





Generative AI in Foreign Language Education: Student Use and Perspectives

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Abstract. The introduction of generative artificial intelligence (AI) has implications for foreign language education of which text production has traditionally formed a central part. This necessitates careful consideration of how the technology should be addressed, and this should be based on the perspectives of different stakeholders. To this end, this study explores foreign language students' use of and perspectives on the integration of generative AI into foreign language education. It does so by means of a questionnaire study of 83 students attending a course on language technology. The study shows a frequent and increasing use of generative AI among students, and that they use it for a wide range of reasons. Approximately 15% of the students reported to have used generative AI in connection with exams despite a ban at the time of the study. Students were generally divided on the question of banning generative AI at exams, however, the number of students considering it cheating increased between 2023 and 2024. The qualitative analysis provided insight into the students' arguments which to a wide extent reflect the scholarly debate that stresses the importance of both validity and authenticity of assessment. The students' reflections on the learning achieved from the course suggest that benefits may be gained from even a quite limited integration of the technology into foreign language education. In general, the study has shown that students have diverse and nuanced perspectives on the integration of generative AI into foreign language education.

Keywords: Generative AI · Foreign Language Education · Higher Education

1 Introduction

The introduction of generative artificial intelligence (AI) may significantly change professions and educational programs of which text production forms a central part (Blom et al. 2024). This is not least the case for foreign language education where text production has traditionally been central to both acquisition and assessment of language skills. In a situation where AI-based language technologies display a level of correctness so high that linguistic accuracy “can no longer be viewed as a synonym of learning and excellence” (Klekovkina and Denić-Higney 2022: 107), we need to revisit how we teach and assess foreign language. While we as higher education teachers want to provide students with the skills they need in the workplace, we also want to achieve the learning

outcomes that are at the core of foreign language education, among other things so that students are able to critically evaluate AI output.

While generative AI applications have been accessible for several years and for example an object of interest within journalism research (referred to as *robot*, *computational* or *augmented* journalism (Lindén 2018)), the technology did not gain substantial mainstream attention until the launch of ChatGPT in November 2022. Since then, inherent issues with the technology as well as consequences for the educational sector and the job market have been massively debated. Some of the issues addressed are the tendency of large language models to hallucinate, i.e. generate plausible-sounding and fluent, but factually incorrect content, bias in generated output (Ferrara 2023), anthropomorphism (Salles et al. 2020) and the environmental impact of AI training and deployment (Luccioni et al. 2023).

In an educational context, the potential value of integrating generative AI into teaching is continuously discussed. Arguments for such an integration include students' preparation for the workplace and potential positive effects of generative AI on learning. Scholars and educators against the integration argue that students' use of generative AI may lead to cognitive outsourcing or overreliance to technology (Dalsgaard et al. 2023) and a general decline in critical thinking skills and learning in general (Mohammadkarimi 2023; Klimova, Pikhart and Al-Obaydi 2024).

The debate has also centered on the consequences for assessment where generative AI has been viewed as a serious threat to academic integrity (Farrokhnia et al. 2023; Sweeney 2023). Different responses have been discussed, including ignoring the technology's consequences for assessment, banning it at exams, embracing it and rethinking assessment entirely in light of generative AI (Ydesen et al. 2024). *Ignoring* the consequences for assessment is arguably a very shortsighted response considering the general uptake of generative AI. *Banning* AI is seen as an appropriate response to ensure that it is the performance of the student, not AI, that is assessed. However, as long as it is not possible to detect AI use (Sadasivan et al. 2023), this may require new forms of assessment (e.g. more oral exams) and/or reverting to controlled examination settings. The response of *embracing* generative AI in assessment would involve having students engage with generative AI at exams, e.g. by asking them to critically reflect on AI-generated output. Arguments for such an integration of generative AI into exams include authenticity, i.e. assessment entailing tasks similar to those performed in workplace or professional settings. However, embracing generative AI has also been questioned, because standard assessment involves evaluating final products to measure learning, and the validity of this approach is called into question when students have access to generative AI (Kizilcec et al. 2024). Finally, *rethinking* assessment in light of generative AI would entail using AI systems to continuously evaluate students' learning, leading to a greater focus on formative assessment and maybe even render summative stop-and-test assessment superfluous (Ydesen et al. 2024).

Both the potentials and the concerns that generative AI brings with it necessitate that we explore how foreign language students approach the technology, since this may inform our future development of foreign language education. Therefore, this paper seeks to explore the following research questions: 1) how do higher education foreign language students use generative AI? 2) What are higher education foreign language students'

perspectives on the integration of generative AI into their education and assessment? These questions have only scarcely been investigated within the field, and the study aims to address this gap.

The paper is structured as follows. In Sect. 2, research on AI-based language technologies in foreign language teaching is described. Next, in Sect. 3, the methods applied are described, before the results are presented in Sect. 4. Finally, we conclude the paper in Sect. 5, discussing the findings and their implications.

2 AI-Based Language Technologies in Foreign Language Teaching

Along with technological developments and uptake in society in general, there has been a parallel interest in language education in so-called computer-assisted language learning (CALL) (Warschauer and Healey 1998; Pym and Hao 2025). The CALL field has focused on, for example, mobile-assisted language learning, technology as a tool for communication inside or beyond the classroom and gamified language learning (Dalsgaard et al. 2023; Zhang and Zou 2022). More recently, attention has also been paid to AI-based language technologies such as machine translation and generative AI which students can use in the production and reception of language.

Studies on the effectiveness of machine translation for language learning have been carried out for several years. Three rather recent reviews have examined this research, and all conclude that machine translation has a positive impact on foreign language learning (Lee 2023; Jolley and Maimone 2022; Klimova et al. 2023). For instance, machine translation can enable students to write more fluently and with fewer errors (Garcia and Pena 2011; Lee 2020; Tsai 2019). However, as pointed out by several scholars (e.g. Pym and Hao 2025; Bundgaard and Christensen 2023), there is a lack of longitudinal studies exploring whether there are lasting positive effects of machine translation on language learning. Also, quality of machine translation output has increased significantly along with changing approaches to machine translation development over the years (from rule-based and statistical to neural and generative systems), leading to e.g. a noteworthy reduction in fluency errors (Bentivogli et al. 2016; Toral and Sánchez-Cartagena 2017), which needs to be considered when interpreting the results of previous studies.

In terms of the impact of generative AI on language learning, research is also emerging. However, many publications are non-empirical contributions (e.g. Warschauer et al. 2023; Godwin-Jones forthcoming; Kohnke et al. 2023; Bonner et al. 2023). Of the empirical studies, some focus on voice interaction with AI-based chatbots. For instance, studies have found that spoken interaction with chatbots is engaging and enjoyable for learners of English (Underwood 2017; Yang et al. 2022), but that students benefit differently from such interaction (Wang et al. 2023). Focusing on written interaction with AI-based chatbots, Jeon (2023) found that interaction with AI-based chatbots can promote vocabulary acquisition. Other studies have indicated that generative AI systems can assist learners in improving their writing (Yan 2023), e.g. by providing feedback on grammar (Schmidt-Fajlik 2023).

Other studies have focused on teacher perspectives. For instance, Mohammadkarimi (2023) found that higher education English teachers acknowledge the benefits of AI for students, but at the same time worry about the consequences for academic integrity. Interestingly, nearly all teachers admitted that they cannot detect the use of generative AI in

student assignments. Cardon et al. (2023) explored business communication instructors' perceptions of the challenges and opportunities associated with AI-assisted writing. The instructors believe that they need to change their teaching to integrate AI, but about 47% feel nervous or anxious about using it in class. At the same time, they are concerned that generative AI will lead to more plagiarism, that it will be more difficult to assess student learning, and that it will lead to less critical thinking.

While foreign language learners' use of machine translation has been explored by e.g. Bundgaard and Møller (2024), as stated above, research on students' use of and perspectives on generative AI is scarce. Taking this as their focus, Klimova et al. (2024) found that undergraduate students studying English are positive about generative AI, but also acknowledge risks related to its use, including academic dishonesty, and the technology's potential impact on their critical thinking skills. The current study also aims to address this research gap.

3 Methods

To explore foreign language students' use of and perspectives on the integration of generative AI in their education, a questionnaire study was conducted. The data was collected as part of an elective 5 ECTS course at Aalborg University entitled *Technology-based language and communication work*. The course is offered to students attending the Bachelor of Arts (BA) in International Business Communication in English (IBC) and the BA and Master of Arts (MA) in English. The former focuses on business communication in English, while the latter is a more traditional English degree focusing on English language and literature.

In the spring of 2023 and 2024, 39 and 53 students were enrolled in the course, respectively. As the course title suggests, the course deals with the solution of linguistic and communicative problems using digital technologies. Different language technologies such as translation memory systems, machine translation, corpus linguistics, generative AI and tools for web scraping and sentiment analysis are introduced. Among other things, the course focuses on building competences in using the tools, critically discussing the contributions and limitations of the technologies and reflecting on the ethical implications of their use. The course includes 18 class hours which are devoted to both theoretical and practical content. Reading material was provided on Aalborg University's Learning Management System and included general introductions to the field of language technology as well as literature related to the language technologies covered. The examination consisted of two parts: participation in at least 80% of classes and completion of a final group project and oral presentation on a self-chosen topic within the thematic scope of the course. The course was primarily taught by a lecturer with expertise in language technology (14 class hours), a lecturer with expertise in web scraping and sentiment analysis (2 class hours) and a guest lecturer working in the language technology industry (2 class hours).

In relation to generative AI, the students were introduced to AI, natural language processing and natural language generation. Further, main issues with generative AI systems and output were addressed and exemplified, such as hallucinations, bias and anthropomorphism. The students also did practical exercises with generative AI systems

during classes. Here, students were required to work with generation of AI output, experimenting with different prompts and with evaluation of the results. In the final group projects and presentations, most groups of students chose to work with questions related to generative AI rather than questions related to the other language technologies covered. Thus, the topic of generative AI attracted a great deal of attention. Although the use of generative AI was generally prohibited at exams at Aalborg University in both the spring of 2023 and 2024, students were allowed to use generative AI to explore the questions they were interested in. However, they were not allowed to use generative AI to produce their presentations.

3.1 Procedure and Analysis

An online questionnaire was designed in SurveyXact, and a link was distributed to all students enrolled in the course during each semester's final class. The questionnaire contained an introductory text, and its content was also briefly outlined orally in the classroom. Next, the questionnaire contained a background question about the study programme of the students. Then the students were asked about their use of generative AI (e.g. frequency and purpose of use) and for their evaluation of the quality of AI-generated output. In the next part, the students were asked to answer questions about the learning acquired through the course and about the role of generative AI in their study programmes. Finally, they were asked for their attitudes towards allowing or prohibiting the use of generative AI at exams and about the role of generative AI in their future careers. It should be noted that the questionnaire was originally designed in Danish, and that in this paper, questions and quotes are translated into English. The questionnaire was designed with both open-ended and closed questions.

38 and 45 students filled out the questionnaire in 2023 and 2024, respectively, resulting in response rates of 97.3% and 84.9%. In 2023, 26 (68%) of the respondents were students in the IBC programme, and 12 (32%) were students in the BA or MA in English programmes. In 2024, 28 (62%) were IBC students, and 17 (38%) BA or MA in English students.

In the following section, the results are reported. Quantitative results are reported as descriptive statistics. The qualitative data have been analysed based on a thematic analysis approach (Braun and Clarke 2006) to identify patterns in the data. This was done in an inductive manner. The analytical process took its outset in Braun and Clarke's six phases. As a first step, we independently familiarized ourselves with the data by reading and re-reading it. Then, for each question that allowed respondents to provide answers in their own words, one author generated initial codes and collated these into potential themes. Next, the other author reviewed the themes, checking whether the themes reflected the data. Small adjustments, e.g. in terms of the naming of themes, were made in this process, and these were discussed between the authors. In the following section, illustrative examples of the themes identified are given. Direct quotes are accompanied by identifications of each respondent (with IDs 1–38 referring to respondents from 2023, and IDs 39–83 to respondents from 2024).

4 Results

In this section, we present the results of the study. In Sect. 4.1, results pertaining to research question 1 are reported, i.e. results on students' use of generative AI. Next, in Sect. 4.2, results related to research question 2 are presented, i.e. insights as to students' perspectives on generative AI in foreign language education.

4.1 Student Use of Generative AI

The students were asked whether they knew about generative AI systems before attending the course, and whether they used them (Fig. 1). In 2023, 13.2% reported that they did not know about generative AI before attending the course. 47.4% reported that they knew about the technology, but that they did not use it, and 39.5% reported using it. Interestingly, in 2024, all students at least knew about generative AI, and as much as 84.4% had used the technology before attending the course. The remaining 15.6% knew about the technology, but had not used it. Thus, both knowledge and use increased between 2023 and 2024.

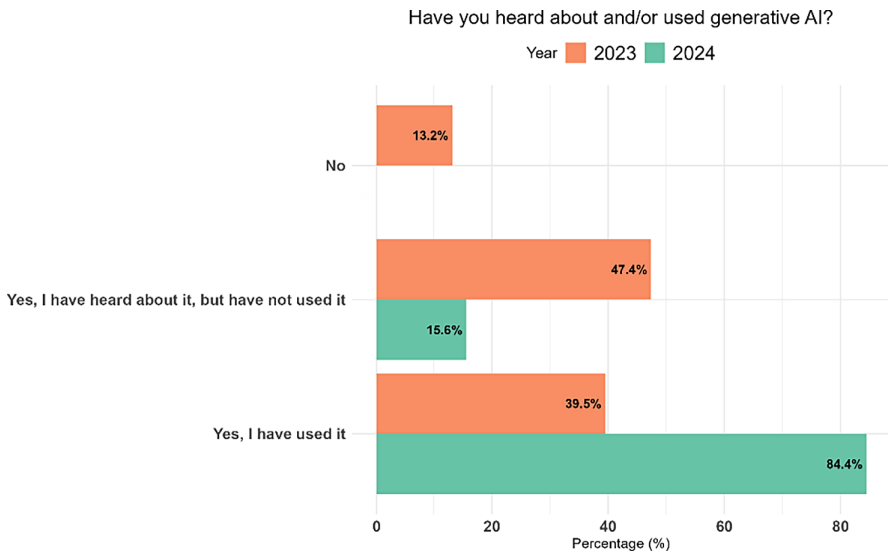


Fig. 1. Students' knowledge and use of generative AI (n = 83)

When asked about the frequency of their use of generative AI, most students reported using generative AI every week (cf. Fig. 2). This was the case for 44.7% and 48.9% of the students in 2023 and 2024, respectively, reflecting an increase in weekly use. There was also an increase in the number of students using generative AI every day (increasing from 7.9% in 2023 to 11.1% in 2024). Accordingly, there was a smaller number of students in 2024 who reported that they did not use generative AI (13.3%), compared to 23.7% in 2023. In both 2023 and 2024, around 18% reported using the technology every month.

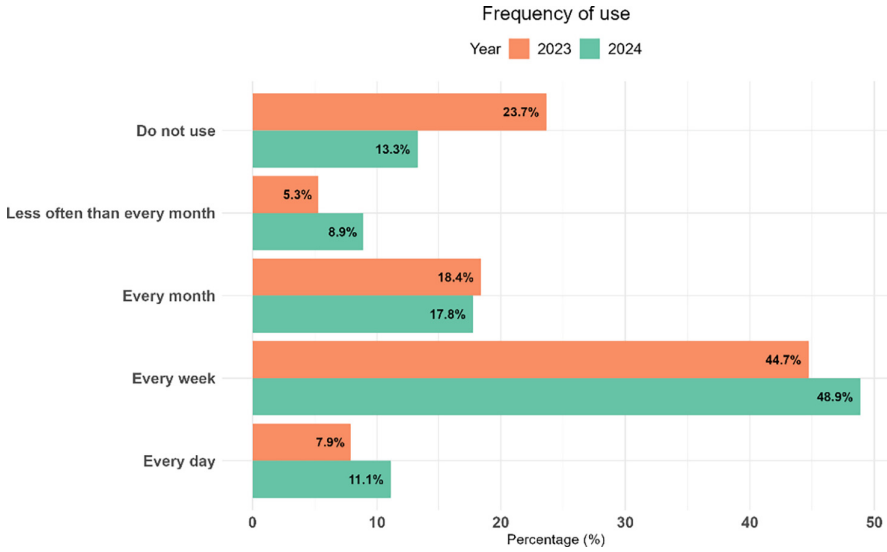


Fig. 2. Frequency of use (n = 83)

Students were asked to give qualitative answers as to the purposes with which they used generative AI. The thematic analysis of this data resulted in seven main themes, i.e. *idea generation, summarization and explanations of scientific concepts and texts, text production, feedback on own text, translation, information search and spare time use*. In terms of idea generation, several students mentioned that they use generative AI to get ideas for project work. For instance, one student answered that “I use it for many different things, including getting inspiration for different parts of project work” (ID29/2023).

Several other students expressed that they use generative AI to get summaries of academic texts or explanations of scientific concepts. Sometimes students added that they did this to better understand concepts and theories which are difficult to grasp. For instance, the following student stated that they used it “primarily to understand theories/texts that are hard” (ID2/2023).

Other students stated in quite general terms that they use generative AI for text production. For example, several answered that they use it to “generate text about a topic” (e.g. ID32/2023; ID49/2024; ID71/2024). Interestingly, within this theme, several students mentioned that they use generative AI in connection with their student jobs, i.e. paid work that they engage in alongside their studies. In this context, several mentioned that they use generative AI for text production tasks, e.g. for press releases and social media content.

Several students expressed that they use generative AI for getting feedback on text that they have written themselves with the purpose of optimizing it. For instance, a student replied that “I sometimes use it for getting feedback on things that I have already written” (ID63/2024). Some students also specified that they use it to get feedback on

grammar and punctuation. Further, a few mentioned that they use generative AI for translation tasks.

In terms of the theme “information search”, some students replied that they use generative AI to ask questions and some specifically mentioned that they use it as an alternative to Google. Finally, several mention that they use generative AI in their spare time, e.g. for dinner inspiration and fitness tips.

The students were also asked in a more closed manner about the contexts in which they use generative AI. As can be seen from Fig. 3, in 2023, 26.3% reported that they used generative AI to write text that a supervisor should read in connection with project work. In 2024, this number has decreased to 20%. In 2023, 26.3% reported that they had used generative AI to produce hand-in assignments to be evaluated by their teachers; in 2024, this was almost the same. Both in the spring of 2023 and 2024, the use of generative AI was generally prohibited at exams at Aalborg University. However, in 2023 and 2024, 7.9% and 15.6%, respectively, had used generative AI in connection with exams. This is of course noteworthy since it might constitute academic dishonesty.

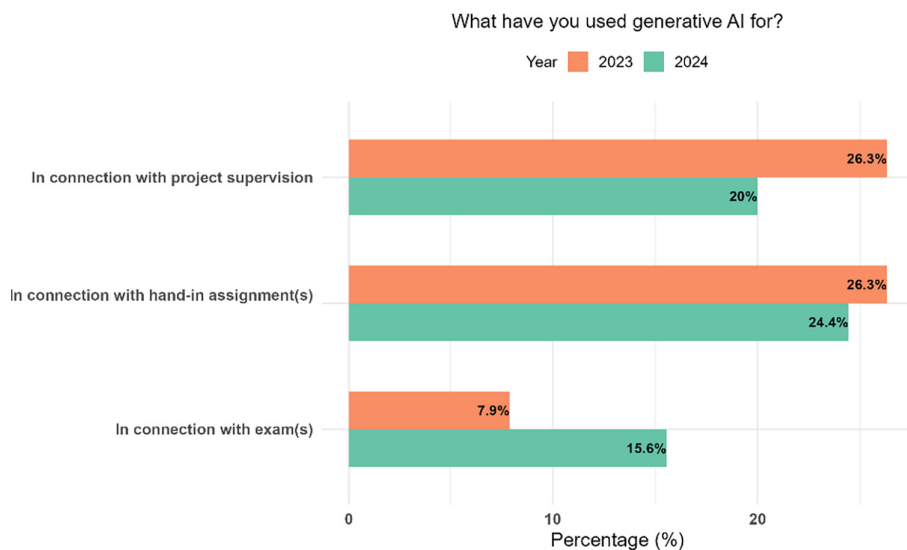


Fig. 3. Context of use (n = 83)

The students were also asked to give an overall evaluation of the quality of AI-generated text. As shown in Fig. 4, in 2023, students reported the quality to be quite high; 57.9% found the quality high and 7.9% very high. 28.9% found that the quality was neither high nor low. Interestingly, in 2024, the students’ evaluation of the quality appeared to be more moderate. Here 6.7% rated the quality as low, 53.3% found it to be neither high nor low, and 37.8% found it high. None of the 2024 respondents evaluated the quality as very high.

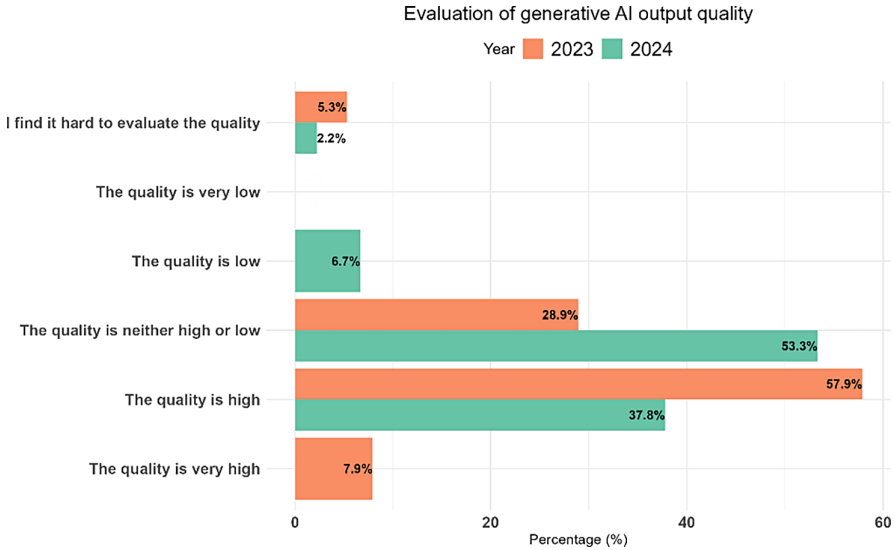


Fig. 4. Evaluation of generative AI output quality (n = 83)

4.2 Student Perspectives on Generative AI in Foreign Language Education

Related to research question 2, students were asked for their perspectives on what they had learned in the course, whether they thought foreign language students should generally be introduced to this type of technology, about their attitudes towards banning generative AI at exams and finally for their perspectives on the role of generative AI in their future careers.

Students were asked to answer in an open-text format what they learned about generative AI in the course, and whether something had surprised them. From the thematic analysis, eight overall themes emerged. One theme included students expressing that they learned a lot about *how generative AI systems work*. For instance, one student replied that “I found it interesting to learn how ChatGPT and other tools work behind the scenes. Since I knew how to use the tool, it is nice to know how it works in the engine room” (ID62/2024). Another theme included students stressing that they learned a lot about *bias* in AI output. Some talked about bias in general, and some mentioned gender bias specifically. Some of the students related this to the workings of generative AI systems, stressing that their learning about how the systems work had also made them realize why output may be biased. For instance, one student replied that “There can also be biases from the input the machine was fed with which also makes the output that the machine generates biased” (ID10/2023).

Other students mentioned that they had learned that AI output is not always accurate, i.e. that AI systems may *hallucinate*. Here, a student explained that “I have learned that it is important to check the generated text for mistakes. ChatGPT can give misleading information and invent references that do not exist” (ID15/2023). Many students replied that they were generally *positively surprised* by the performance of the systems. For

instance, several stressed that they had been surprised by its ability to answer questions, and a student expressed that “the quality of the generated product has surprised me deeply, since I had not expected such a high quality” (ID34/2023). Other students added general statements expressing that they had learned about *limitations of and challenges surrounding* generative AI systems. The remaining three themes included fewer statements. One theme included statements where students expressed that they had not learned a lot that they did not already know, a few mentioned that they had learned what was allowed at exams, and a few mentioned that they had learned that a lot of different AI tools exist.

When asked whether they thought foreign language students should generally be introduced to this type of technology, 92% answered “yes”, and 8% answered “no”. In their arguments for the introduction of generative AI, four overall themes were identified. For instance, many students argued that an introduction to generative AI technology is *necessary to prepare them for tasks in the workplace*, and generally that this technology is the future. Another argument that was often repeated in students’ responses was that *students are using the technology anyway*, and that foreign language education should teach them to use it in a constructive, ethical and critically reflective way, making them aware of the potentials and pitfalls. Other students stressed that generative AI may *aid learning* and be a good resource in the learning process. It is worth noting that several of these students added that the use of generative AI should not replace, but augment students’ own learning processes. Finally, interestingly, two students argued that generative AI is useful for students that do not have people around them to help them with their studies, with one of them mentioning that generative AI can “contribute to making everyone’s toolboxes equally filled” (ID35/2023). Although only mentioned by a few students, it is interesting that some highlight inclusion potentials.

Of the few students who did not think that students should be introduced to generative AI, most argued that generative AI could impact negatively on learning processes because some would tend to outsource tasks to the technology.

The students were also asked about their attitude towards prohibiting the use of generative AI at exams. Interestingly, as reflected in Fig. 5, the students were divided on this, with 44.7% considering the use of generative AI cheating in 2023 and 55.6% considering it cheating in 2024. It is interesting to note that while several Danish universities, including Aalborg University, have recently begun to allow generative AI at exams, the number of students considering it cheating has increased.

After answering this question, the students were asked to provide arguments for their attitude. Students arguing for banning generative AI primarily argued that allowing AI would make it impossible to measure student learning, thus questioning the validity of such assessment approaches. For instance, a student replied that “With our education, expectations are created that we have acquired disciplinary competencies and knowledge – and when the tools are used at exams the boundary between what the student knows and can do him-/herself and what the tool has done becomes invisible” (ID43/2024). Another student had a similar viewpoint and related this to the nature of foreign language education: “I attend a programme of which text forms a central part, so if you are not able to produce or read a text without a resource like that, it does not make sense that you pass the exams” (ID56/2024).

Should the use of generative AI at exams be considered cheating?

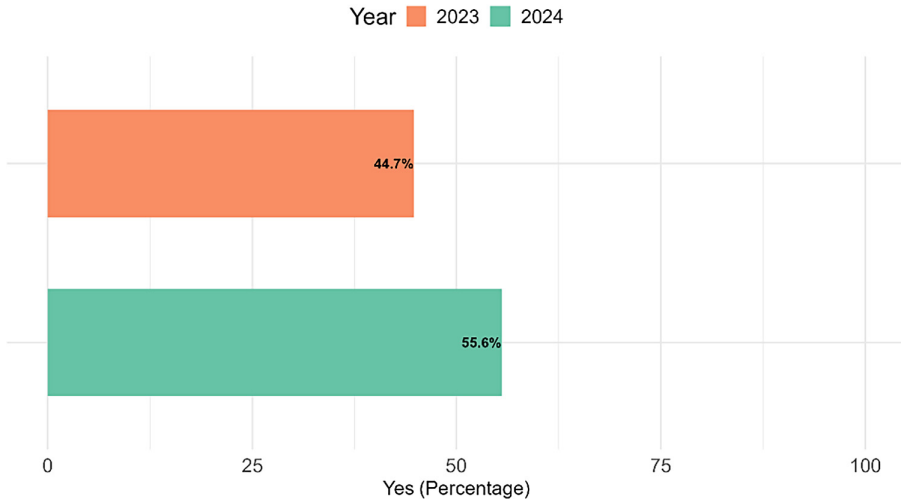


Fig. 5. Student attitudes towards banning generative AI at exams (n = 83)

Students arguing for allowing the use of generative AI at exams primarily argued with the authenticity of such an assessment approach. Here, a student stated that “it already has an impact on the industry. These are tools that change the nature of working tasks. It would correspond to removing the oven from chef education. You would not necessarily get a bad chef out of it, but you would have taken away their opportunity to acquire useful skills” (ID35/2023). Another student also argued for an authentic exam situation and stated that “In real life no one would say that you cannot use a tool to solve a task more effectively, so why is this not reflected in exams? In any case, you need to critically evaluate the output, and you need to be able to prompt effectively to make it work optimally” (ID45/2024).

Interestingly, the data also revealed conflicting viewpoints among students as to whether AI use can be detected. Here, some students arguing for a ban stated that the university cannot control how AI was used, while students arguing against a ban stated that university systems are able to detect this type of plagiarism. Finally, many students (both students arguing for and against a ban) had quite nuanced perspectives in their open-text answers which indicated that it was difficult to answer the question on a ban in a yes/no manner. Here, many argued that it depended on the extent to which AI was used and stressed that AI should be allowed for inspiration, whereas it should not be allowed for actual generation of an exam paper.

Finally, the students were asked whether they thought generative AI will play a large role in their future careers. As shown in Fig. 6, with 60.5% answering “yes” in 2023 and 75.6% in 2024, the results reflect an increased and widespread expectation that this will be the case. The students answering “yes” were also asked to reflect on the work tasks in which they expected generative AI to play a role. Here, many mentioned in general terms that it will influence and is already influencing text production tasks, and

many specifically mentioned tasks related to customer service and the production of marketing texts such as social media content, newsletters and product texts. Finally, a few mentioned that it would influence a career as an upper secondary teacher.

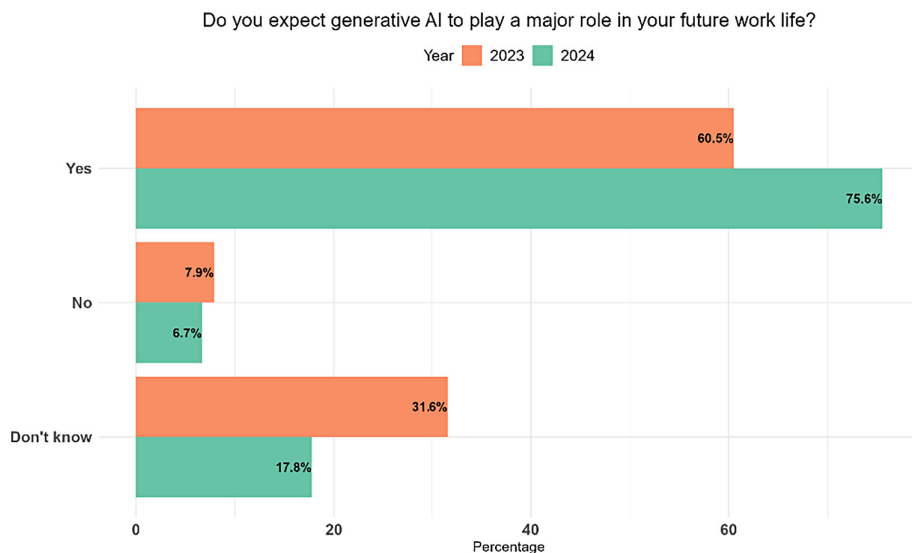


Fig. 6. The anticipated role of generative AI in future careers (n = 83)

4.3 Limitations

Although the analysis has provided interesting insights into foreign language students' use of generative AI and their perspectives on its integration into foreign language education, we recognize that the study also entails a number of limitations. For instance, the study is quite small-scale and was conducted at a single university. Also, the study only included students of English. Since Danish students usually have English as their first foreign language, the results may not apply to languages that are less familiar to the students. Further, many of the students' qualitative responses referred to a rather general use of generative AI that may also apply to students from other educational programmes than language studies. Thus, in retrospect, we would have preferred to ask students to relate their responses to their work with language-related tasks.

5 Concluding Discussion

The massive uptake of generative AI necessitates careful consideration of how the technology should be addressed in foreign language education. This should be based on the perspectives of different stakeholders, not least the students who aspire to make a career in this space. To this end, this study has provided insight into how foreign language students use and perceive generative AI.

The study has documented that between 2023 and 2024, both knowledge and use of generative AI increased, with almost half of the students using the technology every week in 2024; and around 10% every day. Thus, generative AI must be said to be an integral part of many students' practices. This serves as a compelling argument for foreign language education to address and integrate generative AI.

When asked for the purposes with which they used generative AI, many stressed e.g. idea generation, explanations and summarizations of scientific concepts and text as well as text production and feedback on their own texts. This documents that students use generative AI for a wide range of reasons and not (only) to outsource tasks to technology as educators may fear. However, students also reported that they are using it to write text that a supervisor should read in connection with project work and for hand-in assignments. The acceptability of this use arguably depends on whether students are transparent about it. Also, interestingly, approx. 15% of students reported to have used generative AI in connection with exams, although this was banned at the time of the study. This is of course worrying and highlights a need for clear guidelines as to what is allowed as well as a need to design valid forms of assessment.

Interestingly, in 2024, while their use of generative AI had increased compared to 2023, the students' evaluation of the quality of the output appeared to be more moderate. A possible explanation for this result might be that compared to the spring of 2023 where the launch of ChatGPT was still quite recent, the hype might have decreased during the following year with greater attention being paid to issues such as hallucinations, bias etc., for instance in the media. Also, the increased interaction with the technology may have led them to become more aware of these issues.

Nearly all students thought that foreign language students should be introduced to the technology, and students expressed that the course had taught them about the workings of generative AI and about specific limitations of the systems. They were also sometimes able to relate these limitations to how generative AI systems are built, and several stressed that they had become aware that they needed to be critical of AI output. It is quite interesting to note that many of the students seemed to have learned quite a lot about the technology during a few classes, and that the findings indicate that this made them approach AI output in a more critically reflective manner. This suggests that benefits may be gained from even a quite limited integration of the technology into foreign language education. However, it should be remembered here that the study was conducted in the context of an elective course which means that the respondents have actively chosen this course and thus may be more interested in language technologies than other foreign language students.

In terms of assessment, it was highly interesting to find that while several Danish universities have recently begun to allow generative AI at exams, the number of students considering it cheating has increased between 2023 and 2024. It was also noteworthy that students were divided on the question of banning generative AI at exams. The qualitative analysis provided insight into the students' arguments which to a wide extent reflect the scholarly debate, stressing the importance of both validity and authenticity of assessment. If we relate this to the responses outlined by Ydesen et al. (forthcoming), some students favor a banning approach and highlight the validity of such an approach, whereas some students favor an embracing approach and argue for authenticity in assessment. The

ignoring and rethinking responses were not reflected in the students' arguments; in terms of the ignoring response this was entirely natural since the question specifically asked students to take a stand, and in terms of the rethinking response, this is a potential future scenario dependent on AI-based assessment techniques which most students probably do not picture.

Taking its outset in the viewpoint that decisions regarding integration of generative AI into (foreign language) education should be based on the perspectives of different stakeholders, this study has explored students' use of and sentiments surrounding generative AI. In conclusion, the study has shown a widespread use of generative AI among foreign language students, and that they have diverse and nuanced perspectives on the integration of generative AI in foreign language education. This study has highlighted a need for ensuring that foreign language education integrates generative AI, thus acknowledging students' digital practices in this area and preparing them for the workplace. At the same time, we need to ensure that students use generative AI tools in an ethical and critically reflective way, and that they achieve the learning outcomes that are at the core of foreign language education. This is easier said than done, but in any case requires an ongoing dialogue with students.

References

- Bentivogli, L., Bisazza, A., Cettolo, M., Federico, M.: Neural versus phrase-based machine translation quality: a case study. In: *Proceedings of the 2016 Conference on Empirical Methods in Natural Language Processing*, pp. 257–267. Association for Computational Linguistics, Austin (2016)
- Blom, J.N., Holsting, A., Svendsen, J.T.: På sporet af chatbottens sproglige fingeraftryk: En sproglig ophavsanalyse af tekster skrevet af danskstuderende og ChatGPT. *Nydanske Sprogstudier* **65**, 79–110 (2024)
- Bonner, E., Lege, R., Frazier, E.: Large language model-based artificial intelligence in the language classroom: practical ideas for teaching. *Teach. Engl. Technol.* **23**(1), 23–41 (2023)
- Braun, V., Clarke, V.: Using thematic analysis in psychology. *Qual. Res. Psychol.* **3**(2), 77–101 (2006)
- Bundgaard, K., Christensen, T.P.: Machine translation literacy: Maskinoversættelse i fremmedsprogundervisningen på videregående uddannelser. *Sprogforum* **76**, 93–101 (2023)
- Bundgaard, K., Møller, A.K.: Use of AI-powered technologies in upper secondary language learning: current tendencies and future perspectives. *LearningTech* **14**, 14–35 (2024)
- Cardon, P., Fleischmann, C., Aritz, J., Logemann, M., Heidewald, J.: The challenges and opportunities of AI-assisted writing: developing ai literacy for the AI age. *Bus. Prof. Commun. Q.* **86**(3), 257–295 (2023)
- Dalsgaard, C., Christensen, M.V., Caviglia, F., Andersen, M.S., Kjærgaard, H.W., Boie, M.A.K.: Sprogteknologier i fremmedsprogundervisningen: indkredsning af en sprogfaglig teknologiforståelse. *Tidsskriftet Læring og Medier* **28**, 1–23 (2023)
- Farrokhnia, M., Banihashem, S.K., Noroozi, O., Wals, A.: A SWOT analysis of ChatGPT: implications for educational practice and research. *Innov. Educ. Teach. Int.* **15**(1), 1–15 (2023)
- Ferrara, E.: Should ChatGPT be biased? Challenges and Risks of Bias in Large Language Models (2023). <https://arxiv.org/abs/2304.03738>
- Garcia, I., Pena, M.: Machine translation-assisted language learning: writing for beginners. *Comput. Assist. Lang. Learn.* **24**(5), 471–487 (2011)

- Godwin-Jones, R.: Language teacher preparation for an AI world: A human ecological perspective. In: Tian, Z. & Wang, C. (eds.) *Rethinking Language Education in the Age of Generative AI*. Routledge (forthcoming)
- Jeon, J.: Chatbot-assisted dynamic assessment (CA-DA) for L2 vocabulary learning and diagnosis. *Comput. Assist. Lang. Learn.* **36**(7), 1338–1364 (2023)
- Jolley, J.R., Maimone, L.: Thirty years of machine translation in language teaching and learning: a review of the literature. *L2 J.* **14**(1), 26–44 (2022)
- Kizilcec, E.F., et al.: Perceived impact of generative AI on assessments: comparing educator and student perspectives in Australia, Cyprus, and the United States. *Comput. Educ. Artif. Intell.* **7**, 100269 (2024)
- Klekovkina, V., Denié-Higney, L.: Machine translation: friend or foe in the language classroom? *L2 J.* **14**(1), 105–135 (2022)
- Klimova, B., Pikhart, M., Al-Obaydi, L.H.: Exploring the potential of ChatGPT for foreign language education at the university level. *Front. Psychol.* **15**, 1–10 (2024)
- Klimova, B., Pikhart, M., Delorme Benites, A., Lehr, C., Sanchez-Stockhammer, C.: Neural machine translation in foreign language teaching and learning: a systematic review. *Educ. Inf. Technol.* **28**(1), 663–682 (2023)
- Kohnke, L., Moorhouse, B.L., Zou, D.: ChatGPT for language teaching and learning. *RELC J.* **54**(2), 537–550 (2023)
- Lee, S.-M.: The impact of using machine translation on EFL students' writing. *Comput. Assist. Lang. Learn.* **33**(3), 157–175 (2020)
- Lee, S.M.: The effectiveness of machine translation in foreign language education: a systematic review and meta-analysis. *Comput. Assist. Lang. Learn.* **36**(1–2), 103–125 (2023)
- Linden, C.-G.: Algorithms are a reporter's new best friend: news automation and the case for augmented journalism. In: Eldridge, S.A., Franklin, B. (eds.) *The Routledge Handbook of Developments in Digital Journalism Studies*, pp. 237–250. Routledge, Abingdon (2018)
- Luccioni, A. S., Jernite, Y., Strubell, E.: Power Hungry Processing: Watts Driving the Cost of AI Deployment? (2024). <https://arxiv.org/abs/2311.16863>
- Mohammadkarimi, E.: Teachers' reflections on academic dishonesty in EFL students' writings in the era of artificial intelligence. *J. Appl. Learn. Teach.* **6**(2), 105–113 (2023)
- Pym, A., Hao, Y.: *How to Augment Language Skills: Generative AI and Machine Translation in Language Learning and Translator Training*, 1st edn. Routledge, Abingdon (2025)
- Sadasivan, V.S., Kumar, A., Balasubramanian, S., Wang, W., Feizi, S.: Can AI-generated text be reliably detected? (2023). <https://arxiv.org/abs/2303.11156>
- Salles, A., Evers, K., Farisco, M.: Anthropomorphism in AI. *JOB Neurosci.* **11**(2), 88–95 (2020)
- Schmidt-Fajlik, R.: ChatGPT as a grammar checker for Japanese English language learners: a comparison with Grammarly and ProWritingAid. *AsiaCALL Online J.* **14**(1), 105–119 (2023)
- Sweeney, S.: Who wrote this? essay mills and assessment – considerations regarding contract cheating and AI in higher education. *Int. J. Manag. Educ.* **21**(2), 100818 (2023)
- Toral, A., Sánchez-Cartagena, V.M.: A multifaceted evaluation of neural versus phrase-based machine translation for 9 language directions. In: *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics*, pp. 1063–1073. Association for Computational Linguistics, Valencia (2017)
- Tsai, S.-C.: Using google translate in EFL drafts: a preliminary investigation. *Comput. Assist. Lang. Learn.* **32**(5–6), 510–526 (2019)
- Underwood, J.: Exploring AI language assistants with primary EFL students. In: Borthwick, K., Bradley, L., Thouesny (eds.) *CALL in a Climate of Change: Adapting to Turbulent Global Conditions - Short Papers from EUROCALL 2017*, pp. 317–321 (2017)
- Yan, D.: Impact of ChatGPT on learners in a L2 writing practicum: an exploratory investigation. *Educ. Inf. Technol.* **28**, 13943–13967 (2023)

- Yang, H., Kim, H., Lee, J., Shin, D.: Implementation of an AI chatbot as an English conversation partner in EFL speaking classes. *ReCALL* **34**, 327–343 (2022)
- Ydesen, C., Milner, A.L., Bundgaard, K., Møller, A.K.: Aligning curriculum with educational assessment in times of uncertainty: historical insights, crisis management and new technologies. In: OECD (2024)
- Wang, X., et al.: What matters in AI-supported learning: a study of human-AI interactions in language learning using cluster analysis and epistemic network analysis. *Comput. Educ.* **23**, 1–17 (2023)
- Warschauer, M., Healey, D.: Computers and language learning: an overview. *Lang. Teach.* **31**(2), 57–71 (1998)
- Warschauer, M., et al.: The affordances and contradictions of AI-generated text for writers of English as a second or foreign language. *J. Second. Lang. Writ.* **62**, 1–7 (2023)
- Zhang, R., Zou, D.: Types, purposes, and effectiveness of state-of-the-art technologies for second and foreign language learning. *Comput. Assist. Lang. Learn.* **35**(4), 696–742 (2022)