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## THE USE TECHNOLOGY BASED ON ARTIFICIAL INTELLIGENCE IN ENGLISH TEACHING AND LEARNING

Tira Nur Fitria

Institut Teknologi Bisnis AAS Indonesia

\*Corresponding author: Jalan Slamet Riyadi 361 Windan Makamahaji Kartasura Sukoharjo 57161. Email: [tiranurfitria@gmail.com](mailto:tiranurfitria@gmail.com)

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### abstract

Artificial Intelligence (AI) is a human intelligence simulation based on computers and designed to function as human beings. AI is one of the drivers of the 4.0 industrial revolution to facilitate education in teaching and learning. This research is to know the role of AI in ELT and to investigate AI technologies in ELT. This is library research. The result shows that AI offers a good learning atmosphere for English learning. It has considerable ability to create a personalized atmosphere in which learners use their senses to concurrently exercise English skills depending on their current level of English, vocational needs, or interests. AI provides a real simulation dialog platform such as spoken English and increases practical skills such as written. It increases the practice of students' capacity and optimizes the teaching impact of English in ELT. Learning English become easier with the development of technology and platforms. AI's technology offers the opportunity to improve English language skills. The existence of various kinds of learning technology makes it easier for students to understand English. Many choices of ELT applications are based on AI technology that can be used by the students. These technologies as smart machines that think and behave like people with the ability to simulate intelligence and make decisions identical to human reasoning through a process both computers and cell-phones such as Google Translate, Text to speech (TTS), English Able, Orai, Elsa, Chatbot, Duolingo, Neo platforms, and many more.

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## INTRODUCTION

The industrial era has influenced everyone to be able to adapt to rapid changes. Globalization and the industrial era 4.0 have created new creativity, opportunities, and challenges such as in technology. Therefore, technology plays a very important role in conveying information in the form of text, images, and sound (Rahayu & Pujiyono, 2017). The technology was created to facilitate human work and activities. One technology that is being developed intensively is Artificial Intelligence (AI).

Artificial Intelligence (AI) is one of computational creativity that has increased attention to the development of artificial intelligence (AI) technologies (Cheng & Day, 2014). To gain creativity by computers, many artificial intelligence technologies have been implemented. Rahman (2009, p. 343) states that artificial intelligence (AI) creates software that filters knowledge and other autonomous functions, such as computation or student search. Artificial intelligence (AI) develops "intelligent" devices that run and react to something similar to the human brain, such as computer systems (online platforms) and computerized machines (robots) (Karsenti, 2019). Artificial intelligence (AI) is also known as Machine Intelligence (Mehrotra, 2019). It is the intelligence that is predicted by the machine through the natural

intelligence displayed by humans. In other words, AI is about adding human intelligence to the machine for task execution. According to Mehrotra (2019), Artificial Intelligence (AI) is a computer science technology that explores the analysis and development of smart machines and apps. It is the science of having a machine to think and behave like a human being who is intelligent. The key to AI technology lies in intelligence (Wang, 2019). According to Whitby (2009), AI studies intelligent behaviors in humans, animals, and machines and attempt to find ways.

The word AI consists of the words “artificial” and “intelligence” (Ahmet, 2018). The word “artificial” is something that is not real, simulated, but not completely false regarding being a fraud. While “intelligence” is something that can replace genuine items because the former has better qualities in a certain context. Intelligence is a very complex term. It includes different forms, such as reasoning, self-knowledge understanding, emotional awareness, preparation, consciousness, and creativity.

As stated by Joshi (2019, p. 4), AI may not mean designing an incredibly smart computer that solves all problems, but rather building a machine that is capable of human-like action. The purpose of artificial intelligence is to build computer software or hardware systems that demonstrate human-like thought or display features traditionally associated with human intelligence (Campestrato, 2020). AI as a computer system theory can perform tasks normally involving human intelligence. Speech understanding, language awareness, decision-making, and visual perception are aspects of human intelligence that can be understood by artificial intelligence. There is a demand for AI to create an expert system and to find solutions for complex problems such as recognition or natural language processing (Devi et al., 2020). AI as a tutor for the language. AI offers tireless, individualized training, providing learners the large volume of feedback and scaffolding activities needed to achieve fluency, all within a low-stakes atmosphere (learners are more likely to take chances and make mistakes). AI's big promise is that it will shorten the time it takes to develop abilities.

Kaur & Gill (2019) states that artificial intelligence (AI) is a digital attempt to achieve human-level intelligence by using different computations of machines. It is a series of advanced technologies that allow humans to feel, comprehend, function, and learn from machines. It can be said that Artificial intelligence (AI) is a branch of computer science that emphasizes the ability to think and act like humans. It is helped by machines to find solutions to complex problems in a more human-like fashion (Sridhar, 2018). This requires borrowing human intelligence traits and then incorporating them in a computer-friendly way. Human actions such as learning, planning, making decisions, and knowing language can be done by Artificial Intelligence (AI).

Teaching and learning English also has become easier with the development of technology and digital platforms. These now offer the opportunity to improve English language skills. This means that if we have a machine for teaching English, perhaps we do not need any English teachers in the classroom, or English education (Shin, 2018). Therefore, English education need not be replaced by the Fourth Revolution. Instead of that the development of an English class model using Artificial Intelligence should work in collaboration with the English teaching and learning process. Language literacy and digital literacy are a neat combination to improve global competence.

Ribeiro (2020) states that Artificial Intelligence in English Language Teaching (ELT) is the most realistic way English language teachers can use it. English is one of the common world languages which has a systematic grammatical structure. Therefore, learning English has always been substantially difficult for ESL/EFL (English as Second/Foreign Language) students (Mehrotra, 2019). Thus, the reform of English teaching and learning can be

effectively promoted through artificial intelligence machine learning, intelligent search, and natural language processing (Wang, 2019). Related to the explanation above, this research is to know the role of Artificial Intelligence (AI) and to investigate AI technologies in English Language Teaching (ELT).

## **METHOD**

This is library research. It is research carried out through collecting data or scientific writing aimed at the object of research or collection of bibliographic data, or a study carried out to solve a problem that is based on a critical and in-depth study of relevant library materials. One of the characteristics of library research is that the researcher is face to face with the text (Zed, 2004, p. 4). This analysis will look at a variety of reference books or journals as well as the findings of related prior research to get a theoretical foundation for the issue at hand.

Sources of data used as material for this research they are books, journals, and internet sites/websites related to the topic that has been selected by the researcher. Sources of research data consist of various books and journals related to this research topic. Documentation is the data collection method used in this analysis, which involves searching for knowledge about items or factors in the form of documents, books, articles, papers or posts, newspapers, and other sources. But, in this research, an evaluation of the concepts and theories used is chosen based on the available literature, especially from several articles have published in various scientific journals.

After all the data is collected, the next step is the writer analyzes the data so that a conclusion is drawn. To get the correct and correct results in analyzing the data, the writer uses content analysis techniques. Content analysis is a type of study that entails a thorough examination of the contents of written materials because this data to be studied requires a descriptive explanation.

## **FINDING AND DISCUSSION**

### **Relationship between Artificial Intelligence and English Language Teaching**

AI-assisted devices are a sub-section of computer-assisted language learning for foreign language learning (CALL). AI provides a wide variety of developments in foreign language education with the exponential development in natural language processing and technologies to cope with big data (Li, 2020). English language teaching (ELT) is considered an integral educational aim in terms of improving the potential of students to interact internationally (Mukhallafi, 2020). Artificial intelligence (AI) provides a vast range of enhancements in foreign language education with the exponential development of natural language processing and technologies capable of working with big data.

Artificial intelligence (AI) is a challenging and creative field in teaching English (Zhu, 2017). Artificial intelligence technologies may help make world classrooms open for all, including those who speak various languages or may have a vision or auditory impairments (Marr, 2018). Gawate (2019) states that As an additional support system, AI will play a critical function for both students and teachers of the English language. This statement is also supported by Li (2017) that “Artificial intelligence also acts as a tool for improving English teaching”. In AI, language literacy and digital literacy are a neat combination to improve global competence, such as in learning English. Personalized content is also key to digital learning technology. Adaptive systems based on big data and artificial intelligence are now at hand.

Mukhallafi (2020) states that in the present research, artificial intelligence (AI) is characterized as the use of AI systems for teaching/learning English to improve the processes of organizing, arranging, and selecting content. It further diversifies sources of instruction and streams of schooling according to the levels of the learners. Besides, through individualizing self-study procedures, and simulating smart and expert systems, it is used to establish teaching techniques and assessment methods. According to (Wang, 2019) in his research entitled “Research on Artificial Intelligence Promoting English Learning Change”, there is the relationship between Artificial Intelligence and English teaching as follow:

1. Artificial intelligence changes the atmosphere in which English is learned. Artificial intelligence offers a good learning atmosphere for immersive English learning. Through integrating and logically interpreting information such as images, sound, and text in an intelligent device, English learning becomes more stereoscopic and visual. Students communicate with AI through the interface between man and computer, which not only improves the validity of language environments. This statement is also supported by (Zilberman, 2019) that AI has a significant ability to create a personalized atmosphere in which adult learners use all their senses to concurrently exercise English skills in conjunction with their present level of English or occupational needs or wishes.
2. Artificial Intelligence optimizes the teaching impact of English. AI will provide a real simulation dialog platform for the teaching and learning of English in English. We will help students make better use of English words, spoken English, and English writing, and develop their comprehension skills. Not only can the cultural and customs awareness of the various English-speaking countries collected in AI be used to communicate and connect with students, but it can also significantly enhance the interest of students in learning English.
3. Artificial Intelligence increases the practical skill of the students in English class. Artificial Intelligence (AI) is currently the hotspot technology material of social science within the industry. The application of science and technology in English Language Teaching (ELT) requires that teachers and students understand the ability to work the system and solve problems in time. Therefore, as AI is applied to English teaching, it increases the practical operational capacity of the students.

According to Gawate (2019) in his article entitled “Artificial Intelligence (AI) Based Instructional Programs in Teaching-Learning of English Language” states that any advantages of AI-based English language teaching and learning instructional programs are:

1. Friendly need-based instructional programs for consumers. The AI-based teaching software combines aim learners and their contextual needs. It is laid down with the learners' clear expectations and exact criteria. English language teaching-learning misleads to no endpoint without analyzing learners' needs.
2. Qualitative contents: through Artificial Intelligence, it is possible to create qualitative teaching-learning material that operates on all levels of language such as hearing, speaking, reading, and writing.
3. Supplementary teacher and student support system. As an external support mechanism, AI plays a critical function for students and teachers of the English language. AI, when it incorporates humanized knowledge, will do this at any time and anywhere with precise assistance. While AI-based services are built-in, the position of educators is not denied.
4. Fast feedback system: AI-based systems can be built to learn English in a variety of ways to get feedback. It can be used in AI-based instructional programs to quantify and interpret the input according to the needs of the students, such as gradation, review, cross verification, and in-depth presentation. All facets of the students' success are assessed.

5. Changing the teacher's role as a guide and director. It is difficult to change the position of the instructor as a guide and director and exclude the teacher from the method. AI-based systems only modify the teacher's role in the ELT process. Students should be led and assisted by teachers. The teacher can handle and manage such an AI-based program that needs a few manual modifications, and teachers can do it. AI-related instructional services can only be an aid in teaching-learning of the English language.
6. Connectivity globally. For some AI-related instructional systems, it gives students all the possibilities. Owing to Artificial Intelligence, spatial and time constraints are solved. It is possible to exchange knowledge from quality organizations as well as from organizations. This is truly incredible access to AI-based instructional software. With the help of facial recognition, voice recognition, and movements of the students, it allows remote access. In short, all student behaviors can be managed with AI-based applications.
7. Teaching-learning personalization in English. As per the demand and needs of the students, the course can be created. It can be student-centered in its personalization.
8. The AI-based learning platform helps learners to learn at their speed, to repeat topics, and to highlight items that they have issues with to involve them with activities, to cater to their interests, etc. For the advancement of teaching-learning English, AI-based instructional programs are tailored. It emphasizes the need-based creation of the English course material.

### **Artificial Intelligence Technology in English Language Learning**

Artificial intelligence technology is a technology that explores how the robot can complete the intelligent work that only human beings can complete initially as one of the world's most advanced information systems (Han, 2019). Technology also develops in such a way that it becomes more advanced and makes it easier for us to do some work, such as teaching and learning English. One technology that is often discussed in the wider community is artificial intelligence technology. Technology is opening up many new possibilities for language learning (Fryer & Carpenter, 2006).

Luo & Cheng (2020) states that teaching foreign languages is powered by Artificial Intelligence (AI) technologies. The challenges of short teaching hours, limited space, limited resources, and a monotonous measurement method can be solved efficiently by Artificial Intelligence (AI) technology, etc. Thornton (2007, p. 1) defines that almost all programs/technologies Artificial Intelligence (AI) can be said to be doing some form of problem-solving. It means that Artificial Intelligence (AI) is a broad area of science that incorporates this dynamic problem-solving and human-like capacity to sense behavior and purpose. (Cobar, 2019).

The goal of AI can create smart machines that think and act like humans, with the ability to simulate intelligence and produce decisions through a process in a similar manner to human reasoning (Salvaris et al., 2018, pp. 3–4). AI works by combining the presence of several data, repetitive processing, and intelligent algorithms. This allows the software to learn automatically from the patterns or features that exist in the data. AI is a very broad field of study. The scope of theories, methods, technologies, and sub-fields that exist in AI is varied including machine learning, neural networks, cognitive computing, computer vision, and scientific language processing. When humans communicate with others by using a language, they may employ, almost effortlessly or extremely complex and still little understood process (Nilsson, 2014). Thus a computer system capable of producing and interpreting fragments of the English language has been very difficult to create. One cause of the challenge is that language has arisen within intelligent beings as a means of communication.

Teaching and learning English has become easier with the development of digital platforms. Artificial intelligence (AI) technology now offers the opportunity to improve English language skills. Language literacy and digital literacy are a neat combination to improve global competence. AI bases its process on the text processing of a language. The more sophisticated the AI, the more and more accurate the language he mastered. Therefore, the use of AI technologies would strengthen foreign language teaching and learning. (Yingsoon, 2021).

AI plays a role in conveying various information and also helps in making the English learning process even more effective. The existence of various kinds of learning technology makes it easier for these learners to understand what has been explained by the teacher. Even students also have the ease of learning even without having to face the teachers directly. There are so many choices of language learning applications based on the technology of Artificial Intelligence (AI) which can be used by both English educators and students/learners. Some examples of AI technology that can be used in English language learning are as follow:

### **1. Google Translate**

Google has created an enormous suite of tools for users, but after their original search engine, possibly the most important application is Google Translate which can be accessed on <http://google.com/translate> (Smallwood, 2015, p. 51). Text speech has even been replaced by a translator. Applications like Google Translate are already integrated with Google Board. So translating Indonesian to English, or vice versa is as easy as typing on a keyboard. Covili (2016) states that there are five things about Google Translate, they are: Google Translate can translate into up to 50 different languages. The users can translate entire documents using Google Translate. Google Translate can pronounce words in the new language and provide definitions of the words. By using the mobile app for 'translate', the users can translate street signs on the fly. Google Translate also can translate websites into a variety of languages.

Concerning teaching and learning English, Google Translate as a translator is the main function, namely as an online translator. Students can use it to translate words/phrases/sentences/paragraphs from Indonesian English or Indonesian English which are used a lot in Indonesian English translation activities. Google Translate can be used to check the spelling of words that arise due to typos. It is very useful when it comes to checking the English spelling. Google Translate can be used as a tool to learn foreign language word pronunciation. For students who want to learn English for free, especially how to pronounce words, google translate can be used.

### **2. Text to speech (TTS)**

Google Translate adds text to speech as an additional feature. The text to speech feature of Google Translate provides various languages to be spoken, from words that are translated from various languages such as English. The text to speech feature in Google Translate can read text with a less flat intonation and is smoother than the others. A Text-To-Speech (TTS) system can be defined as a system that can convert text into speech automatically through phonetization (the arrangement of phonemes to form speech). A TTS system can pronounce any word because the vocabulary is unlimited.

Concerning teaching and learning English, Text-To-Speech (TTS), can convert computer-generated text into pronunciation (audio), where the resulting pronunciation can be adjusted for speed, intonation, and the output audio format to be saved in the form of an audio file. TTS technology can streamline the teaching and learning process and

complement the learning media for English subjects, especially in the English laboratory (Yudhistiro, 2016).

### **3. English Able**

English ABLE is an Assessment-Based Learning Environment for English grammar. This technology was developed by Zapata-Rivera et al (2007). Assessment-based learning environments (ABLE) use assessment knowledge to direct instruction from a variety of sources (e.g. formative and summative). Concerning teaching and learning English, English ABLE refers to a learning environment that focused on tests to help English language learners (ELLs) learn about grammar in English. English ABLE uses a TOEFL CBT job library to build new sets with improved assignments aimed at unique ELL component skills. An adaptive, scaffolded learning environment, also offers packages for learners to help students master facets of English grammar.

### **4. Orai**

Orai's perfect option for public speaking. It can not only be used to support a teacher but can also be used as a teacher. Orai is getting excellent reviews and is enjoyable to use. Orai is user-friendly. Improving your oratory skills is a quick, self-directed strategy. Concerning teaching and learning English, Orai's strengths are being able to detect how many words we say to detect how many fillers we say while we speak. Using Orai in class, the teachers can combine it with English speaking subject matter at that time, such as describing people, then give students about 15 minutes to use Orai and after that choose randomly to come forward to practice speaking immediately. Orai provides several features designed to hone students' speaking skills, namely Lessons, Practice, Progress, and Recordings. Each of the main features has interesting content and can be studied repeatedly to hone these speaking skills. In the 'Lessons' feature, those who want to practice speaking can learn and practice their speaking skills on the content provided. Each content consists of three content stages that must be completed before you can learn the next lesson content. Orai is an application purposed to help students to be better English speakers (Suryani et al., 2019).

### **5. Elsa**

English Learning Speech Assitant (ELSA) and designed by Vu Van in 2015, and is based in San Francisco, United States. This application makes use of Artificial Intelligence (AI) and speech recognition to help improve and perfect English pronunciation. ELSA (English Learning Speech Assistant) Speak is an application for learning English that applies artificial intelligence and speech recognition. This technology allows for a two-way learning process, for example, the users can pronounce certain words or sentences, then the system will perform analysis and provide corrective input. The ELSA framework is trained to use voice data of people speaking English with multiple accents, to recognize the speech patterns of non-native speakers, distinguishing them from most other speech recognition technologies. Users are given an assessment test to determine their level of proficiency. ELSA provides scores ranging from zero to 100, with most native speakers scoring 95 or above. The results help ELSA personalize the user's learning path, highlighting which sounds hit the spot, and what else needs tweaking. ELSA makes suggestions for specific lessons according to the user's abilities. Concerning teaching and learning English, Application ELSA (English Learning Speech Assistant) Speak is an application for learning English that applies artificial intelligence and speech recognition to help students improve their English speaking skills. This technology allows for a two-way learning process, for example, users can pronounce certain English words

or sentences, then the system will perform analysis and provide corrective input (Eka, 2020).

## **6. Chatbot**

Chatbots as one of the artificially intelligent conversational systems are the latest technologies designed to communicate both with humans and computers automatically (Nghie et al., 2019). Several previous studies have proven the use of chatbots as a learning medium, especially learning English (Afrianto et al., 2019).

Concerning teaching and learning English, the Chatbot application that is built will act as an English conversation partner. Conversations, in general, can be carried out orally or in writing so that it should be possible for the user to be able to practice both. To support the purpose of the chatbot application as a medium for English conversation training, a grammar error correction feature and a user's daily log feature are needed. The responses obtained included the location of the errors, suggestions for replacing words/sentences, and descriptions of errors. This is an effort to minimize errors in the user's sentence structure. Then the daily log feature is useful for measuring the extent to which the user's practice progresses in conversation mastery and English sentence structure. That way, users not only familiarize themselves with conversational English, but also get corrections and assessments of their practice. The simple chatbot function starts with the message the user sends. The NLP (Natural Language Processing) and chatbot then interpreted the message by referring to the message according to the current database (Haristiani, 2019).

## **7. Duolingo**

Duolingo is a web that is used to learn foreign languages. Duolingo is a language learning application that uses a game method by matching words and filling in the blank parts of sentences. This method aims to teach the grammar, words, and phrases needed in a sentence. Concerning teaching and learning English, Any student at any level of English can learn a new science with Duolingo. So that the learning materials obtained by users match their abilities, Duolingo conducts tests first. After taking the test, Duolingo users will know what level of English they are at. Only then will Duolingo provide English material that has been adapted to the user's abilities. Not only about grammar, but Duolingo is also equipped with learning vocabulary, terms, and so on. Duolingo's English teaching method is also designed to be gaming-like and "competitive" with other users. That way, users of this application can see the development of English language skills that have been learned so far.

## **8. Neo**

Nexgen English Online Co., an English application company from California, United States, launched the neo application, a global English language learning system. Neo is an integrated learning solution via cellphone to gain proficiency in English that can adapt to the development of user learning through artificial intelligence and voice recognition systems. Nexgen Neo is a new solution to learning English. Neo is an application that is effective, flexible, and easy to operate for users who have an active lifestyle. With an easy-to-use interface, an adaptive learning system using international standard English technology and certificates, Neo also presents a different experience for each user. Artificial intelligence (AI) in the neo Study application regularly analyzes user behavior and data to then provide content that automatically adapts as users progress.

Concerning teaching and learning English, Neo helps users master English faster as if they were accompanied by an expert personal teacher. Through the neo Study application, users will use the advanced speech recognition feature which trains them to correct the pronunciation of each word until they become proficient in speaking English.



The benefits of using AI tools in English language learning are: 1) AI can do things that cannot be achieved by individuals, such as evaluating English down to the phoneme and understanding how your language skills have progressed almost immediately over time. 2) At any moment, wherever they are genuinely accessible (sometimes even without the internet). 3) AI tools for learning spoken English are a more accessible and successful alternative. 4) They are more scalable and can serve a lot more students than people do. 5) They can accelerate learning by an increased level of instruction, with human teachers alone becoming difficult with such frequency. 6) For those who lack trust in their speech capacity, AI instruments have a pressure-free learning environment.

## CONCLUSION

Artificial intelligence tries to make robots that have intelligence that is similar to or even more than the intelligence possessed by humans. Artificial intelligence is expected to be able to do a variety of things that will make it easier for humans, starting from natural language processing, regarding perception, reasoning, moving and manipulating objects, knowledge, and also learning. The purpose of making this sophisticated machine is to reduce working time so that activities can be more efficient. By using artificial intelligence, humans become cheaper in making decisions and carrying out activities.

Learning English has become easier with the development of digital platforms. Computer and cell phone technology will offer opportunities to expand capabilities to more people around the world and also expand the use of artificial intelligence. Personalized content is also key to digital learning technology. An adaptive system based on big data and artificial intelligence is now at hand. We can determine the right way of learning English according to the needs and schedules of each user.

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