

## Artificial Intelligences in English Teaching and Learning: A Systematic Research Review

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### ABSTRACT

Technological developments cannot be separated from learning, including the use of Artificial Intelligence (AI), which has a tremendous impact on learning, both positive and negative. If used in the right way and in the right way, AI will have a significant effect on learning. This research aims to comprehensively review the use of AI in English language learning and teaching. This research method is a systematic research review that is part of qualitative research using the PICOC (Population-Intervention-Comparison-Outcomes-Context) technique. The aspect of the research discussion is how AI plays in English language learning. AI has a huge impact on the learning system and students' interest in learning English. The research results show that AI if used in the correct procedures, will really help teachers in teaching and further increase students' interest in learning English.

**Keywords:** Artificial Intelligence (AI), Teaching learning development.

### ABSTRAK

Perkembangan teknologi tidak dapat dipisahkan dari pembelajaran, termasuk penggunaan Kecerdasan Buatan (AI), yang memiliki dampak besar pada pembelajaran, baik positif maupun negatif. Jika digunakan dengan benar dan dengan cara yang benar, AI akan memiliki efek yang signifikan pada pembelajaran. Tujuan penelitian ini adalah untuk meninjau secara komprehensif penggunaan AI dalam pembelajaran dan pengajaran bahasa Inggris. Metode penelitian ini adalah review penelitian sistematis yang merupakan bagian dari penelitian kualitatif menggunakan teknik PICOC (Population-Intervention-Comparison-Outcomes-Context). Aspek dari diskusi penelitian adalah bagaimana AI memainkan peran dalam belajar bahasa Inggris. AI memiliki dampak besar pada sistem pembelajaran dan minat siswa dalam belajar bahasa Inggris. Hasil penelitian menunjukkan bahwa AI, jika digunakan dalam prosedur yang benar, akan benar-benar membantu guru dalam mengajar dan meningkatkan minat siswa dalam belajar bahasa Inggris.

**Kata kunci:** Kecerdasan Buatan (AI), Pengajaran Pengembangan Pembelajaran.

## INTRODUCTION

Learning must be appropriate and always develop dynamically according to human nature, whose needs continue to vary according to what they face. Learning or teaching in particular requires media, namely what is called technology. The powerful technological phenomenon that exists today is Artificial Intelligence (AI), which has a tremendous impact on all aspects of life, including the learning system. Before delving into the framework for considering how artificial intelligence will affect the field of education, let's define what is meant by AI itself. Artificial Intelligence (AI) is the term for machine-based systems that can forecast, suggest, or decide on actions that impact real or virtual environments based on a set of human-defined goals. AI systems communicate with humans and either directly or indirectly affect our surroundings. In general, artificial intelligence (AI) is described as a computer system that can carry out tasks typically associated with intelligent beings, (Tuomi, 2018). Technology is like a knife, it can be used for good or bad depending on the person himself. Artificial Intelligence (AI) as an information system knowledge algorithm also has a tremendous

Teaching is a sequence of external activities intended to assist the learner's internal learning process, (Sequeira, 2012). The keyword for learning is to support the internal process of learning, so a support system is needed namely AI. In this case, the author wants to link the relationship between AI in English language learning. Then let's explore the role of AI in English learning. AI undoubtedly has a significant impact on learning. A small example that is currently trending is the use of GBT Chat. Many teachers, students, lecturers, and university students use this application for various purposes - which naturally transcends the numerous discussions about the reliability of the sources cited—this application affects literacy initiatives in the field of education.

Artificial intelligence (AI) related crime can take many different forms and be a complicated topic. Some examples of crime issues related to AI include cyber security attacks. AI can be used to carry out more sophisticated and automated cyber-attacks, such as phishing attacks enhanced by machine intelligence. This can lead to data theft, system hacking, and online fraud. Creating deep fakes or fake video or audio recordings that look and sound like real people is also an AI risk. It can be used for fraud, blackmail, or spreading false content that damages a person's reputation. Another case is the misuse of AI in cyberspace (Rachmad and Supanto, 2020). Many social media platforms use AI algorithms to display content to users. Misuse of AI in this case could include the spread of extremist content, disinformation, or the use of AI to strengthen algorithms that promote harmful content.

The several examples of misuse of AI above do not mean that it is synonymous with crime. However, security issues related to the unauthorized use of AI and misuse of the technology must be addressed through appropriate legal, ethical, and policy frameworks. Organizations, governments, and the technology community are working to develop guidelines and regulations that can help address these issues and maintain the ethical and safe use of AI. That's why the issue of AI information technology crimes needs serious attention. This type of crime is included in extraordinary crime (extraordinary crime) and is also considered a serious crime (serious crime) and transnational crime (crime between countries) which can have a serious impact on human life itself (Raodia, 2019).

According to a Google report on May 22, 2023, artificial intelligence (AI) will bring major changes to the world of education, including Indonesia. Shantanu Sinha, vice president of Google for Education, explains that AI has several benefits and negative impacts in the educational context. He said that AI has great potential to be developed in the future and contribute to the digitalization of education. The use of AI also hurts the world of education. One of them is the dependence of teachers and students on AI which may reduce their ability and willingness to learn. Apart from that, AI also can control national education policies,

increase plagiarism, and reduce the enthusiasm and potential of students and teaching staff (undines.ac.id. 2023).

Several studies that raise AI show several benefits of AI in learning English. Some things that students need in learning English are knowing the native language directly and in this case, AI will offer a realistic dialogue platform that will facilitate learning and teaching English, (Wang 2019). This research aims to determine the relevance between AI and English language learning. Apart from that, the real benefits of AI in English language learning are also explored

## METHODOLOGY

This research used a systematic research review as part of qualitative research. This research aims to synthesize research results using the meta-synthesis method on the topic of AI in English language learning and teaching. By definition, meta-analysis is the integration of data to obtain new theories and concepts at a deeper and more comprehensive level of understanding (Perry & Hammond, 2002).

The five PICOC elements Population (P), the target population for examination (teachers and students who use AI, for example) are the subject of research issues about the use of AI in English language acquisition; Intervention (I), identifying issues that researchers are interested in; Comparison (C) refers to the elements of the study that will be contrasted with the intervention; Outcomes (O), the outcomes of the implemented interventions; Context (C), background, or environment of inquiry (Wahono, 2016).

Table 1. PICOC

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POPULATION	AI, English Language Learning
INTERVENTION	Dampak AI negatif dalam pembelajaran Bahasa Inggris
COMPARISON	The role of AI in English learning
OUTCOMES	The effectiveness of AI in English learning
CONTEXT	AI in English learning

The search data carried out in this research was obtained from the website address, <https://scholar.google.co.id> and supported by several Research Gate website addresses and several general journals and campus journals. To make it easier to find the articles the researchers were looking for, they used the keywords "Artificial Intelligence (AI)", and "English Language Teaching and Learning". The following are the limitations used in this research to ensure the articles searched are worthy of research: (1.) The data sought revolves around AI in learning, especially in English; (2) The majority of data used is qualitative, while quantitative data is complementary; (3.) Data that comes from trusted sites.

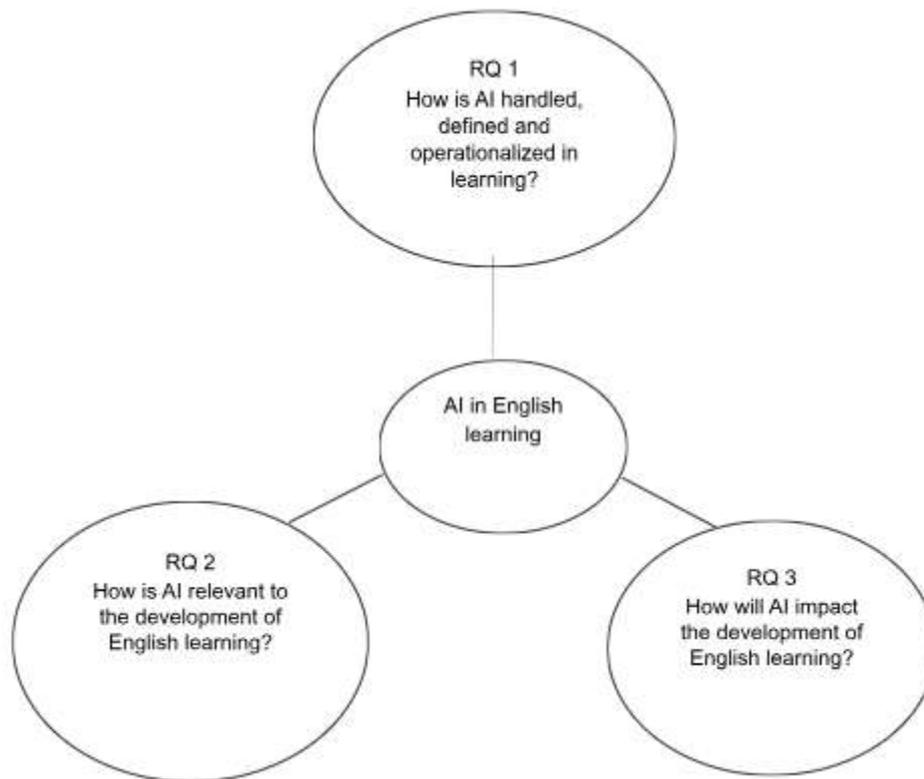


Figure 1. Mind Map

Table 2. Flow In Research Problem

NO.	AUTHORS	AIMS	FINDINGS
1.	(Re, & Liu, 2022)	To describe artificial intelligence (AI), whose use is growing at an alarming rate and has permeated everyday life. The way that education is taught and learned has changed as a result of the widespread deployment of technology.	The English Teaching Network is an online remote learning platform. Automated testing document production is a key component of the English teaching network system because it allows students to learn according to their interests and persuasion aims.
2.	(Gazaill et al, 2023)	To find out how students feel about utilizing AI-powered smartphone apps to get better at listening in English.	The university's students draw attention to the possibilities of IA for individualized education.
3.	(Suryana, I., Asrianto, A., & Murwantono, D. (2020)	This study aims to find out how students feel about utilizing mobile AI applications to enhance their English listening abilities.	The outcomes demonstrated that Netflix is the most successful and efficient artificial intelligence mobile application for enhancing English listening abilities.
4.	(Dewi et al, 2020)	to examine an artificial intelligence platform that can be used for both student performance evaluation and instruction.	Students' English language skills can be developed with the application of AI technology.

5.	(Shareef, 2021)	The impact of artificial intelligence on online education will depend on how education develops in the future. Perhaps a society of robots will teach and study together.	AI is changing study rooms and schools, simplifying the work of teachers greatly.
6.	(Rajesh, 2022)	To explain the usage of AI in the education structure has been drastically increasing.	AI contributes by creating various software programs that raise the standard of the educational system. It may also solve complicated problems by performing multiple problems at once.
7.	(Tuomi, 2018)	It describes the state of artificial intelligence (AI) as of right now and how learning, teaching, and education might be affected by it.	Artificial intelligence is evolving swiftly, acquiring all the fantastic and awful traits that popular culture has attached to it. Modern AI systems have their limitations in terms of technology, society, science, and philosophy. AI will have a bigger, more systematic impact on education systems.
8.	(Zhai, 2021)	To reveal how artificial intelligence (AI) has been used in the field of education and investigate future directions and obstacles in this field of study	The development dimension is covered by 23 studies. Artificial intelligence (AI) was used as a development tool to enable the creation of a smart learning environment, which is characterized as concentrating on the development of algorithms for teaching and learning, such as deep learning, recommendation, matching, and categorization.
9.	(Munir et al., 2023).	Discuss how AI will play a bigger part in higher education since it allows students to tackle learning challenges in a way that is tailored to their individual experiences and interests.	Specifically, since 2015, the application of AI in digital education has grown in popularity as more and more scholars are drawn to carry out investigations into the possibilities of AI/ML in education.
10.	(van der Vorst & Jelicic, 2019)	To investigate how personalized learning might be impacted by educational AI applications	The promise of one-to-one learning is unlocked by AI, which makes it possible for apps to provide each learner with individualized instruction.
11.	(Sabzalieva & Valentini, 2023).	To describe chat GPT and its use in the higher education context	The Quick Start Guide describes how to utilize Chat GPT in higher education and gives an overview of its functionality. The Quick Start Guide outlines the fundamental issues and moral ramifications of artificial intelligence (AI) in higher education and provides actionable recommendations for educational institutions.
12.	(Dileep, 2021)	The purpose of this study was to evaluate AI's effects on schooling.	AI development and application have been aided by the advancement of personal computers and subsequent innovations that have expanded their processing and computational power as well as their capacity to be embedded or integrated into a variety of devices, machinery, and platforms.

13.	(Holmes et al., 2023).	To determine and record the following actions that must be taken to provide moral and legal guidelines for AI and education.	Teachers are increasingly embracing artificial intelligence (AI) tools developed by for-profit businesses with millions of dollars to spare. This is happening at the same time that lawmakers are calling for more AI curricula specifically created for school-age children. Artificial Intelligence in Education is widely embraced worldwide.
14.	(Yoga, 2022)	To understand the extent of the power of AI in education both during the COVID-19 period and the future learning period through the example of ten international scientific publications.	Artificial intelligence is an essential field in computerization in the present and future era of education.
15.	(Fahimirad, 2018).	To look into how AI is being used in education for both teaching and learning.	AI solutions have the potential to revolutionize administrative services at universities, which could provide a whole new set of issues for teaching and learning.
16.	(Flogie. 2021).	To present some ideas for such learning-training environments in education	Not every kind of AI is a benefit to mankind, and not all uses of AI are ethical and moral.
17.	(Chen, 2020).	To evaluate artificial intelligence's (AI) effects on education	AI has been widely embraced and applied in the field of education, especially in educational institutions.
18.	(Baker, 2021).	It outlines the possibilities that arise from integrating AI to support students in one-on-one learning experiences and impact systems.	
19.	(Huang, 2018).	To explain how design transforms machine-to-know interaction learning into knowledge-based learning interactions in automated education.	There are other benefits to using AI and machine learning in education beyond just making teaching easier. The use of modern educational technology, which is not always artificially intelligent, benefits students and the schools that assist them in their academic endeavors in a multitude of additional ways.
20.	(Liu & Kong, 2021).	To explore diversified artificial intelligence, especially in college students	The combination of college and multiple intelligence theories instructing English should be based on four principles: linguistic intelligence, system design, and instructing students based on their aptitude.
21.	(Trubitsyna, 2023).	It analyzes the possibilities of using artificial intelligence tools to improve the Quality of translations into English. It is shown that this process should necessarily involve English specialists who are competent in the subject area to which the text is related	Artificial intelligence (AI) systems are robust, useful, and effective tools for raising the standard of English translations. It will be necessary to build future software tools on top of sophisticated AI systems that are either already available or will be shortly.
22.	(Miladiyenti et al., 2022)	To find out if using the AI pronunciation app may motivate students to practice and take charge of their education.	The findings showed that the students' curiosity and attention were piqued by the activities in the app, which encouraged them to perform better and meet their learning objectives.

## FINDINGS AND DISCUSSION

Certainly, artificial intelligence will have an impact on the quality of learning. As mentioned above, like the two sides of a coin, developmental learning and technology cannot be separated. At a more systemic level, AI will have a major impact on the education system. This isn't due to any particular AI characteristic; Instead, AI is one expression of the far-reaching ongoing transformations resulting from digitization, global real-time production and communication networks, and the automation of productive processes. From the results of research conducted by Ikka, it can be understood that the existence of AI greatly influences the education system, especially in the learning system, (Tuomi, 2018). The influence of AI in the world of education is very significant, especially in the development of digital software (software). So these developments greatly affect the digitalization of the education learning system.

One of the things that AI development offers is online learning. The English language teaching network system is an online distance learning system. This teaching method can guarantee students' goals, and enable them to learn according to their aspects, and automatic test document generation is one of the most important modules in the English teaching network system (Liu, 2022). Furthermore, in the field of training, this innovation transforms schools and learning spaces, making teachers' work easier (Shareef, 3263).

In recent decades, artificial intelligence (AI) has advanced significantly. Its application is unparalleled in several domains and disciplines, including information science, internet marketing, educational data science, data mining from the creation of different platforms, and the field of "connected" items. AI will undoubtedly play a role in language learning and teaching in the future. For many students, the use of AI in foreign language instruction could mean a significant change in the learning environment, thus it's critical that current and aspiring educators are aware of AI's potential and can modify their pedagogical approaches accordingly. encourage and involve pupils in AI foreign language learning, (Gazaille 2023).

Huang (2018), explains that the findings demonstrate how environmental education using an AI teaching system may significantly improve students' environmental knowledge and concepts, alter their attitudes and level of concern for the environment, and foster their conceptions of what it is to be environmentally friendly. The problems of education at this time are still many and increasingly complex so that there needs to be an appropriate contribution of thought to overcome these problems. As educators, we should not be able to remain silent in dealing with these problems. Therefore, we can as much as we can overcome the problem either by writing, discussion, or real practice as educators in the teaching and learning process. So it is not just mere conversation but there is a tangible form in the process of learning and teaching. In order to address online learning model, the teacher or lecturer has to master the application model that allows online learning activities (Melati, 2020).

Online learning is one that AI development offers. An online remote learning system is the English Teaching Network. One of the most important modules in the English teaching network system is automated testing document production, which helps students achieve their goals by letting them study according to their interests (Yang Liu, 2022). Furthermore, this invention is simplifying instructors' jobs in the training sector by modernizing classrooms and schools, (Shareef, 3263).

The current educational system is greatly impacted by the advancement of learning media. Teachers can enhance their pupils' English listening abilities in several ways. The mobile app will be used by students to study the language, but they must register on the course website. Mobile applications can make language learning enjoyable, approachable, and intuitive (Saigal, 2018). Numerous artificial intelligence mobile applications, such as Tune In NFL Radio, Free Music, Sports & Podcasts, Netflix, Joox Music, and VOA Learning English Listening Every Day, can enhance English language proficiency, particularly in the area of listening (Suryana,

2020, p.1). This indicates that technology has a big impact on how educational materials are developed.

Learning English also requires that artificial intelligence be accommodated. AI also strongly supports the achievement of successful learning of English with students' diverse intelligence, suggesting that English language teaching uses a combination of multiple intelligence theory and teaching in higher education should be based on four principles: linguistic intelligence, system design, and teaching students according to their abilities, (Zhiying, 2021). Multiple intelligences will be greatly represented by the presence of AI, especially since it also really supports differentiated learning that is in line with the goals of multiple intelligences.

The presence of AI in the form of applications also really supports students' interest in learning English. Because in Indonesia English is not the main language, teachers and students need tools to translate effectively and efficiently. Regarding this, AI can function optimally to accommodate translating English into local languages. AI systems are practical, powerful, and efficient instruments to improve the quality of translation from English. Future software will need to be developed based on advanced AI systems that are already accessible or will soon be available, (Andriichuk et al, 2023).

From here it can be understood that the software that is realized in applications to help students in learning English is very useful. Even curiosity, which is one of the basics of learning English, will be strong if supported by an application. Students' curiosity and attention are stimulated by the activities in the application, which makes them work better and achieve learning goals (Sariani et al., 2022).

## CONCLUSION

The development of AI is part of the demands of the times because education and technology cannot be separated because they mutually strengthen each other. If applied properly, artificial intelligence can be of great help in English language learning. The application of AI will significantly alter the current educational process, for instance, in terms of helping students' listening, reading, speaking, and writing skills. Because students' interest in the material could be the key to improving students' ability to speak English, AI can help achieve this goal. However, as mentioned above, educators cannot completely rely on AI technology. Because technology cannot replace the role of the teacher who, apart from being an open source, also has a moral responsibility to direct, and develop, so that children have knowledge and at the same time have good morals in the future. AI technology is only a learning medium that will never replace the role of the teacher.

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