THE TRANSFORMATIVE POWER OF ARTIFICIAL INTELLIGENCE (AI) TO ELEVATE ENGLISH LANGUAGE LEARNING

Kurnia Ulfa
Fakultas Ilmu Komputer dan Teknologi Informasi, Universitas Budi Darma, Medan, Indonesia
Email: kurniaulfa82@gmail.com

DOI: https://doi.org/10.46880/methoda.Vol13No3.pp307-313

ABSTRACT

Recently, the articles discussed how Artificial Intelligence (AI) is transforming language education dan improving students' proficiency in learning English. English is being a globally important language, and educators are leveraging AI to revolutionize language education. AI technology provides personalized learning paths, intelligent tutoring systems, gamification strategies, language learning apps, and automated assessments. These advancements cater to individual learning needs, provide real-time feedback, foster engagements through gamified experiences, and offer accurate assessments of language skills. The integration between AI and language education represents a paradigm shift in how students acquire and master the English language, positioning them for success in the increasingly interconnected world.

Keyword: *English Learning Language, Artificial Intelligence, Education Technology.*

INTRODUCTION

It is understandable that there is growing uncertainty among non-experts in Artificial Intelligence (AI) about what AI can or cannot do and the potential consequences of ever more capable AI. The popular press has given significant attention to AI in recent years, which has led to concerns that AI may take away jobs or even take over the world. AI technology has its limitations and is not capable of solving all problems. It is also important for governments to continue investing in AI research and development to ensure the responsible use of this technology. As an AI-powered assistant, I strive to provide helpful and fair assistance while maintaining safety for users.

As the world becomes increasingly interconnected, it has become essential to have proficiency in the English language. For students who want to excel in an English-speaking world, mastering this global lingua franca is a top priority. That's an interesting point about language learning being a complex process that involves both language and communication. It's great to see that innovative solutions are emerging to meet the demand for more effective language education, and the use of Artificial Intelligence (AI) is definitely a promising avenue. With AI, personalized learning experiences can be created to cater to individual learning needs and styles, which can make the language acquisition process more engaging and efficient. The interconnection between different language skills such as reading, writing, listening, and speaking is an important aspect to consider when developing language learning solutions using AI.. To maximize speaking skills, two elements are necessary - comprehensible input and social interaction (Krashen, 1982).

It's exciting to see how innovative and effective approaches to language education are emerging, and Artificial Intelligence (AI) is playing a key role in this transformation. With AI, a dynamic and personalized learning experience can be created, making language acquisition more engaging and efficient for students. AI technologies provide personalized and adaptive learning experiences that can revolutionize the functional educational system and to increase the competitive of institutions while empowering teachers, and students at all

levels. There are various learning platforms and apps available, such as Duolingo, Babbel, or Rosetta Stones, that leverage AI to provide a more tailored learning experience. These platforms can adapt to students' proficiency levels and learning styles, providing personalized learning paths, intelligent tutoring systems, gamification strategies, language learning apps, and automated assessments. As (Kushmar et al., 2022) mentioned, “that using the possibilities of artificial intelligence, students can study multiple courses and curricula worldwide." This highlights the potential of AI to provide a more inclusive and accessible education system for learners around the world.

Previously, learning English communication was carried out using different media or social media platforms to enhance students' speaking skills. For example, students may go on an outing to visit a tourist attraction and create video content describing the object to improve their speaking skills (Ulfa, 2019). During the COVID-19 pandemic, when in-person learning was not possible, researchers used online media to improve students' reading skills through the use of videos uploaded on social media platforms such as YouTube, Telegram, WhatsApp, or Google Classroom (Ulfa, 2020).

It's essential for teachers to stay updated with the latest advances in technology, including Artificial Intelligence (AI), to provide engaging and effective teaching resources for their students. With the rapid growth of AI, it's becoming increasingly necessary for teachers to understand and incorporate it into their teaching methods. Research in this area aims to study AI platforms that can be applied to elevate students' skills in learning the English language.

According to (Lei, 2018). “Digital teaching resources are now widely accessible at all levels of education, and the continuous enhancement of smart learning and teaching and management approaches have made significant progress in modernizing education.” By leveraging AI, a dynamic and personalized learning experience can be created that makes language acquisition more engaging and efficient for students.

METHODOLOGY

The researcher's interest in exploring the power of Artificial Intelligence (AI) development in education, specifically of English language learning, is significant area study. To gather information related to this topic, the researcher utilized the library research method. This method involves gathering books, journals, articles, internet sites related the topic of study. As (Zed, 2004) explains, "library research was research uses library sources to get the data." The researcher utilized this method to collect comprehensive data related to the topic.

In addition to gathering information from various sources, the researcher also drew and integrated ideas from these sources to conclude the synthesis in this research. The researcher extensively reviewed books and journals as references to support their findings.

This methodology allowed the researcher to gather a comprehensive understanding of the topic and draw informed conclusions. By utilizing this method, the researcher was able to gain a deeper understanding of how AI can be used to elevate English language learning.

RESULT AND DISCUSSION

The History Of Artificial Intelligence Development

According to variously researchers: Artificial Intelligence (AI) technology has a long and constantly evolving history, involving a range of interdisciplinary subjects such as informatics, logic, cognition, thinking, systems science, and biology (Hon, 2019).

AI research according (Jackson, 2019) has attempted to stimulate aspects of human intelligence using machines. AI has been applied in various fields, including knowledge processing, pattern recognition, machine learning, natural language processing, game theory, automatic and automated programming, expert systems, knowledge bases, intelligent robots, and more, achieving practical results.

As (Kandpal & Mehta, 2019) explain, AI has undergone a process of development and has a history of over 70 years. The development process of AI can be divided into several stages, starting from 1943 when an artificial neuron

model was proposed, which opened the era of artificial neural network research. Since then, AI has experienced significant advancements in various fields, and its applications have expanded to various industries, including education. AI has opened up new possibilities in the field of education, particularly in language learning. With the use of AI technology, personalized and adaptive learning experiences can be created that cater to individual learning needs and styles, making language acquisition more engaging and efficient for students. The interconnection between different language skills such as reading, writing, listening, and speaking is an important aspect to consider when developing language learning solutions using AI.

What is Artificial Intelligence (AI)

(Haugeland, 1985) explain that Artificial Intelligence (AI) can be defined in various ways, and experts have organized these definitions into four categories. The first category is thinking humanly, which refers to the effort to make computers think and have minds in the full and literal sense. Another definition of thinking humanly is the automation of activities that we associate with human thinking, such as decision-making, problem-solving, and learning (Merkle & Hellman, 1978). The second category is thinking rationally, (Charniak & McDermott, 1985)which is the study of mental faculties through the use of computational models. Another definition of thinking rationally is the study of computations that make it possible to perceive, reason, and act (Winston, 1992). The third category is acting humanly, which is the art of creating machines that perform functions that require human intelligence, according to (Kurzweil, 1998). Another definition of acting humanly is the study of how to make computers perform tasks that people are currently better at (Rich et al., 1991). Lastly, the fourth category is acting rationally, which refers to the study of the design of intelligent agents (Poole, 1998). These agents use computational intelligence to act rationally and make decisions that optimize their performance in a given environment. All of these categories demonstrate the various ways in which AI can be defined and applied, highlighting the flexibility and adaptability of AI technology.

Based on the statements above, researcher completely agree that AI has the potential to transform various fields, including education. With help of AI, personalized and adaptive learning experiences can be created that cater to individual learning needs and styles. This can make the learning process more efficient and engaging for students. The integration of AI in education can also empower teachers and students and provide more inclusive and accessible education system for learners around the world.

Acting Humanly: The Turing Test Approach

The Turing test (Turing, 1950) is a well-known approach that provides an operational definition of intelligence. The test involves a computer's ability to mimic human response to written questions posed by a human interrogator. The computer passes the test if the interrogator cannot tell whether the responses come from a person or a computer. In order to pass the test, the computer would need to possess several capabilities, including: **Natural Language Processing (NLP)** to enable students to practice writing and speaking English. AI can provide instant feedback on pronunciation, grammar, and vocabulary usage, aiding students in their language acquisition journey. **Knowledge representation** is also a crucial aspect of AI that allows the system to store and utilize information effectively. This serves as the bridge between the real world and computational models used by AI systems. **Automated reasoning** involves creating a system capable of solving problems and making decisions without human intervention, while machine learning allows the system to adapt to new circumstances and detect patterns.

The Turing test deliberately avoided direct physical interaction between the interrogator and the computer because the physical simulation of a person is unnecessary for intelligence. However, the Turing test includes a video signal so that the interrogator can test the subject's perceptual abilities, as well

as the opportunity for the interrogator to pass physical objects "through the Hatch" to test the computer's ability to manipulate objects and move about, which requires Computer Vision and Robotics.

In summary, the Turing test approach is one such method that can be used to test a computer's ability to mimic human response and provide a satisfactory operational definition of intelligence. The capabilities required to pass the test, such as NLP, knowledge representation, automated reasoning, and machine learning, are also valuable tools for language learning and other applications of AI technology.

Thinking Humanly: The Cognitive Modeling Approach

(Wilson et al., 1999) explain, Cognitive science is a complex and fascinating field that brings together computer models from AI and experimental techniques from psychology to construct precise and testable theories of the human mind. There are three ways of determining how humans think, which are through introspection, psychological experiments, and brain imaging. By constructing precise and testable theories of the human mind, cognitive science is necessary for the experimental investigation of humans or animals.

In the early days of AI, there was often confusion between the approaches of AI and cognitive science. However, modern authors have separated the two kinds of claims, and this has allowed both AI and cognitive science to develop more rapidly. The two fields continue to complement each other, most notably in computer vision, which incorporates neurophysiology evidence into computational models.

The interdisciplinary approach of cognitive science is necessary to understand the complexities of the human mind and behavior. By combining computer models from AI and experimental techniques from psychology, cognitive science can construct precise and testable theories of the human mind, which is essential for advancing the field. Overall, cognitive science plays a crucial role in the development of AI technology. By understanding how humans think and behave, researchers can develop AI systems that are more accurate, efficient, and effective. The interdisciplinary nature of cognitive science allows for a more holistic understanding of the human mind and behavior, which can help researchers create more intelligent and sophisticated AI systems.

Thinking Rationally: The "Laws Of Thought" Approach

The ancient Greek philosopher Aristotle was one of the first to attempt to codify "right thinking," particularly through the use of syllogisms, which are irrefutable reasoning processes. Syllogisms provided patterns for argument structures that always yield correct conclusions when given correct premises, such as the example "Socrates is a man; all men are mortal; therefore, Socrates is mortal." These laws of thought were designed to govern the operation of the mind and initiated the field called logic. In the 19th century, logicians developed a precise notation for statements about all kinds of objects in the world and the relations among them. This notation provided a more comprehensive way of communicating logical arguments than ordinary arithmetic notation, which only allows for statements about numbers. By 1965, programs existed that could, in principle, solve any solvable problem described in logical notation, although there may not exist a solution, and the program might loop forever. This approach is called the logicist tradition within AI that hopes to build intelligent systems based on such programs (Winston, 1992).

The logicist tradition within AI aims to create intelligent systems based on logical programs that can solve any solvable problem. This approach has its roots in the ancient philosophical tradition of logic and reasoning established by Aristotle. The development of precise notation for logical arguments in the 19th century provided a more comprehensive way of communicating logical arguments, paving the way for the creation of programs that could solve

any solvable problem described in logical notation by 1965.

This approach continues to be a significant area of study within AI and has contributed to the development of intelligent systems that can reason and solve problems in a logical and systematic way.

Acting Rationally: The Rational Agent Approach

In the "laws of thought" approach to AI, the emphasis was on making correct inferences. However, while making correct inferences is a part of being a rational agent, it is not the only aspect of rationality. In some situations, there is no provably correct thing to do, but something must still be done. There are ways of acting rationally that do not involve inference, such as reflex actions like recoiling from a hot stove. All the skills needed for the Turing Test also allow an agent to act rationally, and knowledge representation and reasoning can enable the agent to make good decisions. The rational agent approach has two advantages over other approaches. First, it is more general than the "laws of thought" approach because correct inference is just one of several possible mechanisms for achieving rationality. Second, it is more amenable to scientific development than approaches based on human behavior or human thought. The standard of rationality is mathematically well-defined and completely general, and agent designs can be "unpacked" to provably achieve it. In contrast, human behavior is well-adapted to specific environments and is defined by the total of things humans do. The rational agent approach provides a more comprehensive framework for understanding rationality in AI, and it is not limited to any particular environment or behavior. Overall, the rational agent approach provides a more flexible and comprehensive framework for understanding AI's ability to act rationally. Rather than focusing solely on correct inference, this approach considers a wide range of mechanisms for achieving rationality, including reflex actions and decision-making based on knowledge representation and reasoning. By providing a mathematically well-defined standard of rationality, the rational agent approach is more amenable to scientific development and can be applied to a wide range of environments and behaviors.

Artificial Intelligence (AI) Elevating Learning And Teaching English Language

It's fascinating to see how Artificial Intelligence (AI) has made significant progress in simulating human intelligence and has been applied to various fields, including education and language learning. Language learning is an essential part of human intelligence, and the integration of AI in language education has opened up new possibilities and opportunities. AI research has contributed to the development of intelligent teaching systems, including natural language processing, machine translation, speech recognition technology, and totem tests. These advancements have the potential to revolutionize language education and improve students' proficiency in learning English, a globally important language.

AI has the potential to elevate learning and teaching in the English language. One comprehensive strategy for using AI to enhance English language learning is through AI-powered language learning platforms. These platforms, such as Duolingo, Babbel, or Rosetta Stone, utilize AI to adapt to students' proficiency levels and learning styles, offering interactive exercises, quizzes, and assessments. This revolution lies at the heart of AI-driven language learning platforms. AI can also analyze students' strengths and weaknesses and tailor learning paths accordingly, providing personalized learning paths. This approach ensures that students are not bogged down by material they have already mastered and can focus their energy on areas where they need improvement. The result is a more efficient learning process that maximizes the student's potential.

It's interesting to see how AI technology can be implemented in language education to provide students with personalized and efficient learning experiences. By using Natural Language Processing (NLP) technology, students can practice speaking and writing English and receive instant feedback on their

pronunciation, grammar, and vocabulary usage. This can aid in their language acquisition journey and help them improve their language skills. Additionally, virtual language tutors in the form of AI-driven Chatbots can engage students in conversational English and provide immediate responses, creating immersive learning experiences. These tools can increase students' confidence in their ability to communicate in English and stimulate real-life dialogues.

AI-powered adaptive assessments and data-driven feedback can revolutionize language education and help students achieve their language learning goals. By leveraging AI technology, assessments can be tailored to each student's individual learning needs, ensuring that they accurately reflect the student's language proficiency. Additionally, AI-generated feedback reports can provide detailed insights into areas requiring improvement, enabling students to focus on those areas and accelerate their language acquisition journey. Teachers can also benefit from these reports by gaining a better understanding of their students' strengths and weaknesses, allowing them to adjust their teaching strategies accordingly.

The use of AI-powered language learning tools has potential to transform the way students learn English. Gamification elements, such as progress tracking, rewards, and achievements, can motivate students and make the learning process more engaging and enjoyable. Speech recognition technology can assess students' pronunciation and speaking abilities, providing valuable feedback to help them refine their skills. Continuous assessment and monitoring can help teachers identify students who need extra support and adjust their teaching methods accordingly. AI can also suggest relevant English-language media and ensure that learning tools are accessible through mobile devices. Teachers can benefit from AI by automating administrative tasks, grading assignments, and gaining insights into individual and class-wide performance, allowing for more personalized and effective teaching methods. However, it is essential to address ethical concerns related to data security and student privacy when implementing AI in education. It is crucial to implement AI with respect for student privacy and in compliance with relevant regulations.

Incorporating AI into English language education has immense potential to transform language learning and enhance students' abilities to master the language. Personalized learning paths can be created with AI algorithms, analyzing students' strengths, weaknesses, and learning pace to cater to individual needs effectively. Intelligent tutoring systems act as virtual tutors, providing real-time feedback and guidance to students, helping build their confidence in using the language. The integration of gamification elements into English language learning platforms can significantly improve student engagement, while language learning apps and Chatbots powered by AI offer opportunities for students to practice and improve their language skills in a conversational context. However, it is crucial to provide teachers with ongoing training and support to effectively integrate AI tools into their teaching methods, and continuously assess the effectiveness of AI in enhancing students' English language learning.

It is fascinating to see how AI integration into English language education can transform the way students learn and master the language. AI-powered personalized learning paths, intelligent tutoring systems, and gamification elements can significantly enhance students' ability to learn English. Additionally, language learning apps and Chatbots powered by AI can provide students with opportunities to practice and improve their language skills in a conversational context. Automated language assessment tools can efficiently evaluate listening, speaking, reading, and writing skills, providing a more comprehensive and accurate assessment of a student's language proficiency. However, it is essential to ensure that the implementation of AI in education is done with respect for student privacy and in compliance with relevant regulations. Ongoing professional development and continuous assessment of AI effectiveness are crucial to ensure that the benefits of AI-powered English language education are realized.

CONCLUSION

The researcher completely agrees with the statements above. While AI can undoubtedly enhance the learning experience, it should never replace human teachers. The combination of AI and human skills can create a powerful and effective learning environment, providing students with the best of both worlds. AI-powered tools can help teachers personalize their lessons, provide real-time feedback, and offer interactive learning experiences that cater to individual needs. At the same time, teachers bring their experience, insights, and empathy to create an environment that fosters intellectual growth and personal development. The transformative power of AI in education is undeniable, but it should always be used as a tool to empower and complement human teachers, not replace them.

DAFTAR PUSTAKA

Charniak, Eugene., & McDermott, D. V. (1985). *Introduction to artificial intelligence*. 701.

Haugeland, J. (1985). *Artificial Intelligence: The Very Idea*. A Bradford Book The MIT Press Cambridge, Massachusetts London, England.

Hon, H.-W. (2019). *A Brief History of Intelligence*. 1–1. https://doi.org/10.1145/3340555.3353962

Jackson, Philip. C. (2019). *Introduction to Artificial Intelligence - Philip C. Jackson - Google Books*. Dover Publication, Inc. https://books.google.co.id/books?id=sQegDwAAQBAJ&printsec=frontcover#v=onepage&q&f=false

Kandpal, A. P. K., & Mehta, B. A. (2019). Comparative Study between Multiplicative Neuron and Spiking Neuron Model. *Proceedings - 2019 4th International Conference on Internet of Things: Smart Innovation and Usages, IoT-SIU 2019*. https://doi.org/10.1109/IOT-SIU.2019.8777726

Krashen, S. D. (1982). *Principles and Practice in Second Language Acquisition*.

Kurzweil, R. (1998). *The Age of Spiritual Machines ; When Computers Exceed Human Intelligence* (Vol. 167, Issue 1). CAMBRIDGE MASS; MIT press.

Kushmar, L. V, Vornachev, A., Korobova, I. O., & Kaida, N. O. (2022). Artificial Intelligence in Language Learning: What Are We Afraid of. *Artificial Intelligence in Language Learning Kushmar*, *8*(8), 262–273. https://doi.org/10.24093/awej/call8.18

Lei, C. (2018). 教育信息化 : 从 1. 0 走向 2. 0 ———. JOURNAL OF EAST CHINA NORMAL UNIVERSITY, *0*(1), 5–7.

Merkle, R. C., & Hellman, M. E. (1978). Hiding Information and Signatures in Trap'door Knapsacks. *IEEE TRANSACTIONS ON INFORMATIONTHEORY*, *IT-24*(N0. 5, SEPTEMBER 1978), 525.

Poole, D. (1998). Computational intelligence: a logical approach. *Choice Reviews Online*, *35*(10), 35-5701-35–5701. https://doi.org/10.5860/choice.35-5701

Rich, E., Knight, K., & Nair, S. B. (1991). *Predicting Students' Learning Outcomes Using Eye-Tracking Data* (p. 568).

Turing, Alan. M. (1950). Computing Machinery and Intelligence. *JSTOR Archieve*, *59*(236), 433–450. https://doi.org/10.1177/008124639402400307

Ulfa, K. (2019). Improving Computer Student ' s Ability Through Video : Introducing Tourism Object by Speaking English. *Seminar Nasional Sains & Teknologi Informasi (SENSASI)*, *338*, 697–701.

Ulfa, K. (2020). *The Use of Social Media as E-Learning of Writing Skill in Learning English*. *1*(1), 1–4.

Wilson, R. A., Keil, F. C., & Nerbonne, J. (1999). The MIT Encyclopedia of the Cognitive Sciences (MITECS). *The MIT Encyclopedia of the Cognitive Sciences (MITECS)*, *c*, 463–467. https://doi.org/10.7551/mitpress/4660.001.0001

Winston, P. H. (1992). *Artificial intelligence 3rd ed.* Addison - Wesley.

Zed, M. (2004). *METODE PENELITIAN KEPUSTAKAAN*. Yayasan Pustaka Obor Indonesia. https://doi.org/ISBN 9789794614853