

Chapter 1

Artificial Intelligence in Vocational Education and Training

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ABSTRACT

This chapter explores the transformative impact of Artificial Intelligence (AI) in Vocational Education and Training (VET), highlighting its potential to revolutionize teaching and learning processes while preparing students for the evolving demands of an AI-driven workforce. It examines the diverse applications of AI technologies, including Virtual Reality (VR), Augmented Reality (AR), Machine Learning (ML), and the Internet of Things (IoT), and their role in enhancing personalized learning, skill development, and workplace readiness. The chapter also addresses the challenges of integrating AI into VET, such as algorithmic bias, the digital divide, and data privacy concerns, while offering mitigation strategies to ensure equitable

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and effective implementation. Ethical considerations are discussed, emphasizing the balance between leveraging AI innovations and preserving critical human interaction and ethical integrity.

INTRODUCTION

There are several AI tools that are used in education in general but are also very helpful in VET system as well. These tools might refer to management software which are adopted in schools and universities, specific programs that help in personalized learning or specific teaching, programs which help students enhance their skills in specific areas, according to their needs. However, there are tools that are created to simplify the teaching and learning process in VET education. The combination of AI technologies in VET programs makes possible the creation of customized learning experiences being in line with the cultural and social developments of the country, offering feedback, providing collaborative educational environment, promoting skill development, providing training opportunities. Scholars believe that the incorporation of AI driven tools into VET enhance educational results, their progress, promotes continuous improvement and innovation and enables students to get the necessary skills and knowledge in the workplace. However, there are also some drawbacks regarding the incorporation of AI tools in VET generally, they relate to bias that is created in algorithm, lack of access to technology, lack of training and support and overreliance on AI. All this said, ensuring fair assessment and grading is important in education. The presence of bias elements when using AI tools and algorithms has the capacity to reduce the reliability of the assessment. On the other hand, the absence of access to virtual hardware and computers may restrict the efficiency of AI integration into VET. Also, the usage of AI tools from students mostly might create difficulties in the development of specific skills like critical thinking or problem solving. There must be a balance between the usage of AI and human interaction. So, before implementing these tools into VET systems, it is acquired a professional knowledge on the usage of these tools, trainings to empower and effectively utilize the AI platforms and even optimize the advantages of the integration of AI in VET system (Mohammad Aniq Bin Amdan et al., 2024).

IMPACT OF AI ON VOCATIONAL EDUCATION AND TRAINING

The integration of Artificial Intelligence (AI) in Vocational Education and Training (VET) represents a significant advancement with the potential to reshape both the teaching and learning processes and the nature of work itself. AI can fundamentally

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