

Developing Writing Skill Through Artificial Intelligence

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PREFACE

In today's digital era, artificial intelligence has become an essential tool for developing writing skills. The new generation, growing up in a technology-driven world, needs innovative and personalized learning approaches.

Developing Writing Skill Through Artificial Intelligence not only explores how AI can enhance writing proficiency but also emphasizes the importance of using AI correctly and responsibly. When used effectively, AI can foster creativity, improve critical thinking, and refine communication skills. However, its misuse can lead to dependency and superficial learning. This book equips readers with strategies to harness AI as a supportive tool rather than a replacement, ensuring that technology serves as a means to enhance human intelligence rather than diminish it. By adopting a mindful and ethical approach to AI, individuals especially young learners can maximize its benefits and gain a competitive edge in both academic and professional settings.

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CHAPTER 1

EXPLORING THE LANDSCAPE OF AI FOR LANGUAGES: KEY CONCEPTS, BENEFITS AND CHALLENGES

Artificial intelligence (AI) is undergoing a new manifestation driven by trends in big data, increased processing power, and advances in machine learning techniques. This has led to high expectations for the future of AI in various domains, including the energy, health, and education (Molenaar, 2022).

Based on Dakakni & Safa's definition (2023), artificial intelligence (AI) refers to software programs that emulate human cognitive processes, including decision-making, analysis, adaptation, synthesis, self-correction, judgment, memory, understanding, planning, and calculation. AI involves the simulation of learning and intelligence in a detailed manner, which can be inputted into a machine for simulation. It encompasses the study and development of software algorithms that mimic human intelligence and interact with the environment. Tiwari (2023, p. 2) defined AI as "the capability of a system to correctly interpret external data, to learn from such data and to apply such learnings to achieve specific goals and tasks through flexible adaptation". AI has become prevalent in various aspects of people's lives, ranging from smartphones and manufacturing to transportation, architecture, design, the TV and film industry, and the medical sector. AI systems simulate human intelligence by learning, understanding, and remembering human language. Crompton et al., (2024) comment AI can understand and remembers human language. These capabilities allow AI to potentially help create safe and effective learning environments for acquiring skills like English as a foreign/second language.

The term AI is derived from combining the words "artificial" and "intelligence" (Ahmet, 2018). As stated by Fitria (2021), the word "artificial" refers to something that is not real or natural, but rather is simulated or manufactured by human design rather than occurring naturally. However, artificial things are not completely false or fraudulent, as they aim to represent or replace real things

by having better qualities in certain contexts. Meanwhile, “intelligence” on its own is a very complex concept that involves abilities such as reasoning, self-awareness, understanding, emotional awareness, planning, consciousness, and creativity - allowing organisms to learn from experience, solve problems, and adapt to new situations through sophisticated mental processes. Therefore, when used together, “Artificial Intelligence” denotes intelligence demonstrated by machines, as opposed to the natural intelligence displayed by humans and animals, with AI systems designed to simulate or exhibit intelligent behaviors, problem-solving, and decision-making in human-like ways through programming, even if their cognition differs from biological models. Qammourah, Muhammad, and Krosh’s (2018) characterize AI as having both a ‘memory’ and ‘inference’ dimension, with memory representing the storage of data and inference involving logical analysis of information. Ofosu-Ampong (2024) assert that contemporary AI research focuses on developing far more autonomous and dynamically learning systems compared to past efforts, largely due to advances in algorithms and computational power. Where earlier AI relied predominantly on pre-programmed decision trees with specific pre-defined tasks and limited ability to learn from new data or adapt, modern approaches emphasize self-supervised techniques like deep learning, neural networks, and reinforcement learning that enable AI applications to continuously improve performance when exposed to large datasets without explicit programming. Moreover, contemporary research aims to design goal-oriented systems with enhanced autonomy through independent decision-making and planning, rather than simply reactive behaviors tightly coupled to human instructions. This shift has been facilitated by algorithms that can adapt in real-time to environmental changes and unforeseen inputs, supported by the enhanced processing capabilities of modern hardware.

According to Sharma, Krishnamaraju, & Divakaran, (2024), in the past ten years, progress in artificial intelligence (AI) has paved the way for the emergence of intelligent tutoring systems, adaptive learning platforms, and natural language processing (NLP) technologies. These AI-powered tools meticulously analyze learner data, encompassing interactions, preferences, and performance, in order to provide tailor-made instruction that caters to individual learning styles and proficiency levels. The fundamental advantage of AI is that it offers ongoing, personalised training in a low-stakes setting, encouraging students to take chances and make mistakes. Additionally, it provides students with an abundance of scaffolding tasks and feedback to help them become proficient. Nguyen (2023) identifies several widely recognised AI tools employed in language learning, including ChatGPT, Grammarly, and Google Translate. Less familiar tools such

as Textero AI and JasperChat are also mentioned. In a recent bibliometric analysis conducted by Lubis et al. (2024), it is reported that diverse forms of AI technology are utilised in the domain of language learning and education. Notably, intelligent tutoring systems, chatbots like Siri and ChatGPT, and chatbot partners such as Replika, Kuki, and Wysa are highlighted as prominent examples of AI applications. Additionally, the review acknowledges the significance of applications such as Google Translate, Orai, Text-to-Speech, Elsa, and Duolingo in the context of language learning.

AI also facilitates instantaneous feedback and evaluation, granting students prompt guidance on their language skills. By utilizing chatbots, automated grading systems, and virtual assistants, AI optimizes the efficiency and efficacy of language instruction by offering bespoke support and ample opportunities for practice.

Moreover, AI transcends the realm of personalized learning by enabling the creation of immersive environments for language acquisition, particularly through the utilization of virtual reality (VR) technology. By simulating genuine contexts via VR scenarios, learners can actively engage in language skills practice, such as speaking and interacting with virtual native speakers. These immersive experiences not only refine language aptitude but also nurture cultural sensitivity and competencies in cross-cultural communication. Gawate (2019) points out that AI programs are friendly and need-based, tailored to each learner's specific expectations, needs, and abilities. AI enables the creation of high-quality, multi-level teaching materials that develop the four core skills of listening, speaking, reading, and writing. It acts as a supplementary support system for both teachers and students by providing precise assistance anywhere and anytime without replacing educators.

Dakakni & Safa (2023) indicate that the roles of Artificial Intelligence in Education (AIED) can be categorized into four main roles: tutor, tutee, learning tool/partner, and policy-making advisor. The authors explain each role in detail:

1. AI as a tutor: This role is the most common application of AI in the field of education. Intelligent tutoring systems are designed to personalize the learning experience and cater to the diverse needs of students. These tools aim to enhance student performance and help them achieve their learning objectives. In the language classroom, for example, AI-powered apps and mobile devices provide personalized, efficient, and rapid learning opportunities. Students can practice specific skills tailored to their learning objectives and course requirements. Examples of such intelligent systems include Cognitive Tutors, which provide support in