Exploring the Multilingual Applications of ChatGPT:

Uncovering Language Learning Affordances in YouTuber Videos

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ABSTRACT

ChatGPT's ability to realistically mimic human conversation and its high level of ability to handle linguistic ambiguity opens new and exciting avenues in language learning. Building upon the technical affordances of ChatGPT, this study explores the perceptions of educational affordances when incorporating ChatGPT across languages discussed by language communities on YouTube and identifies best practices for its effective use in language education. Through inductive content analysis, this study discussed 18 languages categorized into four groups: (1) romanized languages with high resources, (2) non-romanized languages with high resources, (3) languages with medium resources, and (4) less frequently used languages. The findings reveal consensus that (a) ChatGPT is a valuable and remarkable tool for language teaching and, (b) learning and it cannot fully replace teachers, as humor, wit, and sympathy cannot be programmed. Two potentially significant issues or two gaps were identified and discussed: namely, the learning optimization gap and the knowledge comprehension gap.

KEYWORDS

Artificial Intelligence, ChatGPT, Educational Affordances, Language Learning, Multilingual Applications, YouTube

INTRODUCTION

Recent advancements in natural language processing (NLP) have resulted in the creation of powerful large language models (LLMs) such as ChatGPT from OpenAI (2022) and Google Bard (Nield, 2023). Even in the fast-paced world of technology, it is rare for a new development to make waves as quickly as ChatGPT has. In just a few months, this artificially intelligent (AI) powered language model took the world by storm, with everyone from researchers to casual Internet users buzzing about its capabilities (Hong, 2023).

Since the end of 2022, research has proliferated that discusses and evaluates ChatGPT for different aspects of natural language application. Among the notable language related research

topics include as machine translation (Hendy et al., 2023; Jiao et al., 2023; Kocmi & Federmann, 2023), question answering (Omar et al., 2023), text summarization (Wang et al., 2023; Yang et al., 2023), information extraction (Zoph et al., 2022), grammatical error detection (Fang et al., 2023), text classification (Amin et al., 2023; Kuzman et al., 2023), and stance detection (Zhang et al., 2022). Clearly, the language-related applications of ChatGPT and other generative AI tools are wide and additional uses are still emerging.

An early report from OpenAI (2022) stated that ChatGPT interacts with users in a conversational way, which enables it to ask follow-up questions, admit to mistakes, and challenge incorrect premises. Such conversational tools are not easy to design since linguistic ambiguity is characteristic of human language and is a major challenge for NLP systems. In an empirical analysis of ChatGPT's handling of linguistic ambiguity, in terms of lexical, syntactic, and semantic dimensions of ambiguity, Ortega-Martin et al. (2023) found that ChatGPT performed especially well in detecting semantic ambiguity. Their finding is vital since, although chatbots have been used in educational settings since the early 1970s (see Kohnke et al., 2023), ChatGPT's ability to realistically mimic human conversation and its high level of ability to handle linguistic ambiguity opens new and exciting avenues in language learning.

The present research, therefore, aims to investigate the perceptions of educational affordances among language learning communities when incorporating ChatGPT, a generative AI model, across various languages. Additionally, the study aims to identify and analyze best practices observed within these communities on YouTube for effectively utilizing ChatGPT in language education. By focusing on these areas, the present research seeks to contribute valuable insights that can inform the development and optimization of online language learning models, particularly in relation to generative AI technologies. In particular, the videos analyzed in this study cover 13 different languages, including English, Chinese, French, German, Japanese, Spanish, Russian, Latin, Korean, Brazilian Portuguese, Bulgarian, Greek, and Turkish. The discussions in the comments section of these videos about other less-used languages, such as Sorbian, Tajik, Irish, Kashubian, and Latgalian, were also analyzed.

CHATGPT IN LANGUAGE LEARNING

The integration of technology in language education has gained significant prominence, prompting global attention from educators (Koraishi, 2023). One notable advancement in 2022 was the introduction of ChatGPT on November 30, 2022. Since that launch, scholars have extensively discussed and explored the potential implications of generative AI, particularly ChatGPT, for online language learning. For instance, Authors et al. (2023, under review) examined 140 YouTube videos for the perspectives and implementations of ChatGPT by content creators in language teaching across different languages. In that exploration, they highlighted the benefits, drawbacks, and concerns associated with the integration of AI tools in language learning. During their review, four main categories of online language learning creators were identified: (1) educators, (2) learners, (3) technology professionals, and (4) e-learning providers. Educators, especially English and Japanese teachers, were the majority, followed by learners and tech field professionals.

Even though generative AI such as ChatGPT is a nascent field, there already have been a series of intensive investigations and results. For instance, Baskara and Mukarto (2023) explored the integration of ChatGPT into language courses, discussing its benefits and challenges for higher education. In addition, Kohnke et al. (2023) examined the affordances of ChatGPT for online language teaching and learning. Their study presented the necessary digital competencies for both teachers and learners to utilize this chatbot in an ethical and effective manner, particularly in supporting language learning. These competencies are discussed from three key perspectives: (1) technological proficiency, (2) pedagogical compatibility, and (3) social awareness. Also worth noting, at the end of their article, Kohnke et al. (2023) detail 10 insightful suggestions for improving one's English with generative AI tools like ChatGPT.

In another recent study, Koraishi (2023) examined material development and assessment in teaching English as a foreign language (EFL), highlighting ChatGPT as a valuable tool for EFL teachers. The research emphasizes the importance of prompt design and understanding AI's potential, advocating for its inclusion in official teacher training programs. This stance ensures that pre-service and in-service teachers acquire the necessary competencies to adapt to the changing educational landscape and effectively utilize technology to enhance their teaching practices.

Hong (2023) similarly discussed the benefits and opportunities of ChatGPT for foreign language teaching such as authentic language use and the incorporation of a personal language tutor that provides instant feedback while clarifying some misconceptions. In noting its disruptive potential in education, Hong also suggested a research agenda that includes some valuable directions for studying ChatGPT's usage in language teaching and learning. Essential to such an agenda and review of disruptive capabilities, Ali et al. (2023) collected data from teachers and students who had early access to ChatGPT. The study revealed positive impact of ChatGPT on reading and writing skills, and neutral impact on attitudes toward listening and speaking skill.

PURPOSE AND RESEARCH QUESTIONS

LLMs demonstrate impressive multilingual capability; however, the performance varies substantially across different languages (Huang et al. 2023). Lai et al. (2023) discussed the performance of ChatGPT on various multilingual datasets. To better highlight ChatGPT's potentials and limitations, their experiments consider 37 diverse languages, characterizing high-, medium-, low-, and extremely low-resource languages, based on their data ratios in the CommomCrawl corpus containing data obtained through years of Web crawling. The results suggest that ChatGPT's performance is generally better for English than for other languages, especially for higher-level tasks that require more complex reasoning abilities. In addition, the performance differences can be substantial for some tasks and lower-resource languages but seem smaller for higher-resource languages (Lai, et al., 2023).

To address these disparities, LLM researchers are working on a new method called cross-lingual-thought prompting (XLT) to improve the multilingual capability of generative AI technology such as ChatGPT, with the goal of enhancing the performance of LLMs across different languages by stimulating user cross-lingual and logical reasoning skills (Huang et al. 2023). Building upon the technical affordances of ChatGPT, this study seeks to investigate the following questions within language teaching and learning communities on YouTube:

1. How do online language learning communities in YouTube perceive the educational affordance of incorporating ChatGPT across different languages?
2. What are best practices for utilizing ChatGPT in language education, as observed within these communities on YouTube?

With the goal of helping modify online language learning models to account for generative AI, 45 videos on YouTube were thoroughly reviewed to identify relevant information related to perceived affordability (see Appendix). It is critical to point out that the term "community" was chosen for this research because the researchers studied both the individual YouTuber videos as well as the comments posted regarding these videos.

METHODS

Elo and Kyngäs (2008) recommended the use of inductive content analysis for analyzing multifaceted data and situations where knowledge is fragmented. Given the exploratory nature of this research project, an inductive content analysis research design was chosen as the initial step to gain insights

into how various language teaching and learning communities on YouTube perceive the educational affordances of ChatGPT. The content analysis served as a means to identify and describe the different focal points of attention of individual YouTubers as well as different language communities that sprung up around their videos (see Stemler, 2000).

Video Selection

To identify videos for analysis, a systematic approach was employed. Two rounds of research were conducted, with the first round from 12/15/2022 to 4/10/2023; and the second round from 4/11/2023 to 5/30/2023. The second round aimed to verify the results yield from the first round, remove deleted videos, and add new releases. The following steps were followed:

1. **Search Strategy:** Relevant search terms related to ChatGPT integration in language learning and teaching were identified. Search terms such as, "ChatGPT AND (Français OR French)" were used.
2. **Search and Filtering:** The identified search terms were used to conduct searches on YouTube. The search results were then filtered based on relevance, view count, and content creator quality criteria. The refined criteria outlined in Table 1 were applied during the filtering process.

Table 1. Criteria for video selection

Criteria	Description
Quality and Engagement	Content creators with a substantial number of subscribers and high levels of engagement were prioritized. This criterion ensured that the selected videos would likely to have a significant number of comments, providing sufficient data for content analysis of YouTube videos and comments.
Uniqueness and Relevance	Content creators offering unique insights, perspectives, or approaches to integrating ChatGPT across different languages were preferred. The inclusion of videos that focused on or discussed less widely used languages was prioritized.
Diversification	Content creators were selected from various backgrounds and perspectives, including educators, AI experts, language learning enthusiasts, and individuals with expertise in multilingual integration. This criterion aimed to include a wide range of viewpoints and experiences.
Validity and Credibility	Content creators known for providing accurate information, supported by reliable sources and evidence, were given preference. Channels that demonstrated a commitment to fact-checking and rigorous research were considered trustworthy for inclusion.

3. **Sampling:** A representative sample of videos meeting the selection criteria was chosen. The sample aimed to encompass a diverse range of content creators, languages, and perspectives. The sample size was determined based on the availability of relevant videos meeting the selection criteria. Not too surprisingly, English as a lingua franca is the most popular language that is discussed in these videos, while less widely used/taught languages often had a limited number of available videos, resulting in a smaller sample size due to the scarcity of released content in those languages. This wide diversity in video resource availability for different languages is also related to the capacity of AI trained with datasets in only a limited number of languages.

Content Analysis

Two rounds of analysis were conducted following Haney et al.'s (1998) four steps of emergent coding, focusing on the selected videos and the associated comments. The videos served as the primary data source, whereas the comments contributed to secondary data analysis.

To begin with, the videos were categorized based on the languages represented, allowing for the application of open coding. Each video was assigned descriptive labels or codes, capturing the main themes and concepts conveyed in the content. This open coding phase facilitated the exploration of diverse perspectives and ideas within each language community.

Following the open coding phase, the second round of analysis involved axial coding. In this stage, the initial codes and categories from the first round were further organized and refined. The aim was to identify relationships between the codes and explore common themes across the different language communities. This process allowed for a deeper understanding of the nuances and variations in perceptions within each community. Through the process of selective coding, the most relevant and significant categories or themes were identified. This step emphasized the comparison of nuances within different language communities, highlighting the distinctive perspectives and insights that emerged from the analysis.

FINDINGS

In this research, we discovered that 18 languages were discussed by language communities on YouTube; undoubtedly, more such language communities will appear in YouTube in the near future. Of the discussed languages, in addition to English, most were categorized as "high resource" languages as defined by Lai et al. (2023), including Japanese, Chinese, French, Spanish, German, Portuguese, and Russian. Of the languages revealed by our data, Korean, Bulgarian, Greek, and Turkish were categorized as "medium resource" languages. However, Lai et al.'s (2023) research did not include the remaining six languages, Latin, Sorbian, Tajik, Irish, Kashubian, and Latgalian.

The following section discusses the perceptions of the YouTubers we analyzed regarding the educational affordance of ChatGPT across different languages, categorized into four groups: (1) Romanized Languages with High Resources, (2) Non-Romanized Languages with High Resources, (3) Languages with Medium Resources, and (4) Less Frequently Used Languages with smaller language communities on YouTube.

Romanized Languages With High Resources

ChatGPT has been well-received by YouTube communities exploring the tool for English, Spanish, German, French, and Portuguese. They have identified several major educational affordances for language teaching and learning:

(1) ChatGPT is accessible to everyone in a user-friendly conversational format and it consolidates information from multiple sources, delivering concise responses and saving learners time in their language learning journey.
(2) ChatGPT addresses the need for targeted vocabulary learning by offering relevant examples and practice questions, distinguishing the nuances between words, and explaining phrases used in different contexts. This feature proves highly valuable for beginners, intermediate learners, and teachers, especially when textbooks lack exercises for specific vocabulary sets.
(3) ChatGPT is a "powerful" (Ohlala French Course, 2023) and "incredible" (Francais avec Pierre, 2023) tool for creating customized exercise questions. For example, it can provide a certain quiz type (e.g., MCQ), or provide questions based on specified text sources (Francais avec Pierre, 2023).
(4) ChatGPT excels in providing satisfactory answers about the languages, including vocabulary, grammar, and culture. Ohlala French Course (2023) attests to the precision, clear explanations, and inclusion of examples in ChatGPT's responses, as described as "assez précis, bien expliqué et avec des exemples" (quite precise, well explained, and with examples) (1:42).
(5) ChatGPT showcases its ability to converse with language learners in the target language at specified proficiency levels and provide timely support and comprehensible input (Krashen, 1982). Mark Bacon (2023) shares his experience of conversing with ChatGPT in Brazilian

Portuguese. By refining his prompt, including specifying a level below the Common European Framework of Reference for Languages (CEFR) level A2 and excluding past and future tenses, he successfully engaged in several rounds of conversation with ChatGPT. Bacon appreciated the translations of new words and received valuable feedback, commenting, "Brilliant! That's a really solid tip!" He noted that excluding specific tenses in natural conversation is challenging, even for native speakers, due to "the constant flow of thought being turned into words."

However, even for the high-resource Romanized languages, ChatGPT is not "a perfect language expert" (Learn German with Herr Antrim, 2023); while its responses assume a definitive tone, they are not always guaranteed to be correct. This group of YouTubers reminds viewers that ChatGPT is not a "certified teacher" (Online French Course, 2023), and caution should be exercised especially when seeking grammar-related answers (Gally, 2022; Learn German, 2023; Ohlala French Course, 2023; Polyglot Secrets, 2023). As Ohlala French Course comments, "It works, but not perfect" (Ohlala French Course, 2023, 9:55). Even for vocabulary support, which is claimed by many YouTubers as a special strength, there are times it is not perfect (Gally, 2022). For example, it falls short of explaining nuanced differences between the two German words "Dean" and "Dame" (Learn German, 2023). There were additional limitations identified by the YouTubers in using ChatGPT for learning German. For example, it struggles to fully understand German idioms (Learn German, 2023, viewer comments). It may also encounter difficulties in comprehending cultural contexts, which can be crucial for language learners.

In the videos we reviewed, the French language as produced by ChatGPT was reported to be unnatural sometimes. A French teacher (Learn French with Elisabeth – HeloFrench, 2023) found several example sentences provided by ChatGPT to be "weird." For instance, ChatGPT provided the phrase "Je veux donner un cadeau " to express "I want to give a gift." The teacher commented, "we don't say this" [English translation] and suggested using "je veux offrir un cadeau" instead as it carries a more polite and gracious connotation. Similarly, Ohlala French Course comments that she would say "Je vasis mettre la pomme dessus ou Je vais la mettre dessus" (i.e., I'll put the apple on top or I'll put it on top), rather than "Je vais mettre la pomme sur la table. Je vais y mettre" (i.e., I'm going to put the apple on the table. I'll put it there). Here the pronoun y replaces "sur la table" (i.e., on the table).

Unlike for non-Roman languages, ChatGPT has been reported as a helpful resource for learning grammar topics. It can correct grammar mistakes and provide explanations for the changes made. It has demonstrated proficiency in explaining "dative" cases, as observed in the feedback from Learn German (2023). However, it struggles with advanced grammar topics, particularly in generating exercises related to possessive pronouns, possessive adjectives, and expressing possession without using the genitive case as reported in Learn German (2023). It also faces difficulty distinguishing between strong and weak verbs when asked to create exercises. Additionally, a comment on Hadar's video (Accent's Way English with Hardar, 2023) warns that it is important for English language learners to specify the English variety they are learning due to AI bots' strong bias towards American English. For instance, the usage of present perfect tenses varies across different English variations, resulting in mixed and incomplete results.

Despite these limitations, the online language communities that we observed in YouTube recognize that advancements in AI are expected to further enhance its capabilities in the near future. As indicated, ChatGPT has already shown impressive performance. French teachers on YouTube have expressed overwhelmingly positive views, and believe that "it will get better, but still it's amazing" (Francais avec Pierre, 2023, 4:20).

Non-Romanized Languages With High Resources

Compared to the communities that have formed around Romanized languages with high resources, communities in non-Romanized languages with high resources, including, Japanese, Chinese, and

Russian, are comparatively cautious and reserved in their remarks about AI support, particularly when it comes to explaining advanced grammar concepts. Nevertheless, in similarity to the high-resource Romanized Languages community, non-Romanized languages with high resources benefit from ChatGPT's capabilities of: (1) providing targeted vocabulary learning, (2) generating text for reading or vocabulary practice with specified words, (3) offering reading practice, (4) engaging in conversation, (5) correcting mistakes, and (6) explaining basic grammar.

One highly significant value is vocabulary learning. ChatGPT's ability to explain the nuances between words has received high praise from ShuoshuoChinese (2023). This capability is especially valuable in languages like Chinese, where distinguishing between similar words can be challenging. ShuoshuoChinese highlights how ChatGPT has excelled in providing clarifications for Chinese words, even for tricky distinctions such as 经⃞ and 经⃞, 引起 and ⃞致.

Another valuable application of ChatGPT is generating text for reading or vocabulary learning purposes, with the option to specify certain words. This feature enables learners to practice reading comprehension and expand their vocabulary in a targeted manner. Yaroslava Russian (2023) presents an alternative method to enhance vocabulary and reading comprehension skills. She recommends having ChatGPT generate text by "feed[ing] it a piece of text and have it generate a simplified version."

Regarding language-specific challenges, ChatGPT helps in breaking down sentences and explaining word meanings and parts of speech. Such techniques are particularly useful for languages like Japanese and Chinese that lack word spacing. By using the simple prompt "Explain this sentence word by word with POS: SENTENCE" as demonstrated by That Japanese Man Yuta (2023b), ChatGPT breaks down the sentence into words, explaining their meaning and parts of speech in the sentence.

In their YouTube videos, Yaroslava Russian (2023) and That Japanese Man Yuta (2023b) have highlighted the usefulness of ChatGPT in explaining basic grammar concepts. Yaroslava Russian (2023) asks about negation in Russian, a topic that often confuses students regarding which case to use, either genitive or accusative. While the answer provided by ChatGPT is not entirely flawless, it offers insights and addresses certain nuances. Interestingly, Yaroslava noticed that ChatGPT's explanations were clearer when the communication was conducted in English rather than Russian. Similarly, That Japanese Man Yuta (2023b) also praised ChatGPT for responding with fairly precise answers when prompted for Japanese word inflections.

In terms of limitations and problems, the high-resource non-Romanized Language communities also noted similar issues and challenges that were found by the high-resource Romanized language communities. However, the problems seem to be more serious in this group and there are some additional language-specific problems. These problems include: (1) unnatural (and sometimes erroneous) and boring text generated by ChatGPT, (2) problems with explaining tricky grammar, (3) correcting mistakes in writing for advanced learners, (4) inaccurate or wrong information about some language facts, including explaining tones for Chinese and pitch accent for Japanese, (5) language output at a specified level, and (6) providing teaching support such as creating quiz questions.

Similar to what the French teacher discussed in the section above, though with heightened severity, Yaroslava Russian (2023) reported that the language generated by ChatGPT sometimes is not natural and, at times, even wrong. She found this problem when prompting ChatGPT to generate some sentence examples illustrating the use of the expression "На седьмом небе" (in seventh heaven). Of the 10 examples provided by ChatGPT, most of them were problematic and some were erroneous. The example "Он купил новый автомобиль и теперь едет по дороге на седьмом небе" (i.e., He bought a new car and is now driving down the road in seventh heaven). Unfortunately, according to on Yaroslava Russian, this expression does not make any sense. Similarly, that Japanese Man Yuta (2023a) cautions against using ChatGPT as a primary source for learning conversational Japanese due to its limitations in choosing (or omitting) particles for different contexts. He mentions that this is a problem for most language-learning textbooks, too.

Both a Chinese teacher (ShuoshuoChinese, 2023) and a Russian teacher (Yaroslava Russian, 2023) commented that the text generated by ChatGPT is usable and it is useful for ChatGPT to generate

text that contain a vocabulary list being learned. However, for students at intermediate and advanced levels, the text generated by ChatGPT is boring and typically lacks the enjoyable aspects of reading a story: "И удовольствие от прочтения этого рассказа ты, наверное, не испытаешь." (i.e., And you probably will not experience the pleasure of reading this story.). It is better to use authentic text or text created by teachers. For instance, Shuoshuo Chinese (2023) strongly recommends students to use the text she wrote for her students.

In terms of grammar, the unstable performance of ChatGPT is noticed in multiple cases. ShuoshuoChinese (2023) found that ChatGPT's ability to explain tricky Chinese grammar, such as 把字句 and 了, is not that impressive. Rita Mandarin Chinese (2023) also rated the explanation of 了 as 5 out of 10. These grammatical structures pose challenges for learners and require the expertise of good human teachers. Similarly, That Japanese Man Yuta (2023b) noted that ChatGPT's explanations for the difference between は and が in Japanese were not satisfactory. While ChatGPT provided an effective introduction to verb inflections, it made mistakes when providing examples for a specific form (u-verb). Out of the 10 words given, 2 of them were actually ru-verbs. However, when prompted again using GPT 4, the 10 words provided were correct.

ChatGPT's ability to correct mistakes in writing is more effective for beginners than experienced language learners. It may focus on trivial errors while overlooking obvious ones. In terms of this issue, ShuoshuoChinese (2023) and Yaroslava Russian (2023) both observed instances where ChatGPT failed to spot errors in their texts.

In addition, Rita Mandarin Chinese (2023) points out that ChatGPT's ability to answer factual questions about languages can be "confidently wrong." It fails to address advanced tone changes in Mandarin, such as the third tone change in "nǐ hǎo" where the third tone of "nǐ" changes to the second tone "ní" (Rita Mandarin Chinese, 2023). Similarly, Dogen (2023) and Dope Chinese with Gloria (2023) identify errors in ChatGPT's responses regarding pitch accents such as 雨 (あめ) (rain) and Jyutping for Chinese characters such as sing3 for 兴, and sei2 for 是. We tested the same word again and ChatGPT continued to offer the wrong answer.

That Japanese Man Yuta (2023b) and Yaroslava Russian (2023) both gave examples of ChatGPT "inventing" language or information that does not exist; for example, Russian songs that do not exist or a Japanese word that does not exist (☒みまみた, which is a wrong word used in a Japanese video, and the correct form should be ☒みました). In effect, ChatGPT appears to recycle information learned from the internet without critical analysis.

ChatGPT's ability to generate text suitable for learners of different proficiency levels is inconsistent. Eric Williams (2023) requested a list of vocabulary for levels B1 and B2 in Japanese but found that the words provided were often either too basic or too advanced. Similarly, a Cantonese teacher (Dope Chinese with Gloria, 2023) raised concerns about ChatGPT's understanding of proficiency levels defined by frameworks like American Council on the Teaching of Foreign Languages (ACTFL) and CEFR. Therefore, its comprehension of these distinct proficiency levels remains uncertain.

Lastly, educators have high expectations for ChatGPT as a teaching assistant, including tasks like creating quiz questions (Baskara & Mukarto, 2023; Kohnke et al., 2023; Koraishi, 2023). However, feedback from ShuoshuoChinese (2023) suggests that the generated quizzes may require modifications. Both teachers and learners advise against relying solely on ChatGPT for language learning, but rather using it as a supplementary tool, as ShuoshuoChinese (2023) concludes at the end of her video:

"In a nutshell, I think ChatGPT can be a great auxiliary tool and a good TA for me as a teacher. But you cannot fully rely on it. So, if I were a beginner in the Chinese language, I would first find a teacher to motivate me and learn with them systematically. I will also use ChatGPT as a tool for me to practice my vocabulary my reading comprehension and also check the nuances between different words."

TaiseiJP (2023) also emphasizes the importance of having a basic understanding of the language before utilizing ChatGPT. He also advises not considering ChatGPT a complete substitute for textbooks and teachers.

Languages With Medium Resource

The opinions regarding ChatGPT's language learning and teaching affordances are inconsistent among Korean, Greek, Bulgarian, and Turkish language communities. Turkkenya Lifestyle (2023) prompted ChatGPT to teach her Turkish as a beginner and received a lesson on the Turkish alphabet, basic phrases, greetings, and upcoming lessons on food and drink vocabulary. Given this experience, she highly recommended learners use it. In the case of Korean, the community has praised ChatGPT for its ability to offer quick refreshers on specific grammar structures that learners have previously studied but had temporarily forgotten. The YouTube community also noted that ChatGPT saves time and effort and can simulate conversations with specific characters, such as a Korean barista. Overall, they appreciate its adaptive translation capabilities. Most of them found that ChatGPT's vocabulary and sentence formation were more sophisticated than they expected. Meanwhile, it has been emphasized that ChatGPT is not perfect and should be fact-checked, as it may have limitations in literal translations.

On the other hand, the feedback on ChatGPT's performance in teaching Bulgarian has been more critical. Polyglot Secrets (2023) identified multiple inaccuracies in the generated information, particularly in relation to Bulgarian grammar, such as the mistaken description of the complexity of its cases, and inconsistent information on the number of grammatical genders in Bulgarian (at first 3 which is correct and later 2, which is wrong). While there were some correct aspects regarding verb conjugations and aspects, the overall accuracy was questioned. The same polyglot language learner was surprised to find, after seeing multiple mistakes for Bulgarian, ChatGPT's description of the basics of Greek grammar was fine. However, she pointed out the problematic description of the subjunctive mood.

Other Less Frequently Used Languages

When it comes to less frequently used languages, ChatGPT's educational affordances are limited due to insufficient training data. For instance, there is only one video addressing Latin. However, this video has sparked extensive discussions, with 383 comments as of June 11, 2023. The comments below include an extensive discussion of other less common languages, such as Sorbian, Tajik, Irish, Kashubian, and Latgalian.

Upon analysis, it has been observed that ChatGPT encounters difficulties with certain aspects of Latin grammar and vocabulary, occasionally making mistakes and relying more on late Latin rather than classical Latin. In particular, our video and comment analyses indicated that ChatGPT struggles with double-relative clauses unless additional demonstrative counterparts for each relative pronoun are provided. Despite these flaws, ChatGPT can still provide basic answers and engage in discussions about topics like history and philosophy in Latin. It also offers translations from Latin to English, although the accuracy of these translations is not guaranteed, and it is not recommended for important translations such as tattoos. Across the 45 videos we analyzed, many video comments shared a positive experience with ChatGPT, stating that it is superior to Google Translate.

People find ChatGPT helpful for explaining contextual usage of phrases and words rather than relying solely on it as a translator or chatbot. One video comment that we observed suggested utilizing ChatGPT's mistakes as a teaching tool in language education. For instance, students can generate questions, analyze the AI's responses for errors, and improve their understanding of language content and grammar. Another user recommended starting with a prompt that specifies a period of Latin (e.g., classical Latin) to obtain more accurate and authoritative responses.

YouTuber communities have reported issues with languages such as Sorbian, Tajik, Irish, Kashubian, and Latgalian. In the case of Sorbian, ChatGPT attempted to answer in various Slavic languages instead of Sorbian itself. For Tajik and Irish, users found the AI's responses to be subpar, indicating that it may have difficulty with certain linguistic nuances and lack sufficient training data for these languages. In interactions with Kashubian and Latgalian, ChatGPT responded in Polish and Latvian respectively, showing limitations in its understanding and accuracy. These examples highlight the challenges faced by ChatGPT in performing well with less common languages, often resulting in inaccurate or inappropriate responses. Given these drawbacks and limitations, learners of some less commonly taught languages may not be able to take advantage of this tool yet.

Best Practice Cases

Disruptive technologies such as ChatGPT are not designed for a specific application; instead, they offer users a wide range of possibilities to explore and utilize in innovative ways (Li et al., in review; Rospigliosi, 2023). Yang (2023) provides practical tips incorporating Large Language models like ChatGPT in the classroom for teachers. On YouTube, early adopters have showcased myriad diverse approaches of using ChatGPT in language learning. We have included the titles of these videos and the YouTuber names in the Appendix as we believe they are valuable to watch in their original form; especially, since we are unable to encompass all the best practices found in these 45 videos in a single paper. In the section, we present four representative best practice cases and illustrate three exemplary learning activities empowered by ChatGPT.

Case One Intensive Reading With ChatGPT (NiJohnGo, 2023)

Case one explores the effective utilization of ChatGPT for intensive reading in multiple languages. Intensive reading involves meticulously understanding uncertain aspects of a text, including vocabulary, grammar, word usage, and collocations. Before the emergence of ChatGPT, intensive reading was predominantly led by teachers due to their expertise and knowledge in guiding students through the comprehension process (Mart, 2015; Nation, 2004). However, with the introduction of ChatGPT, it is plausible that there will be a paradigm shift in the field of intensive reading. As indicated, learners now have access to an advanced language model that can provide immediate explanations and clarifications, mirroring many aspects of the role of a teacher. This technology will empower learners to engage in independent intensive reading.

NiJohnGo's videos showcase how ChatGPT can be employed as a powerful tool for independent intensive reading in different languages by recording himself reading in Japanese, Spanish, Chinese, and French. During the intensive reading process, NiJohnGo engaged in continuous reading in each language until encountering points of uncertainty and came up with three questions for ChatGPT. In one instance, he encountered a sentence containing an expression he had not seen before, specifically, "枠". Although "無料" (free) is a basic word, he was unfamiliar with the character (or kanji) that followed it as in 無料枠. To gain a better understanding, he sought clarification from ChatGPT. He further pursued his learning by seeking distinctions between these two similar expressions (See *Figure 1*).

Figure 1. Screenshots from language learning with Chat GPT: Intensive reading in Japanese, Spanish, Chinese, and French by NiJohnGo (Retrieved from https://www.youtube.com/watch?v=vBbGGn0yxbo&t=160s)
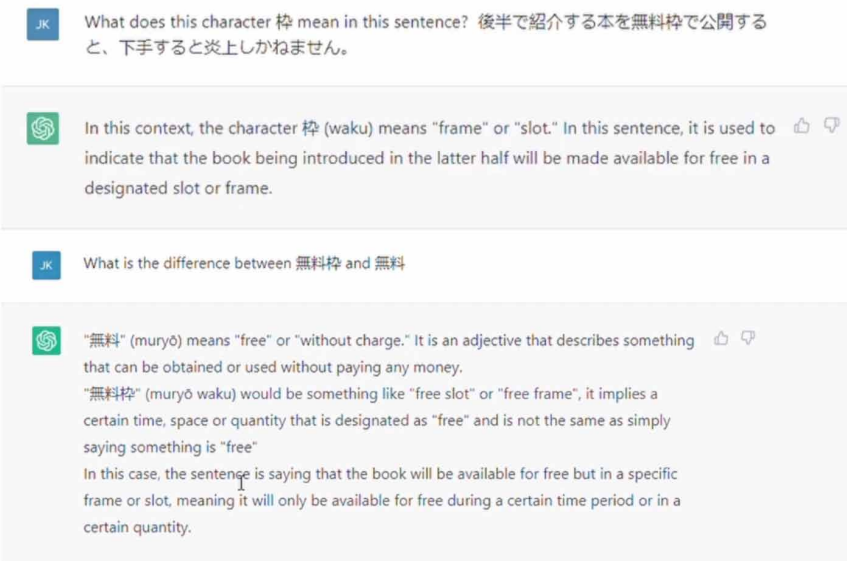
Upon receiving responses from ChatGPT, NiJohnGo assessed the accuracy and usefulness of the provided explanations through cross-referencing the information with external sources, Youglish (i.e., an online platform that offers English-language YouTube videos with subtitles where users can search for specific words or phrases and find video clips with those words spoken, along with the corresponding subtitles). When encountering a word that has limited appearances on Youglish and few example sentences on the internet, NiJohnGo decided not to focus on learning it. Instead, he prioritized studying high-frequency words by creating Anki flashcards, a spaced repetition flashcard program for efficient learning.

Case Two Interactive Text Adventure Game (Schermaul, 2022)

The use of ChatGPT has opened up new possibilities for personalized game-based language learning and teaching, particularly for individuals without programming skills. Case 2 starts with an adventure game designed to help people learn German while having fun. Below is the prompt provided by Dustin Schermaul for creating the text adventure.

I want you to act as a text-based video game adventure in German. Your role will be to provide an interactive, text-based adventure game in German to a player. You should be able to present a series of choices and respond appropriately based on the player's decisions. You should be able to provide a rich, immersive game experience and help the player improve their German language skills as they play. You should not provide any translations of the player's responses, but rather challenge them to use their German language skills to progress through the game. Your first question is: Was willst du tun? (Schermaul, 2022)

ChatGPT responded by creating a game set in a medieval city threatened by an evil wizard. The player's role was to defeat the wizard and save the city. The game presents choices and prompts to the player, who must respond appropriately.

Based on the experience and to make the game more accessible for intermediate English learners, the prompt was revised by the authors. The revised prompt provides a clearer understanding of the content while accommodating the needs of English learners, as shown in the screenshot below.

As indicated in Case 2, ChatGPT is shown to be able to create adaptive games for a personalized and engaging learning experience. It enables the game to offer targeted challenges, feedback, and support tailored to each user's specific learning preferences and progress (Dyulicheva & Glazieva, 2022). Figure 2 also demonstrates that learners can seek clarification and receive support in real-time, making the game more inclusive and conducive to language development.

Case Three PPP Approach With ChatGPT (English at University – Learning English with Pros, 2022)

In Case 3, Dirk Siepmann advocates using ChatGPT, DeepL, and Youglish in a Present, Practice, Produce (PPP) paradigm (Lewis, 1993) to enhance language learning, both for self-directed and classroom settings. Figure 3 shows a detailed breakdown of the steps.

Case Four Personalized Vocabulary Table and Reading Materials (ShuoshuoChinese, 2023)

According to Zhang et al. (2020), technology-supported personalized learning has shown positive outcomes in academic achievement, student engagement, attitudes toward learning, and the development of meta-cognitive skills. As an example, in Case 4, ShuoshuoChinese recommends using ChatGPT to generate vocabulary tables tailored to individual learning needs. By inputting recently learned Chinese words, learners can request ChatGPT to generate a table containing corresponding English translations, Chinese explanations, example sentences, and quizzes (see Figure 4 for the prompt). While acknowledging the generally accurate translations and Chinese explanations provided

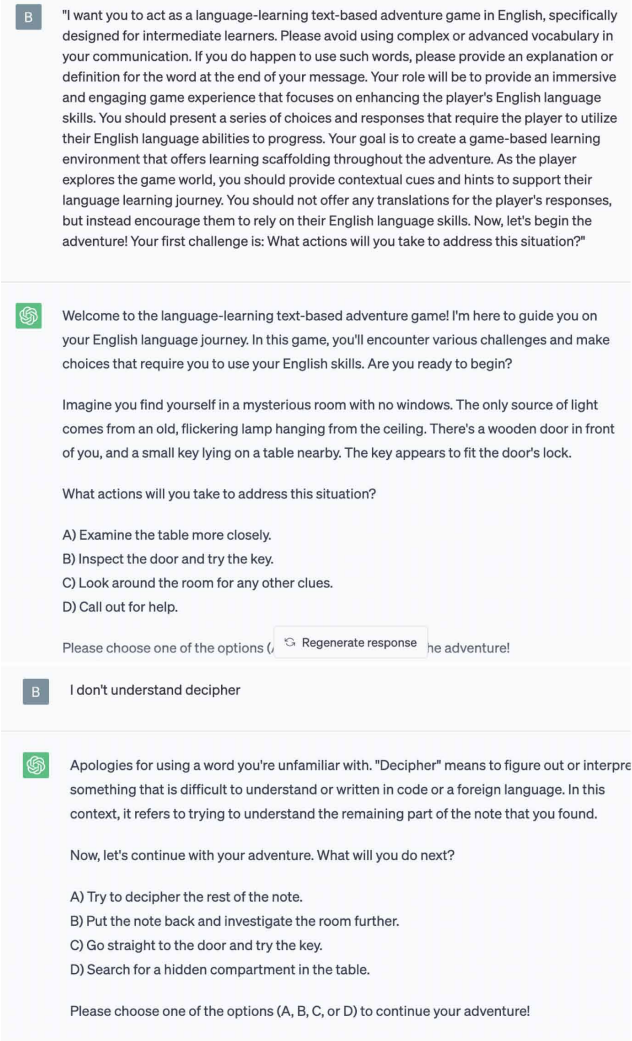**Figure 2. Screenshots of playing interactive text adventure game in English**
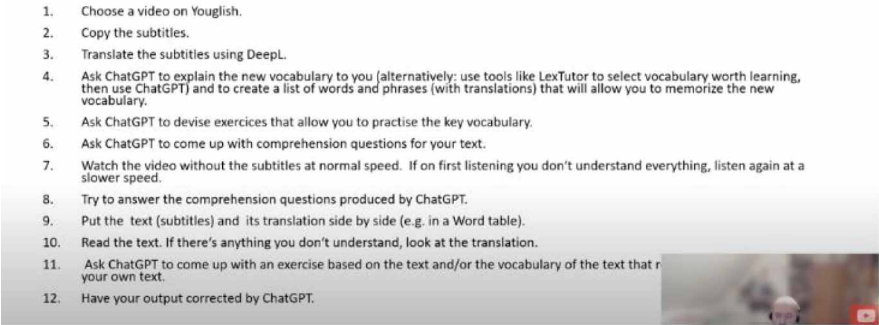

Figure 3. Screenshots from "ChatGTP for Language Learning" by English at University – Learning English with Pros (Retrieved from https://www.youtube.com/watch?v=dZbOR0lrtR4)

by ChatGPT, ShuoshuoChinese suggests refining the quizzes to ensure a more diverse assessment of knowledge.

In the realm of reading materials, ShuoshuoChinese advises learners to leverage ChatGPT for generating Chinese stories and articles. By inputting a list of learned vocabulary words, learners can prompt ChatGPT to generate content (e.g., stories, news articles, poems, letters, etc.) that incorporates these words. This approach allows learners to review and reinforce vocabulary in various sentence contexts while practicing their reading skills.

Figure 4. Screenshots from "How to MAXIMIZE the use of ChatGPT's current functions to learn Chinese in 2023 (The Ultimate Guide)" by Shuoshuo Chinese ⊠⊠中文 (Retrieved from https://www.youtube.com/watch?v=-JgGtrjhFis)
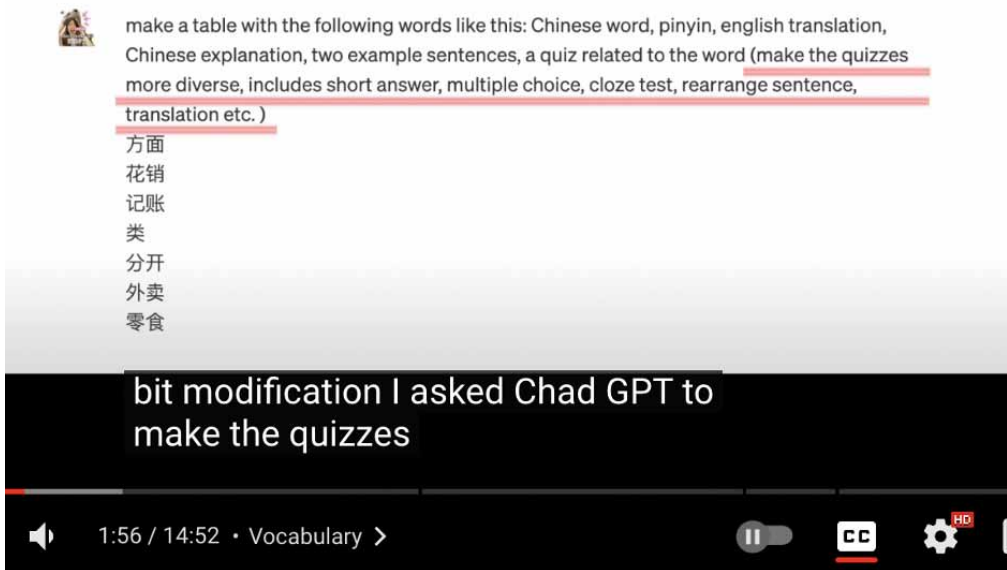
Three Example Learning Activities Empowered by ChatGPT
Are Listed Below (Learn German, 2023)

I.   Word Associations:
1.   Choose a starting word or phrase.
2.   Prompt ChatGPT to generate a word associated with the starting word. For example, "Make a word association with 'cat'."
3.   ChatGPT will provide a response with a word associated with "cat," such as "dog."
4.   Use the generated word as the new starting word and repeat the process by asking ChatGPT to make a word association with the new word.
5.   Continue the cycle, building a chain of associated words.
II. Word Puzzles:
1.   Specify the topic of the puzzle; for example, "Make a puzzle related to animals."
2.   Prompt ChatGPT to generate a puzzle with missing answers or blanks related to the specified topic.
3.   Ask ChatGPT to provide the puzzle without giving away the answers immediately.
4.   Solve the puzzle by filling in the missing answers and compare them to ChatGPT's responses.
5.   If desired, ask ChatGPT to reveal the correct answers or provide feedback on your solutions.

III. Word Chains:
   1. Choose a starting word.
   2. Ask ChatGPT to provide a word that starts with the last letter of the previous word. For example, "Play a word chain starting with the word 'cat.'"
   3. ChatGPT will respond with a word starting with "t," such as "tree."
   4. Use the generated word as the starting point for the next round and continue the chain by asking ChatGPT for a word starting with the last letter of the previous word.
   5. Repeat the process, building a chain of words where each word starts with the last letter of the previous word.

CONCLUSION AND DISCUSSION

As ChatGPT itself has acknowledged: "the quality of my understanding and my text generation varies depending on the language and the complexity of the task." In effect, the findings suggested that perceptions of the affordances of ChatGPT for language learning varies depending on the task and across different languages, with better performance (i.e., less errors and weaknesses discussed) in Romance languages identified as high-resource languages. While exploring 18 different languages, there was a striking consistency in the opinions regarding whether ChatGPT can replace human language teachers. The consensus is that: (a) ChatGPT is a valuable and remarkable tool for language teaching and learning, and (b) it cannot fully replace teachers, as the degree of humor, wit, and sympathy that humans can express cannot (yet) be programmed (Grobe, 2023; Mills, 2023; Rutter & Mintz, 2023). For instance, a Chinese learner, commented on Grace's video (Grace Mandarin Chinese, 2023):

With an AI, I can't make jokes, listen to different perspectives, learn from its experience, try to explain my complex thoughts, drink coffee while we are practicing, or do anything that I only would be able to do with a human…we still need another person (teachers or friends) to learn languages, even if we are great self-learners.

The combination of AI and human interaction is viewed as a promising approach for effective language learning experiences. For instance, Jeon and Lee (2023) examined the complementary relationships between human teachers and AI in education. They identified four distinct roles for ChatGPT in educational settings: (1) interlocutor, (2) content provider, (3) teaching assistant, and (4) evaluator. Additionally, their study revealed three essential roles for teachers: (1) orchestrating resources through pedagogical decisions, (2) promoting student engagement, and (3) fostering AI ethical awareness. As Kanesci et al. (2023) suggests, the role of ChatGPT can be a helper (Francais avec Pierre, 2023) of teachers and a personal coach (Francais avec Fred, 2023) for students. It is recommended to use ChatGPT as a personal language learning assistant (Dope Chinese with Gloria, 2023) or an auxiliary tool along with a teacher (ShuoshuoChinese, 2023). Also, there is a recognition that certain aspects of language learning necessitate human interaction, extending beyond the role of teachers to include engagement with language communities.

Limitations of using ChatGPT for language learning, in general, include: (1) the challenges in forming accurate and effective prompts including the time-consuming process of doing so, (2) potential distractions from focusing solely on learning such as quick access to online entertainment or games, (3) occasional provision of incorrect or inaccurate information, and (4) the lack of emotional support desired for language learning (and all learning experiences) that human teachers can offer (even though it does strive to provide positivity and encouragement when users make mistakes).

One intriguing characteristic of ChatGPT is its resemblance to a knowledgeable native speaker rather than a professional language teacher. In our investigation of language teaching and learning

communities in YouTube, we discovered that this aspect of ChatGPT's behavior can display a positive tone and be highly informative for users. As a result, in situations where finding a human interlocutor who consistently exhibits both a positive attitude and extensive knowledge can be challenging, ChatGPT can serve as a valuable tool during extended conversations. In addition, ChatGPT never suffers from language fatigue.

However, it is critical to recognize that native speakers often have an intuitive understanding of the language but may struggle to explain grammar rules explicitly. ChatGPT, being an AI model, takes a "childish model" (Yaroslava Russian, 2023) approach and lacks a comprehensive understanding of language rules. Instead, it relies on analyzing vast amounts of text to identify patterns. Despite its extensive exposure to linguistic data, it has not been explicitly taught underlying linguistic structures, semantics, and contextual nuances (Basmov, 2023). While it can generate impressive outputs, it is still susceptible to errors or deviations from correct language usage. Due to these limitations, patience is necessary when communicating with ChatGPT and other generative AI tools at this point in time.

There exists a contradiction when it comes to the suitability of ChatGPT for different proficiency levels. Specifically, while ChatGPT's technical affordance makes it more suitable for beginner and intermediate students, it can be difficult for beginners to ask accurate questions. As a result, they may not receive the answers they need and, when they do, they may not correctly interpret the information provided. Thus, there are two gaps that need to be addressed.

The first gap arises from learners' inability to fully leverage ChatGPT's technical affordances, leading to reduced educational affordances (we label this the "learning optimization gap"). This limitation stems from learners' struggles in operating ChatGPT effectively, thereby hindering their ability to maximize its potential for language learning. It is evident in the findings of our review of 18 language learning communities on YouTube that ChatGPT holds promise in facilitating personalized learning as well as game-based learning. It also empowers students to take control of their education and assists teachers in creating more effective materials while alleviating their workload. However, the educational affordances of ChatGPT are contingent upon its technical capabilities and the user's understanding of its limitations, while simultaneously grasping its vast potential and establishing clear goals that can be achieved with it. Consequently, the process of using ChatGPT to complete a task may not necessarily facilitate effective learning. Essentially, this means that it is crucial to address learners' (as well as teachers') limitations in operating ChatGPT and provide adequate guidance and training to enhance their proficiency in utilizing the system. This assistance may involve offering instructional resources, tutorials, and interactive exercises to help learners navigate the ChatGPT platform more effectively.

The second gap emerges between the materials presented by ChatGPT and the learners' capacity to comprehend and absorb the knowledge being conveyed (we label this the "knowledge comprehension gap" or the "cognitive alignment gap"). Such discrepancies underscore the challenge of aligning the presentation of information through ChatGPT with learners' cognitive abilities and prior knowledge. Despite ChatGPT's remarkable technical affordability, it remains unlikely for AI to completely eliminate comprehension bias. These issues are similarly found when human teachers use questioning strategies or assorted brief tasks assess students' grasp of the subject and provide information with absolute accuracy (Bender et al., 2021). It is conceivable that addressing the knowledge comprehension gap could be the next challenge for generative AI researchers and computer scientists to address to help tools like ChatGPT approach the level of real human teachers.

LIMITATIONS AND IMPLICATIONS

The selected YouTube videos have undergone rigorous evaluation using specific criteria for inclusion. Nonetheless, it is vital to acknowledge the limitations of relying solely on YouTube as a source of information for language education. While the chosen videos offer valuable insights, it is crucial to recognize that not all innovative ideas in language learning are specifically addressed in these

videos. YouTube's vast and constantly evolving corpus of content may contain valuable techniques and insights that were not included in our analyses.

Furthermore, it is important to note that the availability of language learning resources on YouTube are not equal across different languages. Some languages may have a wealth of high-quality educational content, whereas others may have limited resources or content of lower quality. For example, Russian, Latin, Korean, Brazilian Portuguese, Greek, Italian, and Turkish as well as other less frequently used languages, have fewer resources on YouTube compared with other languages such as English, French, Chinese, and Japanese. Additionally, it is essential to consider that YouTube videos are created by individuals or organizations with varying levels of expertise and qualifications. While the selected videos met rigorous criteria, the authority and expertise of content creators may not always have been guaranteed. In addition, the perspectives presented in these videos varied greatly which could have impacted the validity of the analyses; so too might have the differences in the available resources for each language investigated.

To further investigate the perceptions of incorporating ChatGPT across different languages in language education, future studies might employ surveys, interviews, and focus groups with language learners, educators, and content creators. Such an extended qualitative research approach would provide deeper insights into the experiences, challenges, and benefits associated with using generative AI models in language learning. Conducting comparative studies across different online platforms or resources beyond YouTube would contribute to a more comprehensive understanding of the affordances of generative AI for language learning. Such a study could involve analyzing the use of ChatGPT or other generative AI in dedicated language learning websites, mobile applications, or other social media platforms.

Exploring the potential of combining generative AI models with other educational technologies, such as virtual reality or gamification, could be a promising avenue for future research. Investigating the synergistic effects of these technologies in language learning settings may lead to more engaging and immersive language learning experiences. Looking into the long-term effects of using generative AI models in language education is another key area for future research. Longitudinal studies tracking learners' progress, retention of language skills, and overall development of proficiency would provide a deeper understanding of the sustained impact of incorporating AI technologies in language learning.

Lastly, examining the impact of language-specific factors, such as linguistic complexity, availability of training data, or language typology, on the performance and effectiveness of AI models like ChatGPT, would provide valuable insights for language educators and developers. Such research could involve comparing the outcomes and challenges of incorporating ChatGPT in different language contexts. Clearly, there are many possible research avenues with ChatGPT and other generative AI systems for language learning and instruction. We hope that the present study sheds some light on at least a few of them.

COMPETING INTERESTS

The authors of this publication declare there are no competing interests.

FUNDING

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APPENDIX

YouTube video list for this study

	Video Title	Youtuber
1	How to MAXIMIZE the use of ChatGPT's current functions to learn Chinese in 2023 (The Ultimate Guide)	ShuoshuoChinese
2	Asking ChatGPT Tricky Chinese-Learning Questions! Am I Replaced?!	Rita Mandarin Chinese
3	Can ChatGPT Replace a Cantonese Teacher? How to Use ChatGPT to Learn Cantonese|Dope Chinese	Dope Chinese with Gloria
4	Will AI change the future of language learning? | ChatGPT	Grace Mandarin Chinese
5	Je teste le ChatGPT pour apprendre le français. #learnfrenchwithAI	Learn French with Elisabeth - HelloFrench
6	How to learn French with an AI (Chat GPT-3) ?	Ohlala French Course
7	ChatGPT pour apprendre le français, l'anglais ou n'importe quelle langue 👍 (c'est fou!!! 😱)	Français avec Pierre
8	Chat GPT pour apprendre le français	Français avec Fred
9	How to learn French using ChatGPT | A DEMO of its possibilities and limits	My Polyglot Life · Cathy Intro ·
10	Can ChatGPT really teach you German?	Learn German with Herr Antrim
11	Tips and Ideas for learning and practising German with ChatGPT | AI | Learn German | A1 - C1	Learn German
12	Use ChatGPT for learning Russian, BUT CHECK THIS FIRST	Yaroslava Russian
13	AI baffles Latin teacher 🤯 ChatGPT speaks Latin	polýMATHY
14	AI vs KOREAN TEACHER | Can ChatGPT Teach Korean Better?	Learn Korean with GO! Billy Korean
15	Getting My Korean Proficiency Graded: Will Chat GPT Score Me? 챗GPT에게 한국어 실력 채점받기: ChatGPT가 점수를 매겨줄까?	Jina The Gorgeous
16	Using ChatGPT to Learn Japanese (feat. Brazilian Portuguese and French) "Faux Immersion"	Mark Bacon
17	I tested ChatGPT in Language Learning... and it FAILED // AI, chatbots & learning potential	Polyglot Secrets
18	HOW i tried Learning Turkish Using CHATGPT (Mind blowing)Learn NEW LANGUAGES USING CHATGPT	Turkkenya Lifestyle
19	Use ChatGPT to DRAMATICALLY improve your Japanese!	Dogen
20	How to Learn Japanese with AI (ChatGPT)	That Japanese Man Yuta
21	So I Talked to an AI (ChatGPT) in Japanese...	That Japanese Man Yuta
22	Can ChatGPT Teach You Natural Japanese?	That Japanese Man Yuta
23	Language Learning With Chat GPT: Intensive Reading in Japanese, Spanish, Chinese & French	NiJohnGo
24	3 Steps to Reach Japanese Fluency with ChatGPT!	TaiseiJP
25	I tried learning Japanese with ChatGPT and here's what happened...♪♪	Eric Williams
26	I let chatGPT be my Japanese teacher for a day. Here's what happened.	Ty's Take
27	Transforming ChatGPT-Generated Dialogues into Natural Japanese From Robot-Like to Human-Like	Sayuri Saying
28	A Storytelling Adventure | Learn French With Chatgpt	Dustin Schermaul
29	How intelligent is ChatGPT in Spanish? - Intermediate Spanish	Dreaming Spanish
30	**5 WAYS TO LEARN SPANISH WITH THIS FREE SUPERSMART AI TOOL (CHAT GPT)**	**SPRING SPANISH - LEARN SPANISH WITH CHUNKS**
31	🔵 _____ - 😸 _____ 😺	Spanish with Vicente
32	☑ SPANISH CONVERSATION FOR BEGINNERS, USING CHAT GPT	My Spanish Lesson TV
33	How To Use Artificial Intelligence To Learn Spanish | #ChatGPT #ai #artificialintelligence	Speak Spanish Now
34	11 Ways to Boost Your Spanish with ChatGPT AI Chatbot	PolyglotPanda - Learn Spanish with TV Series
35	ChatGPT Can SPEAK SPANISH (and it's scary good 😨)	Jerry Registre
36	AI Just KILLED Traditional Language Learning (ChatGPT)	Jerry Registre
37	ChatGPT Mobile Just KILLED Traditional Language Learning	Jerry Registre
38	100 Prompts Just KILLED Traditional Language Learning	Jerry Registre
39	ChatGPT Teacher Tutorial: AI for your ESL class!	Charlie's Lessons
40	Chat GPT For Language Learners 8 Writing Model Answers for IELTS, TOEFL, DALF, DELF, DELE etc	NiJohnGo
41	821. ChatGPT & Learning English PART 1	Luke's English Podcast
42	ChatGPT Tutorial - How to use Chat GPT for Learning and Practicing English	Accent's Way English with Hadar
43	Using ChatGPT for Language Learning	Tom Gally
44	How to Learn Languages with ChatGPT: 7 Ways to Fluency	Elysse Speaks
45	ChatGTP for language learning	English at University - Learning English with Pros

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