion

AI-based translation tools have transformative potential in language education, enhancing accessibility, fostering autonomy, and promoting intercultural competence. Their integration re-

quires careful pedagogical strategies to balance technological efficiency with critical thinking and cultural sensitivity.

The study highlights the importance of structured guidance, comparative analysis, and critical evaluation in leveraging AI translation tools. When used thoughtfully, these tools can serve as catalysts for pedagogical innovation, supporting both language proficiency and intercultural competence in diverse educational settings.

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