

Exploring the Integration of Artificial Intelligence Tools in English as a Foreign Language (EFL) Pedagogy

A Literature Review

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Abstract

The introduction of artificial intelligence (AI) tools in schools has sparked a polarised debate about its negative impact on critical thinking, plagiarism, and problem-solving skills. Future educators will be affected by the tools, prompting this thesis to explore their potential benefits and challenges through a literature review. The main focus is particularly on its implementation in the English as a Foreign Language (EFL) classroom aiming to provide a balanced perspective in light of the rapidly evolving field of AI-powered education. By gathering data on empirical studies done in the EFL classroom where AI was used, two main skills were identified and focused on: writing and speaking. The results highlight both concerns and possibilities. The main concerns regard students' overreliance on the tools, inaccuracies of tools, a lack of personalization, cultural bias, and potential issues of privacy. The possibilities include maximising time efficiency for teachers, lowering anxiety for students connected to performance, making education more equal for all students, and enhancing students' proficiency through effective feedback and assessment. The interpretation of the results indicating whether AI is seen as a possibility or a concern seems to depend on the teacher using the tool. Preconceived ideas, education, and experience are background factors if the teacher successfully implements the tools. Most educators agree that a balanced approach is the way forward using the tools. To ensure the balanced and effective use of AI tools in the classroom, appropriate guidance is essential. The results of our review show further research needs to be done, for example on the accuracy of the tools, to maximise its use for students' and teachers' benefit.

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1. Introduction

In early January 2023, The New York Department of Education chose to ban the artificial intelligence (AI) tool ChatGPT in public schools (Rosenblatt, 2023). New York's Department of Education expressed concern about the program's negative impact on students' learning. The concern originates in AI hindering critical thinking and as a consequence problem-solving skills, which are essential for academic success. The concern is just as present in Sweden; several cases of students using ChatGPT in an unauthorised way have surfaced, leading to expulsion in two separate cases reported in Dagens Nyheter (Cato, 2023). With the emergence of ChatGPT and similar AI tools and their ability to generate advanced and human-like texts, AI and its place in education has become a controversial talking point. With this in mind, we wanted to conduct a literature review, gathering empirical studies, with the aim of investigating if AI tools can be used to aid teachers in the classroom or if it is justifiable to try and ban them.

The debate is polarised where educators and policymakers on one side do not believe this to be part of education, while others predict this to be the next step of education and want to focus on the possibilities rather than the obstacles (Ahlfors, 2023). Even in places where cheating has occurred, some educators still report a willingness to use AI to support students' learning (Ahlfors, 2023). Instead of taking a clear stance in the polarised debate, Skolverket (2023) reports cautiously on the possibilities of using AI tools in terms of heavy text processing without providing any guidance on how.

A great deal of research has been carried out in the field of AI-powered learning tools over the past decades, however, most of the studies we are exploring are from the last two years. The selection originates from the field of research being dynamic, expanding at a rapid pace, and with the tools becoming better, research quickly gets irrelevant. The significance of an up-to-date report like this is therefore clear as present and future teachers will be affected by the tools. Whether it means teachers being encouraged by their principal to implement the tools to become more effective in correcting and giving feedback, or schools forbidding the use of AI-powered tools, teachers will have to deal with students using these tools in an unauthorised way.

The aim of this review is to investigate the challenges and key factors for the effective integration of AI tools mainly in the English as a Foreign Language (EFL) classroom. We

will, in the review, consider the perspectives of both students and teachers. We find the EFL aspect particularly fascinating since AI tools cater to the unique needs of language learners of various accents, dialects, and regional differences. This personalization is especially important in the EFL classroom with its wide range of different learners. As pre-service teachers, our hope with the review is to contribute with a broader perspective on the debate and expand the teacher's toolbox in the EFL classroom. We are interested in exploring mainly the positive implementations since most narratives surrounding AI in education have been negative, for example (Dibble, 2023; Rosenblatt, 2023). In addition to reviewing the possibilities of the implementation of AI, the review also comments on the limitations and negative consequences and concerns, as these will need to be dealt with in order to offer realistic pedagogical implementations.

2. Method

The process of finding suitable articles for our literary review began by using the Gothenburg University library's search engine "Supersearch". First, we searched for AI, EFL, and ChatGPT, to get a scope of how many articles there are on the subject, resulting in 34 articles. After finding a few suitable articles on the Supersearch database we decided to use the Scopus database as our main source for finding articles. The reason for this was to make our search more efficient and to ensure that all chosen articles were of high quality and peer-reviewed.

We broadened the search on Scopus to EFL AND AI, and ended up with 65 studies. We tried extending our search terms, and when searching on, for example, EFL* AND AI* AND School* but the search results were too vast, around 1050. As a result, we had to limit our scope. We tried searches with AI, ESL (English Second Language), and ELF (English as Lingua Franca) but without satisfactory results. We decided to not only include articles that were related to EFL but also other articles about the usage of AI in other educational contexts, used mainly for discussion.

We then decided to limit our search to articles that were written in 2017 or later since the topic of our review is new and ChatGPT has only been available to the public for the last two years. We were only interested in finding empirical studies for the results section, and for that reason rejected many of the articles since they were reviews or did not include empirical data. This study looks at how AI tools can be used in education, and if that was not in focus,

we did not include the study. In terms of the writing and speaking results we decided on the following search terms: “EFL + AI”/ ”EFL + AI + Writing(speaking)”/ “English Foreign Language + AI”/”AI Tools Teachers”/ “AI tool + EFL/”Grammarly + Writing”/”Grammarly + EFL”/. In some cases we have also used the “related article” feature on Scopus to find articles that were relevant to our work. Furthermore, the snowball technique (Ridley, 2012) was used to find articles, meaning that we found relevant articles in the references of articles we used.

In total, we ended up with 15 studies that we reviewed in our paper. The studies we chose were not restricted to any specific part of the world. Although, many of them were conducted in Asia since there was a large representation of studies from the region. In addition, the studies we chose were not restricted to any age group of students because this would have limited our number of studies too much. Throughout the exploration, we have found and included several studies on student attitudes toward using AI. These findings will be presented in the results section.

The studies show that AI has, so far, mostly been used for teaching writing and speaking, but has also been used for providing feedback and as a tool for assessment. Out of the 15 studies included in this review, nine focus on the use of AI in writing contexts, and six focus on speaking contexts. The articles found in the review do not cover any studies regarding receptive skills, reading, and listening, hence, this review will not cover those areas.

3. Historical Background

The digitalization of the Swedish School system began in 1970 when the Swedish government thought it necessary to introduce students to the new computer technology. Later on in the late seventies, several schools in Sweden brought in stationary computers on trial to test their usefulness in education, focusing on mathematics (Björk, n,d). In the middle of the 2000s schools in Sweden started handing out personal laptops to students, but this was mostly done by free-standing schools in an effort to attract students (Lindström, 2010). This trend continued in public schools, with many regions having the goal that every student and teacher should have their own computer or tablet (Andersson & Gencoglu, 2018). This was also the case for students as young as first graders. However, this trend has had a negative backlash in the past years. Some say that computers and tablets in the classroom affect the students’ attention negatively due to the fact that students use them for other things than learning (Meyer, 2019). This shows the conflicting relationship that the Swedish school system has

had with the implementation of new technology in the classroom. The most recent debate about technology in Swedish schools, however, is the one about artificial intelligence (AI) in schools. AI's entry into Swedish schools is just the next step in the digitalization of education, and its entry into teaching should perhaps be seen as inevitable as the entrance of calculators and computers. The introduction of these tools was met with the same scepticism that AI programs are now facing but is now seen as a natural part of the school environment. Since every student has access to these tools, they are being used in everyday tasks by students.

The debate about the usage of AI in schools mainly revolves around Generative AI (GAI). The reason for this is that GAI can produce human-like texts that are difficult to identify and that can then be used for cheating. GAI is based on models that analyse and learn from enormous amounts of data, such as text, audio, and video to create diversified content based on pre-existing content (Jovanovic & Campbell, 2022). Jovanovic and Campbell (2022) state that there are many types of GAI, but the most discussed at the moment is the Generative Pre-trained Transformer (GPT) due to the launch of OpenAI's language model ChatGPT. Large language models such as ChatGPT use deep learning and natural language processing to process massive amounts of text of different kinds. By analysing news articles, scientific texts, novels, and so forth, the model is able to produce text that could have been written by a human. ChatGPT, which was taught on a much bigger amount of data than prior language models, has been able to perform natural-language tasks in a way that has not been seen before (E. Kasnec et al., 2023).

This leap in the development of GAI has initiated a debate about implementing tools such as ChatGPT in schools. There has been extensive media coverage on the topic, with a focus on students who have been using it to cheat (Muskat, 2023; Jönsson, 2023). For instance, several cases of students using ChatGPT on home exams were identified in the spring of 2023 (Cato, 2023). For this reason, the positive aspects of AI may be overlooked. For example, Skolverket, advises caution when it comes to using ChatGPT and similar AI tools. This could affect the way many teachers view AI since the decisions of Skolverket affect the whole Swedish school system and should be followed by teachers.

According to Skolverket (2023), Chatbots increase the risk of cheating among students, and it is therefore advised that home exams should not be used as a method of testing if reliability cannot be guaranteed. Although there are different types of chatbots that simulate a human conversation, and not all chatbots are based on AI, it can be assumed that AI-based chatbots are what Skolverket (2023) is referring to (IBM, n.d.). It is also stated by

Skolverket (2023) that the information that ChatGPT provides could be biased, and contain inappropriate- or false information. They go on to state that another problematic aspect of letting the students use GAI programs is that the programs may be age-restricted in their terms of use. However, if Skolverket stated that ChatGPT should not be used in schools at all, it could be seen as being in conflict with the curriculum. The curriculum states that the Swedish school should “contribute to developing the students’ digital competence” and that every student should “be given the opportunity to develop their ability to use digital technology” (Läroplan för gymnasiet, 2021).

Although the majority of discussion on the use of AI in schools has been negative, admissions of the potential positive characteristics of AI in school settings can still be found. Even Skolverket suggests that it can be a part of education, especially when it comes to programming or processing large texts. Others believe that ChatGPT needs to be included in teaching (Kronqvist, 2023), especially in writing teaching, where it could be used to give responses to texts, help students start their writing, or provide them with a text to analyse. Üzümcü & Acilmis contribute to this positive view of AI-powered tools in school (2023). The authors state that features of AI-powered tools are important for students to experience as they provide personalised feedback when interacting with them. Additionally, the head of Skolverket, Anders Boman, believes that ChatGPT is just an old problem in a new form since some students’ parents have helped them with writing assignments (Swiesciak, 2023). ChatGPT could perhaps therefore act as an equaliser when every student has access to the same assistance.

Even if the discussion on AI-powered tools and the research is new, computer-assisted language learning (CALL) has been the subject of investigation for 30 years (Golonka, Bowles, Frank, Richardson, & Freynik, 2014). The authors further report that the technology at best can increase learner interest and motivation; and provide students with increased access to their target language (TL) input, interaction opportunities, and feedback. For the instructors, it can be used as a tool for organizing the content of the course and increased availability to interact with more students more efficiently. Worst-case scenarios can lead to inappropriate input, shallow interactions, inaccurate feedback problems, and frustration with software and hardware, a distraction from the learning task. This does not include ChatGPT since it was released in 2022, and research suggests that the use of ChatGPT may be broader than earlier technologies. Authors have stated that ChatGPT can be a useful tool for essay grading and that it may even be able to automate or semi-automate and improve the grading

process (Kasneci et al., 2023). Furthermore, there are other ways that AI may reduce the workload for the teacher so that they can focus more on creating innovative ways of teaching and adapting the teaching to suit every student. Some say that AI could for example aid the teacher in lesson planning, translating educational material, creating quizzes, and tests (Grassini, 2023). A substantial amount of research indicates that the potential use of AI in education is great, so with this review, we want to find out how it has actually been used so far, and what the results were.

4. Findings

In this section of the paper, the findings concerning how teachers have used AI in the EFL classroom will be presented. The results present how teachers have used AI so far. Other aspects of AI interacting with implementation in classroom settings, for instance, as relates to positive or negative views, or the usefulness of AI, are covered in the discussion section. The studies are categorised under the two major language skills, Writing and Speaking. The reasoning behind this decision was that we thought it would be logical to divide up the findings into the major language skills that teachers are teaching and testing regarding the EFL classroom.

4.1 The Use of AI Tools in Writing Contexts

Table 1 shows the nine empirical studies concerning writing where AI tools were implemented in a classroom. The table further contains sections organised for the reader to see which study used which tools in what context and for which aim.

Table 1. Studies on AI in writing

Author, year, title	Tools mentioned	Context	Focus/Aim
Marzuki et al (2023): <i>The impact of AI writing</i>	Quillbot, WordTune, Jenni, Chat GPT,	Four participating EFL teachers from three universities in Indonesia, a	The main objective of the study is to implement and analyze AI writing tools and to assess their influence on students' writing,

<p><i>tools on the content and organisation of students' writing: EFL teachers' perspective</i></p>	<p>Paperpal, Copy.ai, and Essay Writer</p>	<p>qualitative approach. The study was carried out through a case study design, interviewing teachers only.</p>	<p>specifically in terms of content and organisation.</p>
<p>Xiao & Zhi (2023) <i>An Exploratory Study of EFL Learners' Use of ChatGPT for Language Learning Tasks: Experience and Perceptions</i></p>	<p>ChatGPT</p>	<p>Five students participating in a small-scale study in a University in China</p>	<p>The objectives of the study is to explore students' experience with AI tools and their perception of the role of the tool in language learning.</p>
<p>Koltovskaia (2023) <i>Postsecondary L2 writing teachers' use and perceptions of Grammarly as a complement</i></p>	<p>Grammarly</p>	<p>Six participating postsecondary L2 writing teachers in the USA but the study was done online due to Covid-19. The teacher's comments on 10 essays were</p>	<p>The study's objective is to explore how Grammarly shaped teacher's feedback practice as well as the teachers' perception of the tool.</p>

<i>to their feedback</i>		analysed and then semi-structured interviews.	
Hsiao & Chang (2023). <i>Enhancing EFL reading and writing through AI-powered tools: design, implementation, and evaluation of an online course.</i>	Linggle Write, Linggle Read, Linggle Search	Forty-three participating Senior High school students in Taiwan	The main objective of the case study is to explore how teachers integrate AI-powered tools and how students experience them. The study was done by creating an 18-week online course designed according to learning theories. The aim was to cultivate autonomous EFL learners both in reading and writing, supported by three AI-powered tools
Gayed et al., (2022) <i>Exploring an AI-based writing Assistant's impact on English language learners</i>	AI KAKU	A study done with ten adult students who attend a language school in Japan	The objective of the study is to try to measure the impact of a new AI writing tool called AI KAKU on L2 learners in terms of reducing cognitive barriers when the learner produces written text in English.

<p>Uzumcu & Acilmis (2023) <i>Do Innovative Teachers use AI-powered Tools More Interactively? A Study in the Context of Diffusion of Innovation Theory</i></p>	<p>Assisted Melody, Paint with Music, and Blob Opera</p>	<p>A case study with 32 pre-service teachers (students/teachers to be), Turkey</p>	<p>The aim is to investigate AI tools and integrate them into the teachers' lesson plan. The aim of the study is to see if the views on integrating the tools changed in accordance with diffusion innovation theory. Further, the researcher wanted to see if individuals who are better at individual innovativeness are more likely to adapt to and use new applications of technologies than other individuals.</p>
<p>Han et al., (2023) <i>RECIPE: How to Integrate ChatGPT into EFL Writing Education</i></p>	<p>RECIPE (a platform using ChatGPT)</p>	<p>A study was done in South Korea on 213 students in an EFL writing course with seven instructors.</p>	<p>Addresses the need for further research on ChatGPT's effectiveness in EFL education by creating the platform RECIPE where students can revise their essays with teacher-led modifications to ChatGPT.</p>
<p>Al Mahmud (2023). <i>Investigating EFL Students' Writing Skills Through Artificial Intelligence:</i></p>	<p>Wordtune</p>	<p>A study conducted in Jeddah, Saudi Arabia. 39 participants from a boys Higher secondary school and 39 participants from</p>	<p>The study aims to explain whether and/or to what extent AI tools, such as Wordtune can affect the enhancement of Saudi English as a foreign language writing. Which specific improvements could be done and also if any statistical</p>

<i>Wordtune Application as a Tool.</i>		a girls Higher secondary school.	improvements could be based on their sex.
<i>Hwang et al., (2023). AI and Recognition Technologies to Facilitate English as Foreign Language Writing for Supporting Personalization and Contextualization in Authentic Contexts</i>	Smart RoamLingo	A study conducted with 104 Indonesian university undergraduate students enrolled in the course English for engineering.	The study saw researchers develop the app Smart RoamLingo with the aim of measuring its impact on the experimental groups in relation to the control groups in terms of increasing students ability to write meaningful content in authentic contexts.

The findings of how researchers and educators used AI for teaching writing in the classroom will be summarised and presented below. We identified three main areas where AI was implemented concerning writing: to improve student's writing skills, as a tool for feedback, and as a tool for assessment.

One way that AI can be used as a tool in this context is to help students improve their writing skills by aiding students in rewriting their essays (Han et al., 2023; Yeo, 2023). In Han's study, the educators used prompts (2023). The first prompt used was "hidden" where ChatGPT was fed preparatory information by the educators to act as the student's English

writing class teacher. The program was further informed that when students provide a summary of what they learned, the program must guide the student to correction rather than rewriting and revising straight away. This aids students' improvement in writing skills by, for example, detection. The second prompt was then addressed to the student, providing the program with a written example of what the student had learned today. The educator provided the students beforehand with a writing example for guidance. Similarly, Yeo (2023) provides some suggestions on how to integrate GPT. The teacher can ask the learners to evaluate GPT-generated essays against criteria, critiquing and revising the written text. Students could then use the AI to co-write a text, where the student writes one paragraph and the robot the next. GPT was further used for learners to work in pairs, writing an essay and discussing which sentences best fit which audience, purpose, and text type. Getting students to revise aspects of the language provided by the AI, such as linking words, passive sentences and nominalizations will promote noticing and language-focused learning for the students according to the author.

To enhance writing abilities in the EFL classroom in particular Gayed et al.'s study used AI KAKU (2023). The researchers had previously noticed in EFL learning a great deal of cognitive resources gets spent on low-level writing tasks such as basic word production and translations from L1 to L2. This might hinder the learner from focusing on higher-level issues such as organising and revising text. AI KAKU addresses the issue, not by creating the text in the target language like Google translate or creating large amounts of the text for the student to copy, but by reversing the translation from the student writing in L2 to L1 for validation purposes. AI KAKU has the ability to further provide word suggestions based on the learner's input. The method encourages cognitive processes in the target language for the learners.

In Marzuki, Utami Widiati, Diyenti Rusdin, Darwin, and Inda Indrawati's study (2023) four EFL teachers implemented AI-generated tools differently to improve students' writing. All four teachers used WordTune and Quillbot. Other tools used in the research, however not unanimously, were Jenni AI, ChatGPT, Copy AI, Essay Writer, and Paper Pal. The tools were used with the main aim of helping students practise paraphrasing, organisation and improving sentence structure. The tools were also used to aid students' writing during the brainstorming process, helping students to organise their thoughts before writing. Other tools were used to assist students with conversational writing skills, grammar checks, and writing samples to show students different types of writing.

The second main area we identified as using AI for writing purposes was to provide

students with feedback on their writing. In Koltovskaia's study (2023), an automated writing evaluation (AWE) tool called Grammarly was examined as a complement to teachers' normal feedback practice. Grammarly highlights errors without directly correcting them and further provides the user with a metalinguistic understanding of why the error has been highlighted. The teachers participating in the study were to comment and give feedback on 10 essays provided to them. The teacher's implementation of the tool differed as did the attitude towards the effectiveness of the tool and in terms of its usefulness. The timing of when the tool was implemented in the feedback practice differed. Grammarly was implemented by some teachers in the study after glancing at the essay first, to get an idea of errors, but consulted the program before giving feedback themselves. After the AI had given feedback they looked into what feedback was still to be reported. Another method deployed by educators was proceeding to give personal feedback first and then double-check with the program. This was due to educators worrying about being potentially biased by the Grammarly report but reported in the end that both the educator and the AI provided similar feedback.

WordTune was used to provide instant feedback and enhance the proficiency of the student's writing in Al Mahmud's study (2023). The procedure saw the teacher introducing the students to the tool. Students then fed the program with sentences of their own, receiving feedback from the program. The student got to rewrite and reflect together with the educator on factors differentiating strong and weak sentences. The instructors finally informed the students of the limitations of the AI to avoid future uncritical reliance on the tool. The use of the tool led to higher writing test scores in the experimental group compared to the control group. It was also found that students using Wordtune gradually gained lexical resourcefulness and improved sentence structure.

Another tool designed to provide written corrective feedback to the student is Lingle Write, one of the three tools used in Hshiao's & Chang's study (2023). Upon the student handing in a written document to the tool, the main focus regarding feedback is grammatical error correction. The tool further shows the European framework for language reference (CEFR) and the student's proficiency level according to the framework (Council of Europe, 2020). Compared to other feedback programs such as Grammarly, which typically spot misuse of function words, incorrect word forms, and or incorrect word order, Lingle Write also provides feedback on word choice, turning for example, "a big accident" into "a serious accident".

Smart RoamLingo app was used in the study of Hwang et al., to provide personalised feedback and help the students improve their writing skills (2023). The students participating in the study initially did a pretest, upon which teachers trained them in using the app. The students then proceeded to individually work on essay writing with the aid of the app. Smart RoamLingo provides for example aid in improving writing quality through several revisions. The goal is that the cohesion and consistency of the student's writing will be enhanced. The study finished with students taking a post-test. The results saw the experimental group that practised with the tool significantly outperformed the control group in terms of providing authentic content, organisation, grammar, vocabulary, cohesion, and consistency. The researchers mainly contribute the positive results of the students working with the app when practising revising text. Students who revised their texts the most sharpened their writing skills notably.

In the third main area we identified in this context, AI was used to provide students with instant assessment. The results of Yeo's study (2023) suggest using AI for assessment aligns with Assessment for Learning practices where the purpose is to improve skills through feedback, monitoring, and reflection, rather than simply measure learning. The author reports that it is more valuable to prioritise the process. The preservice teachers in Üzümcü & Acilmis study included AI-powered tools in their lesson plans, both in terms of teaching and evaluation (2023). When students wrote down notes of Mozart for example in the application, works of the artist appeared if the student had written them down correctly, giving an instant assessment of how the student was doing without the teacher having to be present. The individual assessment without the teacher being present indicates using AI for assessment could function as a time-saving aspect. In the study done by (Xiao & Zhi, 2023), 3 out of 5 students reported that the assessment of the AI tool ChatGPT was more easily accessible than that of teachers. When one of the students for example was preparing for a writing test, they asked the tool how to improve the organisation of their essay and the tool proceeded to assess which sentences lacked transitions and which information was lacking to connect ideas.

4.2 The Use of AI Tools in Speaking Contexts

The Following table contains six empirical studies, all related to Teaching speaking in the EFL classroom. The table is organised to help the reader to see the context, tools and aim of the study.

Table 1. Studies on AI in practising speaking

Author & Title	Tools mentioned	Context	Focus/Aim
Underwood (2017). “Exploring AI language assistants with primary EFL students.”	Amazon's Alexa, Apple's Siri, Google voice search	The study was conducted on eleven primary age (6 -11 years old) EFL pupils. From University of Southampton.	The main objective of this study was to investigate ways to incorporate chat bots when teaching speaking.
Zou, Du, Wang, Chen (2023). “An Investigation Into Artificial Intelligence Speech Evaluation Programs With Automatic Feedback for Developing EFL Learners’ Speaking Skills”	Various AI speech evaluation programs which are popular in China including Liulishuo, IELTS, Liulishuo, EAP Talk, Shanbay, etc.	Forty Chinese undergraduates volunteered to participate. Out of convenience, the participants were selected with the “Snowball sampling method” (the participants are recruited by each other). Most of the participants attended a Chinese university.	The study aims to investigate the effectiveness of current AI speech evaluation programs, focusing on learners’ perceptions of various feedback provided to assist learners in developing different speaking skills.

Ericsson, Johansson (2023). “English speaking practice with conversational AI: Lower secondary students' educational experiences over time”	Enskill, the program used in this study. The students could use the program to simulate a real life situation, like checking into a hotel or buying a car.	The study was conducted on Swedish lower secondary students. twenty two students in total, 13 male and nine female. Ten speaking sessions over a four month period.	The aim of the study: “The aim of this study is to explore and gain a nuanced and comprehensive understanding of how conversational AI in an institutional L2 educational situation is experienced for the learning and development of speaking skills over time.”.
Han. (2020). “The Effects of Voice-based AI Chatbots on Korean EFL Middle School Students Speaking Competence and Affective Domains”	Alexa	Forty four Middle School Students. South Korea.	This study examines the effectiveness of voice-based chatbots on Korean children

Iio, Maeda, Ogawa, Yoshikawa, Ishiguro, Suzuki, Aoki, Maesaki, Hama (2018). “Improvement of Japanese adults' English speaking skills via experiences speaking to a robot”	Robot-assisted language learning (RALL)	The study was conducted on nine female Japanese university students. University of Tsukuba, Japan.	The study aims to provide evidence that RALLs affect adults' speaking skills.
Dandu, G., & Mohanacharyulu, G. (2022). “An Impact of Artificial Intelligence Tools on Technical students' ESL Oral Communication skills-A Study.”	ELSA (app)	College Engineering students. Students Visakhapatnam city	The study focused on exploring the impact of AI tools on engineering students' ESL oral communication skills.

Teachers have used mainly AI for improving students' speaking skills in three of the following ways. Firstly, as an information source, for example, asking the Ai how to spell or to pronounce a certain word. The AI tool would then reply with an answer to the given question. Secondly, as a conversational tool, the student would use an AI tool to have a simulated conversation based on real-life scenarios, talking with a salesperson about buying a house or speaking to a stranger at a bar/cafe. Thirdly, as an evaluation program, where the student speaks to the AI and the AI listens, evaluates and gives immediate feedback to the student, no conversation.

In Underwood's (2017) study, AI was used as an information source. The study used the AI chatbots available at the time, such as Apple Siri, Amazon Alexa, and Google voice

search. The students were then asked to ask the chat-bots questions, such as, " how do you say... in English, "How do you spell ...;," What does... mean? ". All of these questions were provided by the teacher. The study showed that the effectiveness of using Ai in the classroom heavily depended on which AI the student used (the quality of the program mattered), which language, and what type of questions were asked.

Ericsson & Johansson (2023), Han (2020), Iio (2018) and Dandu & Mohanacharyulu (2022) used AI as a conversational tool in their studies. In these three studies AI tools like “Enskil”, Robot-assisted language learning (RALL), Alexa and ELSA were used. The students were then given options on subjects to talk with the AI about, to practise the conversational skill in a low anxiety environment. In all three of the studies the participants thought there to be great benefits of using an AI as practice, and many experienced it to be easier to have a conversation with an AI rather than with a fellow student. The participants agreed that the programs help develop their speaking skills, such as grammatical range, pronunciation, spontaneous speaking, oral rhythm, and reading aloud.

In Zou and Du's study (2023), AI was used to evaluate participant's speaking skills. In the study, the participants were given a set of questions, which they then answered while the AI tool recorded and afterward could provide them feedback. The feedback contains remarks on their pronunciation, fluency, vocabulary, and grammar. Most of the participants agreed that the AI tool helps them improve their speaking skills. The participants were also more willing to receive and take in the feedback that they were given.

4.3 Students' Attitude Towards ChatGPT

Although not the focus of our review, studies we found on the subject of students' attitudes indicated that students have a positive approach to AI tools. In an effort to examine how students attitude towards GAI, and more specifically ChatGPT, Liu & Ma (2023) and Strzelecki (2023) uses the Technology Acceptance Model (TAM) in order to provide theoretical backing for assessing the receptivity of EFL learners towards ChatGPT.

Behavioural-attitude-intention stands as an important part of TAM, which means that depending on the student's intention and attitude affect the likelihood that the student will perform the behaviour. The study by Strzelecki (2023) found three variables that were positively associated with behavioural intention, namely "Performance expectancy," "Habit," and "Hedonic motivation". According to the study, students were comfortable with using ChatGPT and other similar technologies, and consistent use was linked to habitual behaviour

and behavioural intention. “Performance expectancy” was another strong indicator of behavioural intention, which indicated that students are more likely to use new technologies if they have high expectations of their performance. This is consistent with Liu & Ma’s (2023) study of EFL Learners, which indicates that students with a positive attitude toward the usefulness of AI tools are likely to have higher behavioural intentions of using them. Moreover, their behavioural intention was a strong predictor of how likely they were to use it outside of the classroom. Moreover, a study by Hsiao & Chang (2023) included reports of students' opinions of using AI tools themselves. The students declared that the lecture became student-centred rather than teacher-centred and students unanimously reported that they thought their mind wandered less and that they felt more engaged.

5. Discussion on Writing

Section 4.1 will discuss and highlight the possibilities of using AI in the EFL classroom for writing gathered in our review, 4.2 will present and discuss the concerns and 4.3 will close the discussion on writing by presenting a balanced approach to the implementation of the AI tools. The results of numerous studies (e.g. Marzuki et al., 2023; Han et al., 2023; Ouyang et al., 2022), indicate implementing AI-powered tools in combination with teaching in the EFL classroom to enhance writing skills for students has generated mixed results as displayed below.

5.1 Possibilities of Using AI for Writing

The studies reviewed indicate that the use of AI tools can play an important role relating to maximising time efficiency for teachers. Multiple teachers reported positive use of AI tools as a complement to teachers' feedback practices (Al Mahmud, 2023) (Koltovskaia, 2023) (Hwang et al., 2023). Some of the participants in Koltovskaia’s study found that Grammarly saved time by addressing basic errors and providing metalinguistic feedback, allowing instructors to focus on concerns of higher-level. The teachers enjoyed that Grammarly provided information on which errors were the most common among the students, making it easier to go forward with information on what needs to be focused on in the classroom. The findings in Xiao & Zhi’s study (2023) echo the time efficiency aspect of the tools. The ability to offer instant and easily accessible feedback is the most attractive feature of ChatGPT reported in the study. There were also clear positive results in Al Mahmud’s study (2023)

between using AI for feedback and enhancing written proficiency. Usage of AI in the classroom is then not about replacing teachers, but rather to help them spend their time wiser and freeing up time for teachers to focus on more important things. Focusing on these possibilities rather than the obstacles aligns with some of the positive voices raised in the background for example.

It seems various individual factors appear to contribute to the successful utilisation of AI-powered tools in terms of writing in the English as a Foreign Language (EFL) classroom. This is notable from both the student and teacher perspectives, which is exemplified in the work done by Han et al., (2023) and Marzuki et al., (2023) respectively. Findings in the results indicate teachers with more extensive experience in using digital tools demonstrated more efficiency in their pedagogical practices. For example, one teacher reported on the positive impact of the tools on students' creative expression and ability to overcome writer's block. The teacher further reported on positive growth in lexical repertoire and accredited the growth of for example synonyms not typically used by the learner to the tools used in the study. A teacher, who values AI tools as stimulating and a source of expanding students' idea development. Consensus could be found among the teacher's perspective on the positive use of AI in terms of transition words and phrases. They highlight the educational nature of the tools, comparing them to an interactive tutorial, and seeing AI as a complementary resource (Marzuki et al., 2023). So these results highlight pedagogical advantages and how the tools can aid students in the classroom. Perhaps a preconceived positive outlook on using AI and experience contributes to the best possibilities of successful inclusion of AI in the classroom.

Numerous researchers and educators have initial concerns but realise the tools are an inevitable part of the future of education, meaning educators might as well make the most of the tools, potentially leading to a more equal school for all (Xiao & Zhi, 2023). These findings align with the argument in the historical background that programs like ChatGPT could become an equaliser for students, who might be disfavoured in terms of parents aiding the student with homework. Al Mahmoud sought further to see if using the tools would have different effects between the sexes but instead found equality of outcome in positive progression for both groups(2023). Therefore, the findings show a different sentiment than the one of the critiques in the initial findings presented in the background worrying about ChatGPT sole use for plagiarism. The use of ChatGPT in Xiao & Zhi's study (2023) showed students' ability to think critically about texts generated by the program and actively modify prompts to get the results they wanted instead of using it to cheat. Alharbi (2023) initially

displays concern, but further suggests that instead of working against the tools a more realistic approach might be to accept the tools. When acceptance of tools has occurred the next step should focus on how to integrate them and how to provide appropriate guidance. The author states AI can play an important role in transforming the student's learning experience and enhancing their writing skills. This aligns with another finding in the study done by Gayed et al., (2022), that all students writing under the AI condition in their study produced more words with lower variance between themselves compared to the other group, which potentially could indicate that using the AI program is helping lower-level students to equalise their performance to higher-level students in terms of writing. The tools must be used intentionally with an aim and support the learning experience and instead of focusing on restrictions and which programs to ban, the focus could be shifted on the possibilities presented.

5.2 Concerns of Using AI for Writing

This section will look into the concerns highlighted in the reviewed studies, which mainly concern students' use, as reported by educators participating in the studies.

One overlapping concern showed in a number of studies (e.g, Marzuki et al., 2023), and the review by Alharbi (2023) is students' potential overreliance on the tools, which might limit students' creativity and problem-solving skills. The author indicates overreliance on tools could further lead to students taking up a copy-paste practice. This practice means that a person cuts out data from its original position and duplicates it into another position, in this case meaning that the student duplicates the AI's text into their own document for example. The copy-paste practice is getting more challenging for educators to detect as plagiarism from tool-generated text is getting better at creating human-like sentences (Alharbi, 2023). This practice does not only raise concern about the deprivation of students' deeper cognitive thinking, but also one of academic integrity. This aligns with some of our initial findings in the background where concerns were raised by for example Golenka et al. (2017) of worst-case scenarios leading to inappropriate input and shallow interactions for the students.

The authenticity of the content generated by AI might not further meet the standard of the local educational purposes. A teacher in Marzuki, Utami Widiati, Diyenti Rusdin, Darwin, and Inda Indrawati's study (2023) stated that AI has a tendency to overcomplicate language and was therefore worried that the students might use a language that they do not fully comprehend. This practice aligns with the problem of the copy-paste practice. An expanded

vocabulary due to the usage of AI could be good but not if the student does not comprehend the words they are providing. The primary goal should be clarity and precision reports a teacher in the study. Alharbi (2023) shares the concern and states further that copy-paste praxis provides little to no learning experience. This ties further together with the concern raised by (Muskat, 2023 ; Jönsson, 2023) in the background reports of students using AI to cheat. The problem the integration of AI in an educational setting seems to be facing is that it is new. When students are using AI without supervision and aim, with educators without formal training, cause for alarm is to be expected. Researchers are in the early stages of exploring and testing how to integrate the tools. The main focus seems to land on areas where it does not work instead of where it could work with the guidance of the educator. As the tools get better however, and educators get better at using them, concerns like those of authenticity could disperse as the students are using the tools in a different way, much like how the calculator got integrated into Math as described in the background.

Negative aspects are raised also when students use AI tools for feedback practice or correctional purposes. The reports from Marzuki et al., (2023), indicate the over correctional nature of some AI-tools might lead to a cognitive overload for the student. When students get overwhelmed with numerous comments from the AI, the motivation could be discouraged. The same theme was further commented on in Koltovskaia's study (2023) where a participant reported that when Grammarly remarks on every little error it catches, the feedback looks negative and can become overwhelming for the student. Another participant in the same study filled in that one student got 64 comments on his paper which discouraged the student. These aspects do highlight the need for the teacher to be present and guide the student's usage of the tool, rather than not using the tool at all.

The results of our collection of studies shows AI integration in the classroom is marked by inconsistency, with varying perspectives from teachers, highlighting the irregular effectiveness of AI tools. This could be an issue of innovators' dilemma, however, where teachers could have a strong disincentive to be innovative in their practice exploring new tools as they could undermine their already existing ones.

Some negative reports could be found in using AI as an aid for providing feedback as well. In Koltovskaia's (2023) study, teachers reported on a clear disadvantage that Grammarly missed a lot of errors and that the feedback of the program sometimes was inaccurate. One participant exemplified that Grammarly occasionally confuses one word of being the problem but in reality another one being the issue. This led to the teacher still having to give feedback

on errors of lower concern such as basic grammar issues, and therefore not fully trusting the feedback practice of the program. When the teacher needs to double-check the feedback of Grammarly, the idea of the program taking care of lower concern correction, giving the teacher prominence to focus on bigger concerns such as sentence structure and discourse is contradicted. Some feedback from the AI was also not understood by the students, highlighting further the need for human interaction in combination with the tools. The biggest concern in using Grammarly in Koltovskaia's study (2023) has to do with the course goals. Because Grammarly not only highlights errors, but also provides corrections on how to correct it, the students are hindered from detecting and coming up with solutions of their own. Four of the teachers therefore suggested peer review being a more effective method for feedback. The concerns can be summarised as showing the need for careful consideration when implementing AI tools in education to maximise their benefits while addressing potential challenges.

5.3 A Balanced Approach

Historically, there is no shortage of initial concern from educators in regards to technological advancement. Whether it is Google making us stupid (Carr, 2008), or students' overreliance on untrustworthy Wikipedia (Meishar-Tal, 2015), sources that are well used in education today. Concerns of overreliance and plagiarism for example should be taken seriously. But rather than banning it, AI contributing to a balanced approach with more knowledge, educated students and teachers alike seem to be the way forward according to our findings.

The findings indicate that the conceptualization of whether AI is seen as a possibility or a concern seems to be depending on the teacher using the tool. The duality is exemplified where one teacher sees an opportunity to use AI for feedback, freeing up time to focus on giving feedback on items of higher concerns, another teacher looks at the same phenomenon as over-correction, leading to discouraged students. Koltovskaia reports (2023) that students often adopt the teacher's attitude and a number of previous studies show high pedagogical potential to improve students' writing and that the students report positively on the use of the tool. The research done by Han et al., (2023), shows the educators taking control over the AI and how strategic use of e.g. preparing the ChatGPT results in the tool operating the way the educators intend. This indicates that once educators understand a tool, they can successfully implement it in their educational praxis. Attitudes can also be differentiated for different tools. Alharbi (2023) reports that teachers are more positive in general to Automated Writing

Evaluation (AWE) tools than Machine Translation (MT) tools, as MT offers little to no cognitive stimulation. Collectively the educators in Koltovskaia's study (2023) agree that a balanced approach is the way forward using the tools. To ensure the balanced and effective use of AI tools in the classroom, appropriate guidance is essential (Xiao & Zhi, 2023).

6. Discussion on Speaking

In the following sections, a nuanced discussion about the findings will be presented in relation to how teachers have used AI tools to practise speaking. In section 5.1, positive aspects of AI tools as speaking as Concerns and possibilities that are brought up in the studies and some of our thoughts, as teachers to be, on the subject.

6.1 Possibilities of Using AI for Speaking

The most frequently mentioned positive aspect of using an AI speech tool was that it reduced the social anxiety aspect of speaking a foreign language. According to Underwood's (2017) and Ericsson & Johansson (2023) studies, students were more comfortable talking to an AI chatbot rather than talking to a classmate or a teacher. Thus, AI has the potential to promote creativity and motivation for students when using their L2. According to Ericsson and Johansson (2023), at the beginning of the study, the participants' opinions regarding social and emotional aspects of using AI tools, were neither especially positive nor negative. The participants did however change their attitudes gradually, as they thought talking to the AI became more comfortable. It later showed that the females in the study benefited more than their male counterparts from practising with an AI tool as they all rated their experience higher than the male participants. This was largely because of the nonexistent social pressure (Ericsson & Johansson, 2023).

Regarding the improvement of speaking skills. Pronunciation, fluency, and grammatical correctness were the three most frequently named areas of improvement in the studies, largely because of the Speech program's ability to give the participants real-time and precise feedback on their speech. According to Mohamed (2023), ChatGPT, for example, can provide students with real-time interaction and feedback, personalised language instructions, a vast knowledge base, natural language processing capabilities and the ability to deliver human-like responses. This aligns with Iio's (2018) study, that the participants greatly improved their pronunciation from the repeated feedback the Ai could provide on how to

more accurately pronounce the word. With help from RALL, the student improved their grammatical knowledge and fluency when speaking and the word count per minute increased marginally. Rall also helped the participant to shorten their pauses in between sentences. (Iio, 2018). According to Zou and Du (2023), the participants were also more willing to receive feedback in spoken form from the AI rather than in written form. The study showed that the participants thought it to be more intuitive and could quickly correct themselves. This was because the evaluation program could instantly provide feedback and highlight it with different colours and provide the student with the correct way of pronouncing the utterance (Zou et al., 2023).

According to Luckin & Holmes (2017), AI might decrease the need for standardised tests to evaluate student's skills. In the scenario of students practising their speaking skills with an AI speech program, that AI program would have the complete record of what the student has performed, and then make an assessment of the student's skills and provide a grade, based on their previous practice records, without an additional test (Luckin & Holmes, 2017). These aspects could greatly benefit students whose test performance is affected by nervousness/performance anxiety and maybe result in a fairer grade related to the students' actual knowledge/skill. Using AI as a method for testing students' speaking skills in the EFL classroom could have a big impact on schools as it might raise a lot of students' grades, as performance anxiety is a major problem for students today.

According to Mohamed (2023), AI learning tools, in general, are more efficient than traditional learning methods (such as books) as they can be personalised to each student's needs and offer a more interactive experience. This aspect could also be greatly beneficial to the school as the need for specialised teachers might increase and the fact that dated teaching materials will not be a concern, as a simple update of the software would make the material/language up to date. Furthermore, according to Dandu & Mohanacharyulu (2022), low-performance students benefited greatly from practising their speaking skills with an AI speech program, in contrast to high-performing students who did not seem to improve much at all.

6.2 Concerns About Using AI for Speaking

The concerns of using AI were not as unified in the studies as the possibilities were. While some of the concerns found were generic concerns that are problems for all users of AI, other concerns were more aimed at the specific program in question.

Even though students feel that they have improved their speaking skills with an AI training program, partially because of the low social pressure, it does not necessarily mean that they improve when they speak with a person. The students will still need to face the social anxiety aspect of speaking and speaking in a second language. The anxiety aspect will always be a part of talking, and an AI tool cannot train that away. However, AI can hopefully provide students to be better equipped to speak to real humans and face the social anxiety that comes with it. AI speech training programs can probably not replace practising speaking and communicating with another student in class.

One concern that two of the studies shared was technical difficulties. In Ericsson and Johansson's (2023) study, the students experienced technical difficulties. Some days the program was non-responsive and became useless, hence a whole day of planning was wasted. This highlights another aspect of using AI tools as the teachers have to learn how to use them and naturally benefits from being interested in new technical innovations. In addition, if the lesson is dependent on using AI technology, the teacher is dependent on having a stable internet connection and efficient computers. In Underwood's study (2017) the students also faced technical difficulties. When talking to the AI, the students could not always expect an answer to their questions. Generally, questions asked in English were provided with a good enough answer, while questions in other languages like Spanish were not. Questions like "How do you spell..." were for the most part answered correctly, while "What does ... mean" were often not answered to satisfaction and rarely understood. Even though the results were not overwhelmingly positive, students were still intrigued by incorporating AI in their education. Students were intrigued to talk to the AI, but mostly to see what it is capable of (Underwood, 2017). This requires both the teacher and the students to have a certain knowledge of how to use the AI program, to learn how to use the program could on its own be time consuming and take away educational hours from the regular language education.

According to Mohammed (2023), real teachers are still vital to EFL education, for several reasons. For example, Mohamed's (2023) study showed that there are concerns about stereotypes and cultural biases coming in the AI speech tools, Kring (RISE, 2023) also shares these concerns. As AI is based on the largest international languages in the world a lot of, for example, American English and Mandarin, values and stereotypes from those cultures could seep through into the classrooms which is outside of the teachers' control. AI tools, generally, do not offer a cultural understanding. With this in mind, real teachers will still be essential to be able to integrate cultural understanding to EFL education. Furthermore, AI tools do raise

some ethical questions, questions about privacy, accountability, fairness, transparency, and the capability of giving the right emotional or appropriate feedback (Mohamed, 2023).

7. Summary and Conclusions

This review was conducted to provide an up-to-date summary of the possibilities of using AI in foreign language teaching and learning. The findings show that AI has been used successfully in practising productive skills, writing, and speaking, in the EFL classroom. As of now, it has been used to enhance students' writing by practising how to properly write a text, providing better formulations, suggestions, and exercises for translation between the student's L1 and L2, and providing feedback. To practise speaking, AI has been used to simulate conversations, evaluate students' recorded speech, and also as a way of providing immediate feedback. The findings of the studies show that when teachers are exposed to the tools, they realise their strengths and/or weaknesses and can then form an informed decision on how to best implement it or not and decide if it correlates with their personal teaching practice.

The results of our review show that further research needs to be carried out to maximise its use for students' and teachers' benefit. This can be seen in the results of Hsiao & Chang (2023) for example, where the case study indicates a research gap in the implementation of the tools and a gap in the exploration of students' perception of different learning activities. This result is echoed by (Gayed et al., 2022), (Han et al., 2023) and Uzumcu & Acilmis (2023) where some positive results were observed but the study indicated the need for further training and specifically human assessment to better understand the impact of the AI-tool used. Further training for optimal benefit when using AI-powered tools can be illustrated by Uzumcu & Acilmis's (2023) report which showed a clear parallel between the innovativeness levels of the teachers and increased levels of use of interactive AI-powered tools with students. For the future maybe the tools themselves should be looked into. Kloppers (2023) noted that there is a lack of studies on how accurate tools such as Grammarly themselves actually are so they conducted a study where 1136 Grammarly-identified errors were graded and discussed among two native English speakers. They found that the tools propose a certain style of writing, variance in the quality of the feedback, and accuracy of style-related corrective feedback were also identified.

It is clear when you read all the papers that the tools in theory are here to provide the

next level of education where students' focus will shift from solving simpler tasks by themselves to tougher tasks with the tools. In the future, it would be interesting to see more research done in Sweden, as a lot of the methods could be applicable in Swedish schools where we will teach where students should get the opportunity to meet written and spoken English and relate the content to their own experience (Skolverket 2023). Also, more research on receptive skills, such as reading and listening, is much needed.

Although most studies are robust in their design, some were carried out on a small sample size, thus leading to unreliable results. Prior to some of the research, teachers had expressed support in using AI tools, which suggests that caution regarding potential biases should be acknowledged. Some conclusions are preliminary, due to the research field being new. This is best exemplified in the results of Gayed et al., (2022) study, which indicated that the student's lexical diversity on average became better when using AI KAKU compared to the control group not using AI. The results were however not in line with the researcher's expectations as they predicted a bigger impact of the tools. Among other factors, it is discussed if the results are due to a lack of training for students in using the concerned tool. It should also be stated that the gathered results in the study came from machine assessment and the researchers believe human assessment might have contributed to a more holistic understanding of the student's results. The researchers could not claim after asking participants that the program reduced participants' perceived mental effort during the writing process. As with most of the studies we have gathered, the author highlighted that additional research is needed.

As mentioned in the introduction, The New York State Department of Education banned its schools from using AI in their teaching, in January 2023. As of now, the same department has removed the ban on AI, and schools are now allowed to use it. This proves how quickly this particular area of research is moving. With the release of the latest update of ChatGPT, ChatGTP 4, many flaws of the program are eliminated, and ChatGPT writes text similar to the quality of a human. With this in mind, we hope this review will provide a reference for educators and policymakers curious about implementing AI tools.

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