

How Does AI Impact the Development of Young Researchers in the 21st Century?

Jusu M. Ngobeh

 <http://orcid.org/0000-0002-4274-9904>

Electricity Generation and Transmission Company, Sierra Leone

ABSTRACT

The 21st century has ushered in incredibly intelligent machines and software capable of doing almost anything. While some might argue that this makes young people less inclined to develop certain skills, there is no doubt that these machines can handle complex scientific thinking and tedious calculations with just a single click. Although artificial intelligence (AI) has been around for a while, recent breakthroughs and increased availability have made it useful in all areas of science. This technology is revitalizing and revolutionizing the world. In a few years, greater equalization will change the dynamics of our present reality. AI has a major impact on industries by creating new ideas, making things more productive, and changing the way businesses and society function. Additionally, AI is helping scientific research by accelerating discoveries, making it possible to run intricate simulations and experiments, and providing people with new abilities.

1. INTRODUCTION

The world is experiencing the most opportune time in human history. We stand at the dawn of a new technological era, witnessing firsthand the transition from manual, even stone-aged, technologies to a digitalized world. This transformation drives changes in economies, education systems, social structures, and political landscapes. At the heart of this revolution lies artificial intelligence (AI). AI is transforming our daily lives, assisting us in carrying out nearly all digital tasks more efficiently. AI is not a human duplicate but rather an intelligent machine that can be trained to think and do things like a human. By processing large datasets from satellite cameras and other sources, AI can learn to perform tasks as instructed through machine learning algorithms. This chapter explores the impact of artificial intelligence AI on the modern education system in the 21st century. An analysis of research from reli-

DOI: 10.4018/407614

able educational databases such as Google Scholar, Scopus, ScienceDirect, and others will demonstrate how AI applications are instrumental in facilitating student learning, research, and the development of critical thinking and problem-solving skills. The focus will extend to how AI can enhance collaboration in relevant technical fields (Trisnawati et al., 2023).

The following section describes how AI can improve the teaching curriculum to prepare high-caliber graduates who can excel in future academic challenges:

- **Simple yet comprehensive learning:** AI can facilitate learning that is both clear and thorough.
- **Efficiency with large amounts of text:** AI can summarize vast volumes of text, saving students valuable time.
- **Clear answers to complex questions:** Like AI chatbots and advanced AI systems, AI chatbots can provide concise and accurate answers to intricate questions.
- **Enhanced readability:** AI can paraphrase text to improve its clarity and readability, making the learning experience more engaging (Slimi, 2023).

Artificial Intelligence has recently extended its reach beyond education and into every sector, including the military and other security apparatuses. AI is making a significant impact in these sectors. The United States, Russia, and China are all developing autonomous vehicles and other AI-powered systems for military operations. AI can also facilitate well-informed decision-making on critical issues of militarization and demilitarization. AI is impactful. It is impactful in military logistics, cybersecurity, algorithms, convolutional neural networks (CNNs), and surveillance areas (Bistrion & Piotrowski, 2021), (Sayler, 2020).

'Alan' posed a rhetorical question: Can machines think (TURING, 1950)? "A key question for AI researchers to consider is...can a machine be like a human which it all in its intelligent capacity." This chapter will explore the intelligence of human-like machines, known as AI, and their groundbreaking applications in today's world. The human-like machine (AI) might be an imaginative view of an AI with a physical body resembling robotics. This resemblance is not surprising, as some AI methods have been developed for robotic applications. However, the complexity of AI goes beyond its physical form. The true power of AI lies in its ability to solve complex problems. One interesting aspect of AI is its duality. While AI can be designed to mimic human capabilities, it is fundamentally a machine. This difference means that AI does not tire in the same way that humans do. The image might depict numerous neurons, representing the complex information flow within an AI system. This network allows AI to process and handle intricate tasks.

Like business argumentation, as some describe, AI is not about replacing humans but about empowering them to achieve greater business productivity and foster collaboration, leading to increased employee engagement to fully harness their capability and change narratives of how things should be done faster and more easily for socioeconomic development. This chapter will begin by exploring the definitions of AI. There is no single, universally accepted definition of AI. DeepMind, a company at the forefront of AI research, defines AI as an attempt to simulate human intelligence in machines. The effectiveness of this process can be improved through learning, information processing, language use, perception, and well-defined decision-making procedures. The Journal of Computer-Mediated Communication defines AI in the context of its field as communication mediated by technology that facilitates human interpersonal communication, message generation, and comprehensive archiving of communication purposes (Balla et al., 2022). There are many ways to define AI. One definition focuses on how AI systems communicate

16 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/how-does-ai-impact-the-development-of-young-researchers-in-the-21st-century/407614

Related Content

Global Regulatory Landscape: The European Union AI Act Comparative International Perspectives

Chrisella Natasia Tanujaya and Binastya Anggara Sekti (2026). *Navigating Social Trust in the AI Era* (pp. 95-122).

www.irma-international.org/chapter/global-regulatory-landscape/396082

Semantic Web Services for Smart Devices Based on Mobile Agents

Vagan Terziyan (2005). *International Journal of Intelligent Information Technologies* (pp. 43-55).

www.irma-international.org/article/semantic-web-services-smart-devices/2383

Adapting Technical Theatre Principles and Practices to Immersive Computing and Mixed Reality Environments

Tim Boucher (2010). *International Journal of Ambient Computing and Intelligence* (pp. 65-67).

www.irma-international.org/article/adapting-technical-theatre-principles-practices/43864

AI-Powered Talent Development: Nurturing Skills and Leadership in Entrepreneurial Teams

Deepak Kumar Sahoo, Thi Mai Le, Anish Kumar and Ajay Chandel (2025). *Improving Entrepreneurial Processes Through Advanced AI* (pp. 241-266).

www.irma-international.org/chapter/ai-powered-talent-development/360730

The Relationship Between Ontology and Modelling Concepts: Example Role Oriented Modelling

Mona von Rosing, Maxim Arzumanyan and John A. Zachman Sr. (2017). *International Journal of Conceptual Structures and Smart Applications* (pp. 25-47).

www.irma-international.org/article/the-relationship-between-ontology-and-modelling-concepts/188738