


Chapter 10

Exploring the Role of Artificial Intelligence in Advancing Higher Education for Sustainable Development: A Bibliometric Study

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ABSTRACT

Artificial intelligence has encountered significant advancements in the past years. Prominence is growing with each passing day as it is revolutionizing daily life with its assistance to solve complex problems. With this continuous evolution and improvement AI can help to achieve SDGs by mitigating the negative effects on the environment. The incorporation of AI in higher education can play a vital role in achieving sustainable education. AI can improve the quality of higher education by offering the learners more customized, captivating, and constructive learning experiences. This study aims to analyze and evaluate existing knowledge to identify themes, opportunities, and challenges. The data for analysis is retrieved from Scopus database for 1997 to 2024. A total of 332 articles were retrieved which were analyzed for publication, country, author, source productivity, and most cited documents. This study provides a comprehensive evaluation of recent trends and themes. It also highlights the research gap, providing valuable insights for further exploration in this field.

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INTRODUCTION

In today's interconnected world, education is more important than ever before where education not only serves as a catalyst for cross-border collaboration but also drives innovation and economic development. Higher education (HE) is instrumental in empowering growth, alleviating poverty, and boosting shared prosperity around the globe. Well-educated people are more resilient to uncertainty as they cultivate critical thinking skills and problem-solving abilities. Governments across the globe are trying to evolve the education system from a teacher-centered approach to learner-centered approach. In such an approach, the learner is positioned in the center while the teachers act as the facilitators. But it is important to address the significance of implications of student experience and development. Therefore, contextual learning must be blended with digital technology in the new paradigm of teaching and learning.

In the past few years, technology has profoundly transformed our education sector. The continuously evolving technology is revolutionizing the roles of teachers and learners. Due to the increase in access to educational resources on the internet, the role of teacher has shifted from being the crucial source of information to a mentor. Technology has opened numerous opportunities for learning while being at remote locations. Among all the technological advancements, Artificial Intelligence is the most significant one. AI technology exhibits intelligence shown by a machine, which is programmed and designed by the experts (Vasiliu et al., 2023). In simpler terms, Artificial Intelligence is human-like intelligence coming from artificial brain. The development of AI is transitioning from technology-focused applications to humanity-focused applications, where the focus of increasing production and efficiency is shifted to leveraging human intelligence with machine intelligence (Yang, 2021). AI is concentrating on consciousness and human audio-visual literacy (i.e. see, hear, read, and write), this helps in smart tutoring for explicit adaptations and customization, along with error-free, diagnosis, treatment, and prevention for smart appraisal (Yang et al., 2021).

The study conducted by (Williams, 2019) has aligned three growing technologies has potential to revolutionize higher education. Among these technologies, the first one is learning analytics, which enables us to store online data of students regarding their activities and participation. This will help in profiling of students along with early intimation of improvement for struggling students. The second one is Artificial Intelligence, which assists human experts through machine learning for decision making in complex situations. The third one is Blockchain, which offers several utilities such as recording independent and secure credentials of students and occupation activities and achievements. The formal assessment system would engage AI with learning analytics to acknowledge the credit bearing activities and blockchain to give tamper-proof credentialling (Hiran & Henten, 2020).

RESEARCH QUESTIONS

The current study intends to address the answers for the following questions:

RQ1 What is the current trend of publications related to role of Artificial Intelligence (AI) in attaining Sustainable Higher Education?

The number of publications in the area represents a growing trend, as manifested by the data extracted from the Scopus database. The data was then analyzed using Biblioshiny to gain further insights.

RQ2 Which countries, authors, sources have got the top position in terms of productivity in the field?

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