

# Teaching and Learning German as a Foreign language in the age of Artificial Intelligence: Possibilities and challenges of integrating AI technologies

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## Abstract

*We are living in the age of Artificial Intelligence (AI) and it is here to stay. In recent years, digital technologies and technology-enhanced language learning have become central to the field of education. Among the latest advancements, Artificial Intelligence has emerged as a prominent term across nearly all industries and is generating increasing interest. AI is becoming relevant in lot of industries but how can it be applied to language teaching and learning? This technology has changed the way we learn. This paper seeks to discuss the potential and limitations/challenges of AI technologies in foreign language learning. Should we see AI as an assistance tool or replacement? Will they replace the teachers or will they redefine the role of the teachers? Can we completely rely on Chat Generative Pre-trained Transformer (ChatGPT), an artificial intelligence-generated text (AI-generated text) model that is based on Artificial intelligence (AI) to learn German as a foreign language? These are few questions that will be reflected upon and discussed ahead in this paper.*

## I. INTRODUCTION

The concept of Artificial intelligence was first proposed at the Dartmouth conference in 1956, where a group of scholars met to discuss the possibility of constructing genuinely intelligent machines. Artificial Intelligence (AI) is a branch of computer science focused on creating systems and machines that can perform tasks typically requiring human intelligence. AI is omnipresent and helps in processing large no. /volumes of data. Digital tools assist us in everyday oral and written language tasks but AI often operates within the boundaries of predefined algorithms and it most importantly relies on vast dataset. The more data AI models has, better the

accuracy. One will witness a significantly wider range of intelligent tutorial systems along these lines in the near future. AI has great potential for education as it can generate predictive and diagnostic models. They are smart and they analyse individual pupils' learning trajectories as well as their mistakes, predict learner's learning capacity and skills to complete a particular task & assess feedback for each learner. What are the essentials of AI for language learning? How do the developments in AI affect the learning & teaching of foreign languages?

There are many different definitions of Artificial Intelligence "Artificial Intelligence (AI) is a broad term used to describe a collection of technologies

that can solve problems and perform tasks to achieve defined objectives without explicit human guidance.”<sup>1</sup> In the era that is characterized by the presence of technology and the ever-expanding horizons of artificial intelligence, the landscape of education, particularly in the domain of foreign language learning, has undergone a profound transformation. In this context, the integration of Artificial Intelligence (AI) technologies into the teaching and learning of German as a foreign language has emerged as a compelling endeavour. AI technologies are not just tools but an integral part of learning process and transformative forces where opportunities and obstacles combine to redefine the boundaries of language acquisition in the digital age.

There is a growing popularity of dialogue systems like Alexa & Siri who performs as per the command given to them and operates via language recognition. These speech recognition systems and recommendation engines are categorized under Narrow AI that handles specific task or a narrow range of tasks “The development of so-called narrow AIs (less complex algorithms that are good at doing one thing in particular, e.g. Siri, AI powered vacuum cleaners) explicitly shows that data-driven, multi-layered technologies based on Algorithms have transformed from a niche discipline into a highly relevant technology for educational, including language learning purposes. The potential of these programs to analyze unprecedented amounts of data, collected in real time, combined with novel methods from the field of AI, are bringing the optimization of teaching and learning processes into particular focus.”<sup>2</sup> The potential AI systems can range from simple algorithms to complex models that mimic human cognitive functions. Artificial intelligence is supposed to make our life easier in future and in

the era of AI, one can leverage it in the work and take advantage of innovative technologies in foreign language teaching too. Humans have always tried to keep up with the development of new technologies and improve their learning. As Dr. Netaya Lotze explains in his article “*Artificial Intelligence in language learning*” “AI is not only used to give a verbal command to one’s smartphone to play a particular playlist, but also features in far more complex scenarios such as online games and interactive toys with a language interface (like Mattel’s Hello Barbie), and as virtual tutors in e-learning environments (such as the virtual tutor Ed the Bot in SAP learning software).”<sup>3</sup>

Education will be revolutionized with an introduction of AI to foreign language learning and teaching “By 2023, more than 40% of global capital in the education market will be spent on AI and education [...] As a result more and more companies and educational stakeholders are investing in AI-powered technologies.”<sup>4</sup> As per the year and data predicted by Torben Schmidt and Thomas Strasser, one could see AI-powered language learning combined with neural network capabilities making a paradigm shift in education. We are in a new digitally enhanced educational space, where the learners and teachers are challenged to adopt an entirely new approach and adapt with the changing educational landscape. The usage of AI can create adaptive learning environment. Getting machines to understand language has been a challenge in AI “Language is so powerful because of the way words and concepts can be combined to confer a virtually infinite landscape of ideas and thoughts. But decoding the meaning of words can also be surprisingly difficult because of frequent ambiguity, and it’s impossible to write all the rules of language into a computer program.”<sup>5</sup> With the development of technology

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<sup>1</sup> Healey, Justin: Artificial Intelligence <https://library.camhigh.vic.edu.au/ais/downloadfile/Qi0xOTU1NDk1NTgmVT02Mjk3OQ==/Artificial%20Intelligence.pdf%3E> ; Pg 3.

<sup>2</sup> Schmidt, Torben & Strasser, Thomas: Artificial Intelligence in Foreign Language Learning and Teaching: A CALL for Intelligent Practice; Pg. 165

<sup>3</sup> Lotze, Netaya: Goodbye to classroom teaching? Artificial Intelligence in Language Learning. <https://www.goethe.de/ins/in/en/spr/mag/21290629.html>

<sup>4</sup> Schmidt, Torben & Strasser, Thomas: Artificial Intelligence in Foreign Language Learning and Teaching: A CALL for Intelligent Practice; Pg.166

<sup>5</sup> Knight, Will: AI can write in English. Now it’s learning other languages <https://www.wired.com/story/ai-write-english-learning-other-languages/>

Chen, X., Zou, D., Xie, H., & Cheng, G. (2021a). Twenty years of personalized language learning. Educational Technology & Society, 24(1), 205-222.

and changing education ecology & landscape, the teaching strategy also changes. The artificial intelligence brings opportunities as well as challenges to foreign language teaching.

## II. KEY CONCEPTS

Before exploring the potentials and limitations of AI, it's essential to understand the key concepts of AI, particularly in the context of AI-powered language learning.

1. **Machine Learning (ML)** is a subset of AI which focuses on algorithms that enable systems to learn from data. It refers to systems that learn from data to make predictions or decisions without being explicitly programmed. "Machine learning is not just a database problem; it is also a part of artificial intelligence. To be intelligent, a system that is in a changing environment should have the ability to learn. If the system can learn and adapt to such changes, the system designer need not foresee and provide solutions for all possible situations. Machine learning also helps us find solutions to many problems in vision, speech recognition, and robotics."<sup>6</sup> The ability to solve complex tasks by AI can only be achieved, if AI can learn.
2. **Deep Learning (DL)** is a subfield of AI and a specialized area of ML that uses Artificial neural networks to analyze various types of complex data, especially images and audio "It is extremely important to understand that the results at which the deep learning program arrives only reflect probabilities. It does not decide on a particular option and justify it, but, for example, states that it is 9% likely to be a car, 72% a person or 19% an animal. How these outputs are applied is up to the programmer [...] In the case of deep learning systems, an attempt is made to increase explainability by not only specifying the probability of a particular option, but also giving a

justification of why this option is the most probable. For example, instead of the output, "the object is 93% likely to be a cat." The machine learning algorithm should specify: "The object is 93% likely to be a cat, because it has fur, paws and claws."<sup>7</sup>

3. **Natural Language Processing (NLP)** is an area that involves the interaction between computers and human language, enabling machines to understand and generate text. "Natural Language Processing (NLP) is concerned with the automated processing of human language. It addresses the analysis and generation of written and spoken language, though speech processing is often regarded as a separate subfield."<sup>8</sup> It allows machines to understand, interpret, and generate human language. The authors of the article "*Trends, Research Issue and Applications of Artificial Intelligence in Language Education*" states the AI applications used in language learning writing. AI was used to assist students' writing via AWE systems and ITS. "These systems evaluate students' work using NLP techniques to diagnose and comment on students' errors so that they have a comprehensive understanding of language use."<sup>9</sup>

## III. I V/S AI

### 3.1 Possibilities:

AI techniques such as User Modelling, Natural Language Processing (NLP), Natural Language Generation, Automated Speech Recognition (ASR), and Machine Translation were the most frequently utilized in language learning systems (Gamper & Knapp, 2002). How can one use AI for improving learning outcomes for students or make teaching more effective?

- a) AI can help customize the content as per learner's need because some students lag

<sup>6</sup> Alpaydin, Ethem: Introduction to Machine Learning; Pg 3.

<sup>7</sup> Lück, Nico: Machine Learning- Powered Artificial Intelligence in Arms Control; Pg 5

<sup>8</sup> Meurers, Detmar: Natural Language Processing and Language Learning;

<http://www.sfs.unituebingen.de/~dm/papers/Meurers-19.pdf> ; Pg 1

<sup>9</sup> Huang X., Zou D., Cheng G., Chen X. & Xie H.: Trends, Research Issue and Applications of Artificial Intelligence in Language Education; Pg 125

when one-size-fits-all approach is applied while teaching which results in moving on to the next level without understanding the previous level thoroughly. Everyone learns in different ways and at different speed. Students have different proficiency levels and might not achieve the same learning outcomes. It allows learners with different language proficiency to learn at their own pace. It is personalized, flexible and inclusive. Personalized learning systems allow learners with low language proficiency to learn at their own pace to maximize their progress (Chen et al. 2021a). Outside the classroom, students could individually practice their language skills tailored to their individual skill levels and interests. Learners from different backgrounds will have equal opportunities to participate.

- b) AI can be used during oral assessments by the teachers to assess student's speaking abilities and even learners can make use of AI to improve their speaking skills "Related to ASR, Chatbots can conduct intelligent conversations through a keyword matching technique that assesses students' speaking abilities. AI-amalgamated flipped classrooms can also effectively enhance students' learning performance and motivation. Therefore, researchers have generally displayed positive attitudes towards AI-enhanced language learning."<sup>10</sup> The language learners often experience anxiety when speaking a new foreign language. AI can replicate real speech and conversations and would save such students from judgement or mistakes being made publicly. The human-machine communication will be brought into effect.
- c) Summative assessments can be replaced by formative assessments. AI provides instant feedback which helps students to enhance their language proficiency and constantly make modifications. With timely and instant feedback, language proficiency and behavior can be improved during the learning process instead of the final stage i.e. towards the end of the semester. With

timely feedback, immediate adjustments can be made and there will be more room to focus and move on to the next topic. AWE systems can provide rich formative feedback, which can overcome teachers' preference for summative feedback due to time-constraint with large-sized classes (Gierl et.al. 2014).

- d) Human minds aren't built for repetitive tasks every day; we thrive on creativity in our work. In contrast, robots can handle monotonous tasks without any creative thinking. AI algorithms can efficiently manage grading, paperwork, and other routine administrative duties that require minimal skill. This allows teachers to focus more on coordinating learning and mentoring students, ultimately fostering their creativity. It would minimize teacher's workload. AI also enhances the accuracy of grading student writing, as traditional grading can sometimes be biased and prone to human error.
- e) AI can extract reading materials on different topics from its vast set of data and would filter and suggest exactly what is needed which humans can extract from a limited source or from the source which the respective institutions have access to. Apart from focusing on isolated grammar and vocabulary practices, it will also help in exercise selection and sequencing. The content of courses supported by AI is more diversified and in-depth than traditional courses.
- f) AI applications would enhance reading comprehension by identifying text structures and providing summarizing strategies. Reading comprehension in a foreign language is a challenge for many students. AI is used to assist students' reading and writing via Intelligent Tutoring Systems (ITS). ITS is used to enhance language readers' reading comprehension. Wijekumar (2017) developed a text-structure based instruction for enhancing reading comprehension that showed positive outcomes in reading comprehension at all grade levels. The text

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<sup>10</sup> Ibid; Pg. 113

structure strategy called Intelligent Tutoring System for the Text Structure Strategy (ITSS).

Table 1 shows the reading comprehension in German language (left side) & the output given by ChatGPT (right side).

<b>Text Input given to ChatGPT</b>	<b>Output given by ChatGPT as per the command</b>
<p>Zu meiner Familie gehören vier Personen. Die Mutter bin ich und dann gehört natürlich mein Mann dazu. Wir haben zwei Kinder, einen Sohn, der sechs Jahre alt ist und eine dreijährige Tochter. Wir wohnen in einem kleinen Haus mit einem Garten. Dort können die Kinder ein bisschen spielen. Unser Sohn kommt bald in die Schule, unsere Tochter geht noch eine Zeit lang in den Kindergarten. Meine Kinder sind am Nachmittag zu Hause. So arbeite ich nur halbtags. Eigentlich gehören zu unserer Familie auch noch die Großeltern. Sie wohnen nicht bei uns. Sie haben ein Haus in der Nähe. Die Kinder gehen sie oft besuchen.</p>	<p><i>(The table could only fit on the next two pages)</i></p> <p><b>Textstruktur</b></p> <p>Der Text hat eine <b>deskriptive Struktur</b>, die sich auf die Familie und deren Mitglieder konzentriert. Die Informationen sind klar gegliedert und beinhalten:</p> <ol style="list-style-type: none"> <li>1. <b>Einführung der Familienmitglieder:</b> Wer gehört zur Familie?</li> <li>2. <b>Lebensumstände:</b> Wo wohnen sie und wie ist ihre Lebenssituation?</li> <li>3. <b>Aktivitäten der Kinder:</b> Welche Rolle spielen die Kinder im Alltag?</li> <li>4. <b>Erwähnung der Großeltern:</b> Erweiterung der Familie und deren Beziehung.</li> </ol> <p><b>Zusammenfassungsstrategien</b> <b>(Summary Strategies)</b></p> <ol style="list-style-type: none"> <li>1. <b>Kerngedanken identifizieren:</b> Finde die wichtigsten Punkte und Ideen, z. B. die Anzahl der Familienmitglieder und deren Aktivitäten.</li> <li>2. <b>Kürzen:</b> Unnötige Details weglassen, um die Essenz des Textes zu erfassen.</li> <li>3. <b>Zusammenfassen in eigenen Worten:</b> Schreibe die wichtigsten Informationen in eigenen Worten, um das Verständnis zu zeigen.</li> </ol> <p><b>Zusammenfassung auf Deutsch</b> <b>(Summary in German)</b></p> <p>Die Familie besteht aus vier Personen: der Mutter, dem Vater und zwei Kindern, einem sechsjährigen Sohn und einer dreijährigen Tochter. Sie wohnen in einem kleinen Haus mit Garten, wo die Kinder spielen können. Der Sohn beginnt bald die Schule, während die Tochter noch im Kindergarten ist. Die Mutter arbeitet halbtags, da die Kinder am Nachmittag zu Hause sind. Zudem haben sie Großeltern, die in der Nähe wohnen und oft besucht werden.</p>

In table 1, the text input given to ChatGPT is a comprehension on "My Family" in German. The command was given to provide text structure and

summarizing strategy. It tells the structure of the text and highlight the points around which the text revolves. Furthermore, it gives the strategy

to summarize and also summarizes the entire text for the user thereby teaching to be strategic in reading and comprehending content area texts.

g) AI-powered writing tools where built-in-spellcheckers offers spelling & grammar checks and analyze the clarity and delivery of text would be very helpful in long passage, comprehension or essay where the tool indicates whether an expression within a written text is incorrect and provides linguistic feedback, e.g., Grammarly “AI-powered writing tools like Grammarly ([www.grammarly.com](http://www.grammarly.com)) have entered the market, offering spelling & grammar checks and functions that analyze the clarity, coherence, engagement, and delivery of a text, and can thus scan written text more reliably “Based on an extensive corpus and algorithms, Grammarly also offers linguistic recommendations and adaptations for a text based on given parameters regarding register and delivery.”<sup>11</sup> Grammarly doesn’t replace the classic writing skill of the learner as language is not just the process of spelling & grammar checking but also context & coherence. The text first needs to be written for the software to analyze it. Furthermore, it would simplify teacher’s task as well, where they manually go through comprehension and long essays and manually do the color-coded tagging in MS-Word to indicate errors using red color or provide an alternative to a sentence using a different color. AI-tool could be helpful to offer color-coded tagging. Color-coded tagging help learners immediately see the nature of their linguistic differences.

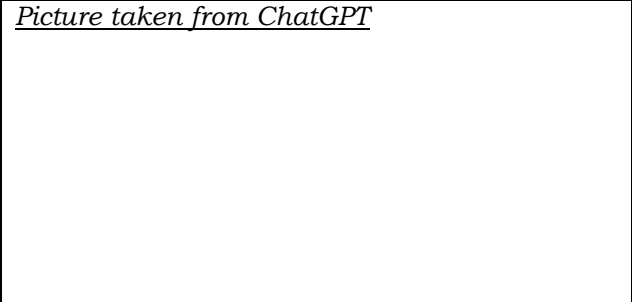
Lotze talks about a pedagogical agent called Max who is being developed as virtual Museum guide at Bielefeld University. Museum visitors can chat

to him, and they should not deviate from the predefined dialogue scripts. He points out the limitation of the same thing in foreign language teaching “In foreign language teaching, the problem is that interaction with the agent will only work smoothly if learners input the questions and answers that the system developers were able to foresee. Human responses are only predictable to a limited degree. However, outside the scripted application areas, dialogues with chatbots and agent systems are erratic, incoherent and prone to error.”<sup>12</sup> So, what are the challenges & limitations of using AI in context of foreign language teaching and learning?

### 3.2 Limitations & Challenges:

- a) Teachers might face challenges in adopting AI technologies due to their limited experience with information and computer technology. Therefore, teacher training programs should emphasize digital literacy and technological knowledge, enabling educators to adapt to the AI era and appreciate the benefits of using AI in language education.
- b) There will be lack of critical thinking ability amongst students since they will be heavily dependent on AI for the answers. The students at university as well as school level use ChatGPT to create essays & complete assignments, thereby resulting in the deterioration in the linguistic skill. In Table 2, a command is given to ChatGPT to write a text in German for C1 Level on “Umweltschutz (Environment protection)” (left side). The table on the right shows the essay given by ChatGPT in German.

Table.2

<p><u>Picture taken from ChatGPT</u></p> 	<p><u>Essay by ChatGPT in German C1 level</u> (The table could only fit on the next page.)</p> <p>In der heutigen Zeit ist der Umweltschutz zu einem zentralen Thema geworden, das nicht nur politische Entscheidungsträger, sondern auch die Zivilgesellschaft und Unternehmen betrifft. Die zunehmenden Herausforderungen, die sich aus dem Klimawandel, der Verschmutzung der Meere und</p>
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<sup>11</sup> Schmidt, Torben & Strasser, Thomas: Artificial Intelligence in Foreign Language Learning and Teaching: A CALL for Intelligent Practice; Pg. 169

<sup>12</sup> Lotze, Netaya: Goodbye to classroom teaching? Artificial Intelligence in Language Learning.

<p>Kannst du mir einen Text zum Thema "Umweltschutz" für Niveau C1 schreiben?</p> <p>Natürlich! Hier ist ein Text zum Thema Umweltschutz auf C1-Niveau:</p> <hr/> <p>Umweltschutz: Eine globale Verantwortung</p> <p>↓</p>	<p>dem Verlust der Biodiversität ergeben, erfordern ein sofortiges und umfassendes Handeln. Dabei ist es von entscheidender Bedeutung, dass Umweltschutz nicht als isolierte Aufgabe betrachtet wird, sondern als integraler Bestandteil einer nachhaltigen Entwicklung.</p> <p>Ein entscheidender Aspekt des Umweltschutzes ist die Notwendigkeit, das Bewusstsein in der Bevölkerung zu schärfen. Bildung spielt hierbei eine fundamentale Rolle. Durch Aufklärung über die Auswirkungen unseres Handelns auf die Umwelt können Individuen motiviert werden, ihren Lebensstil zu überdenken. Maßnahmen wie Recycling, die Reduktion des eigenen ökologischen Fußabdrucks und der Umstieg auf erneuerbare Energien sind Ansätze, die in den Alltag integriert werden können.</p> <p>Zusätzlich ist es wichtig, dass Regierungen auf nationaler und internationaler Ebene zusammenarbeiten, um effektive Umweltpolitik zu formulieren. Abkommen wie das Pariser Klimaabkommen sind Schritte in die richtige Richtung, jedoch ist ihre Umsetzung oft von politischen Interessen und wirtschaftlichen Überlegungen geprägt. Der Druck der Öffentlichkeit kann hier eine Schlüsselrolle spielen, indem er Entscheidungsträger dazu ermutigt, nachhaltige Praktiken zu priorisieren.</p> <p>Ein weiterer Aspekt, der häufig vernachlässigt wird, ist die Verantwortung der Unternehmen. Die Wirtschaft hat das Potenzial, entweder zur Zerstörung oder zur Erhaltung der Umwelt beizutragen. Unternehmen sind gefordert, nicht nur ökonomische, sondern auch ökologische und soziale Verantwortung zu übernehmen. Nachhaltige Produktionsmethoden und die Entwicklung umweltfreundlicher Technologien sollten zur Norm werden, um langfristig eine Balance zwischen Wachstum und Umweltbewusstsein zu gewährleisten.</p> <p>Letztendlich zeigt sich, dass der Umweltschutz eine gemeinsame Aufgabe ist, die kollektives Handeln erfordert. Jeder Einzelne kann einen Beitrag leisten, sei es durch bewusste Kaufentscheidungen, aktive Teilnahme an Umweltschutzprojekten oder durch das Engagement in politischen Initiativen. Die Erde ist unser gemeinsames Zuhause, und es liegt in unserer Verantwortung, sie für zukünftige Generationen zu bewahren. Nur durch einen integrativen Ansatz, der Bildung, politische</p>
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	Maßnahmen und unternehmerische Verantwortung vereint, können wir die Herausforderungen des Umweltschutzes meistern und eine nachhaltige Zukunft gestalten.
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The question persists: should teachers discourage or regulate students' use of AI, or should they shift their approach to encourage students to explore and discover AI in their learning? When used appropriately as a learning partner or as a tool for simulating scenarios, AI can enhance critical thinking, prompting students to engage more actively in their education.

- c) The pervasive use of AI in language teaching may reduce opportunities for real human interaction, which is essential for language development. Language is a social skill, and excessive reliability on AI may diminish opportunities for authentic conversations and language immersion. Students who rely heavily on AI tools may become overly dependent on technology for language learning, potentially hindering their ability to communicate effectively in real-world, offline situations.
- d) In the realm of education, there exists the looming spectre of a digital divide, a stark disparity that afflicts not only developing or underdeveloped countries who cannot adopt AI-based new technologies but also divides the

populace between rural hinterlands and bustling urban centres. Access to high-speed internet is a crucial requirement for students opting for individualized learning through AI-powered tools. However, the challenge lies in the fact that many people in the rural areas of the country do not have access to fast and reliable internet resulting in slow and delayed connectivity. Additionally, there are AI-powered tools like *Grammarly* and *Mondly* that offer expensive premium versions, making them unaffordable for multiple students from lower or middle-income brackets.

e) AI-powered writing tools cannot guarantee 100% linguistic accuracy since texts are coherent and context-dependent that consists of many cultural implications. Hence, complete appropriateness cannot be guaranteed or AI-powered translation tool for that matter cannot understand a particular region's local context or languages, idiomatic expressions, cultural nuances. In Figure 1, the translation tool *DeepL* provides a literal translation of a proverb in German "*Das Leben ist kein Ponyhof*" which means "*Life is not bed of roses.*"

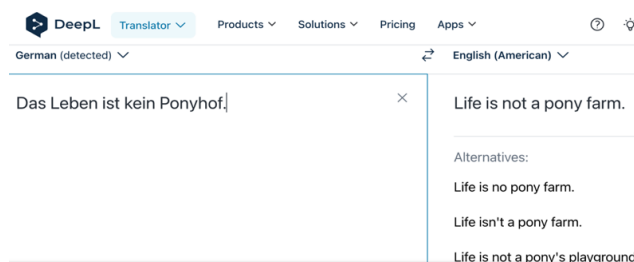


Fig. 1: Taken from DeepL Translation Tool

In Figure 2 and 3, the German idiom "*Das Blaue vom Himmel versprechen*" means "*to overpromise on something completely unrealistic.*" but the translation tools like *Google Translate*

and *DeepL* translate the idiom literally in English to "*Promise the moon*" and "*Promising the blue sky*" respectively.



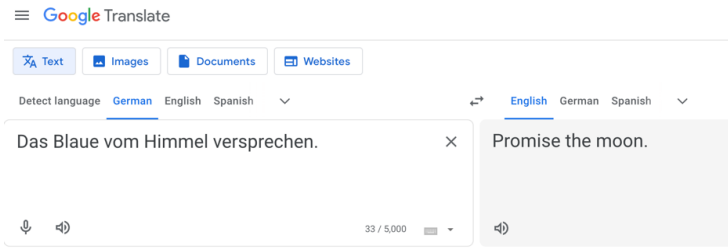


Fig.2: Taken from Google Translate

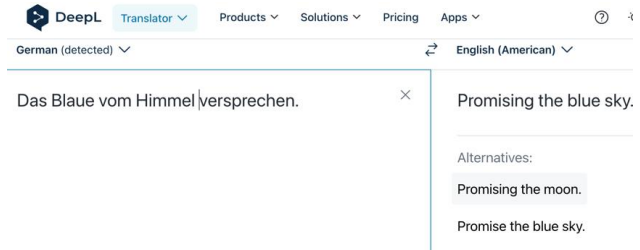


Fig.3: Taken from DeepL Translation Tool

The word “Schadenfreude” in German describes the feeling of joy that comes from someone else’s pain. The translations tools in Figure 4 and 5

were not able to translate the word in English. Even the alternatives mentioned below are not even close to the actual meaning of the word.

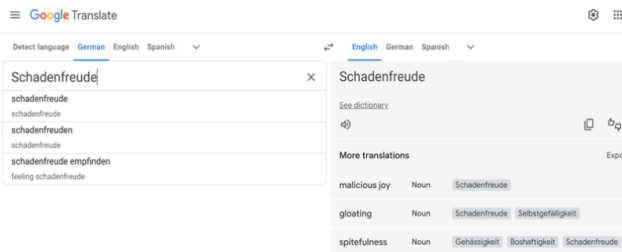


Fig.4: Taken from Google Translate

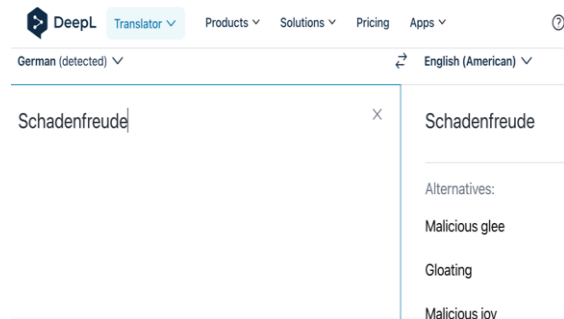


Fig.5: Taken from DeepL Translation Tool

There are many Hindi words and phrases that are cultural-specific and cannot be translated directly in German or English by the translation tools, for e.g. “Jugaad”(जुगाड़) which means to use limited resources in an innovative way to find an easy solution to a problem or to fix something using cheap, basic items. Only the human translators can understand the context of such words and translate accordingly because the meanings are complex and shaped by a particular culture. Primarily for literary translation and poems, human translators will still be better. The translation tools can only give you a gist of the passage but will not be able to give the correct translation of each word. Machine will translate what the author writes, whereas humans will translate what the author means.

f) Data privacy could be a huge concern when using AI-powered tools since language learning is a personal process and data privacy might be threatened where the server location is unclear or when it is not in accordance with EU General Data Protection Regulation (GDPR). For e.g., Digital India, a flagship programme of the Government of India with aim to transform India into a digitally empowered society and economy. So online payment transactions have become simple and quick but so has Cybertheft increased where personal or financial data are stolen. There are various cybersecurity issues, such as cloud attacks, ransomware attacks, phishing attacks which make personal data vulnerable.

g) If AI systems incorporate imbalanced or inaccurate data and algorithms, their efficacy may become uncertain or compromised.

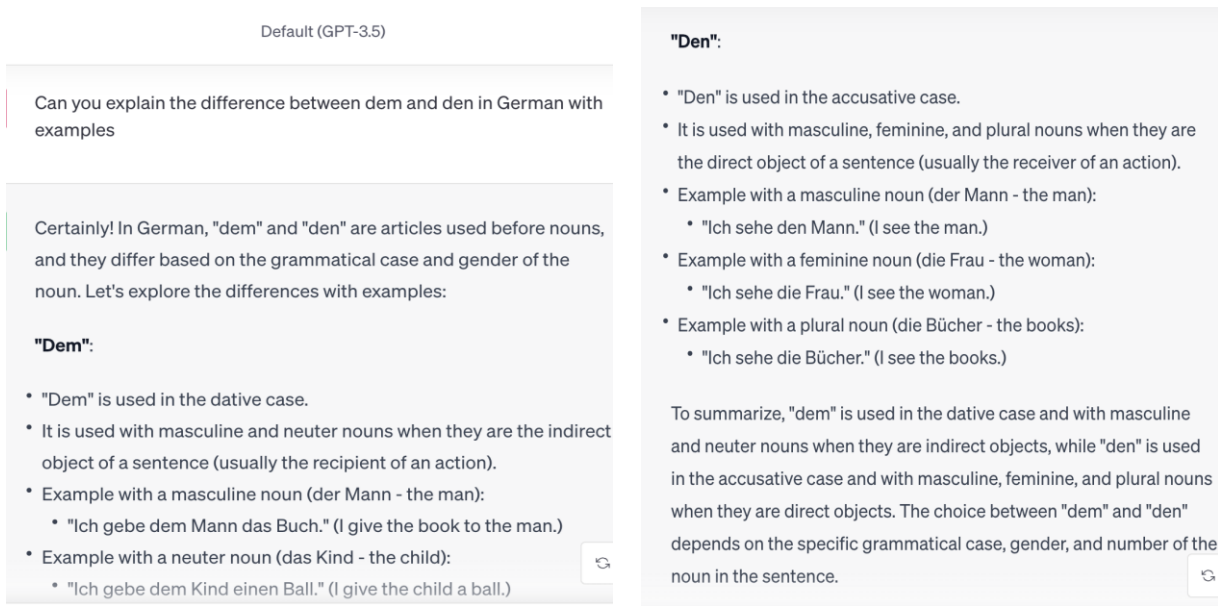


Fig.6: Taken from ChatGPT 3.5 version in 2023

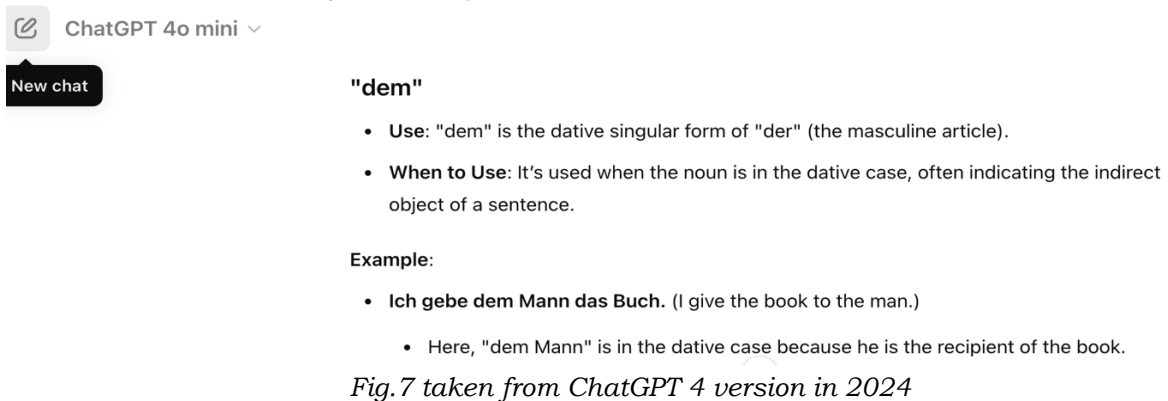


Fig.7 taken from ChatGPT 4 version in 2024

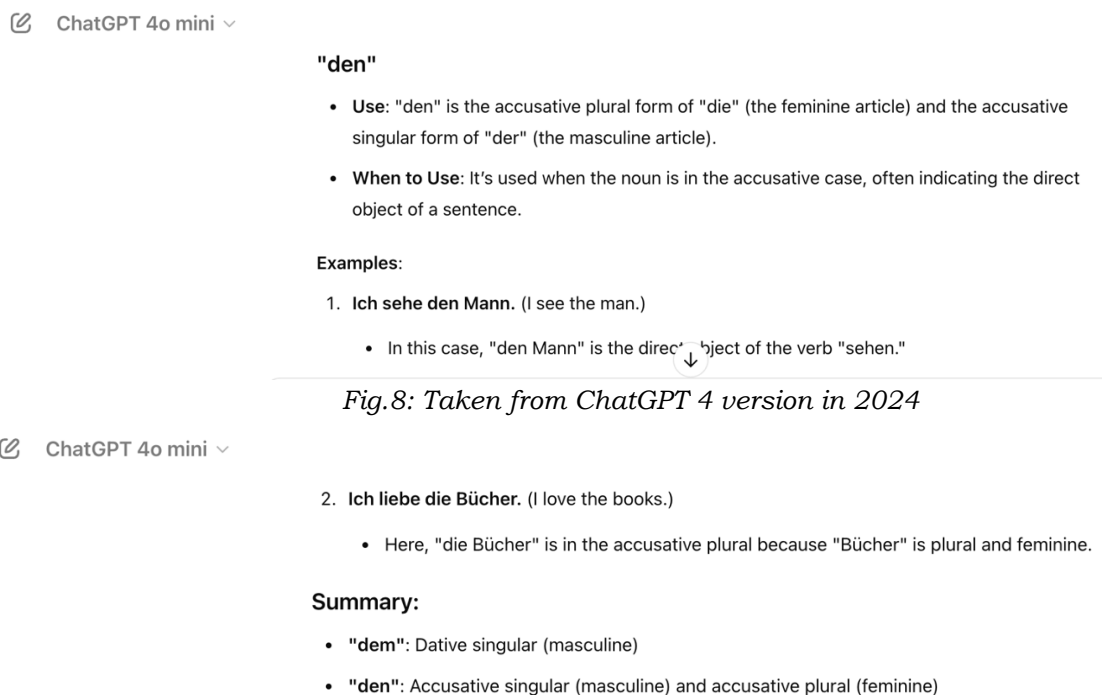


Fig.9: Taken from ChatGPT 4 version in 2024

The above Figures are categorized in two parts: a) Figure 6 was taken in September 2023 from ChatGPT 3.5 version and b) Figure 7, 8 and 9 are taken in October 2024 from ChatGPT 4 version. The questions asked in both the Figures are similar: Explain the difference between “dem” and “den” in German. The answer and the explanation given by ChatGPT in both the version for “dem” is correct, but the explanation given for “den” is incorrect and question its reliability to learn foreign language. Moreover, even after a year of data input and updates to ChatGPT, it can still provide incorrect and redundant explanations for the same question, failing to offer the correct answer.

Table 3

<b>Answer by ChatGPT in both the versions</b>	<b>Correct Answer as per the German grammatical rule</b>
“dem” is used in the dative case with the masculine and neuter nouns when they are indirect objects	“dem” is used in the singular definite dative case with the masculine and neuter nouns.
“den” is used in the accusative case and with masculine, feminine, and plural nouns when they are direct objects.	<p>“den” is used in the singular definite accusative case for masculine and the definite dative for plurals.</p> <p>E.g.- a) <i>singular definite accusative case for masculine</i> - Ich sehe den Mann [I see a man.]                      b) <i>definite dative for plurals</i> - Ich gebe den Männern das Buch. [I give the book to the men.]</p>

#### IV. THE FUTURE OF AI ?

With the advent of AI-based technology, the educational and working landscape will change or is already in progress towards change. People have major concern about their work completely being replaced by AI “Our starting point is to call

out the myth of mass automation, which has an unhealthy grip on the media and public’s attention [...] Yet for every jaw-droppingly impressive technology we hear of, there is another that silently falters without notice. IBM’s Watson computer has made several incorrect treatment recommendations for cancer diagnosis. Google Translate still struggles with large passages of text, despite years of tinkering. Nor do technologies always substitute labour.”<sup>13</sup> But it is important to put humans at the centre of AI-applications. If the shift is from technology-oriented applications to human-oriented ones, it would mean the integration of human as well as machine intelligence. People who don’t know AI might be replaced with people who know AI and how to leverage technology “Different machines will have different effects on workers. Some will de-skill jobs, reduce the bargaining power of employees, impinge on privacy and put workers under great scrutiny. Others will enliven and enlarge workers’ capabilities, help them to achieve more and better-quality work, and raise wages. Automation will create winners as well as losers.”<sup>14</sup> We are moving towards an era, where the machines and humans would co-exist. When we combine things, it has different properties. For e.g. when HCl i.e. hydrogen chloride combines with H<sub>2</sub>O i.e. water, an acidic solution is formed which is called Hydrochloric acid. HCL as a separate compound is the most volatile compound. The same way, when AI and Human will combine, then together they will do something which neither human alone can do, nor AI alone can do. The future of foreign language teaching would be more adaptive and a blend of face-to-face teaching and of individual practice and self-directed learning. AI-based technology would be a resource, a tool, an enabler for students as well as teachers which will add value to the learning process. It is a new age skill which should be introduced to the students from all disciplines. AI should complement, not replace human educators, as the human element remains essential for mentorship, emotional support, and the development of soft skills. In every profession, an authoritative decision needs to be made at some point which currently AI lacks and can only be

<sup>13</sup> Dellot B., Balarum B: Machine Learning; Pg 44

<sup>14</sup> Ibid; Pg 46

made by humans. It lacks team management and does not have emotions or moral values. It will be a combination of digital learning with content and tasks for face-to-face teaching which will remain highly significant for successful learning. The human educator role will always be important. The language learning mode will change from tradition follow-up reading to human-computer interaction. The evaluation of learning process, prediction of future performances and identification of potential problem also helps teacher to reflect on teaching activities. The evaluation results will help to supervise the whole teaching process. AI seems to push education towards the more developmental models of education. It will play a decisive role in the teaching with the formulation of teaching objectives, strategies & evaluation. The application of artificial intelligence in the language teaching is still at nascent and primary stage. With an upgradation of technical mode, foreign language teaching process will innovate and become effective in the coming future. To overcome the anticipated challenges in introducing AI, one must create awareness on the code of ethics and put strict penalty on copyright infringement and Plagiarism. AI is no different than any other technology. What is important is the privacy & security, robustness & reliability, fairness & transparency, responsibility & accountability. ChatGPT is an assistant to every human to be a superhuman. If kept in wrong hands or used for the wrong things, it could be dangerous and highly destructive for the society. Humans and AI will have to work together. So, it is not I **v/s** AI, rather it is I with AI.

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