Chapter 8
AI Enhanced Micro-Credentials for Efficiency and Accessibility:
Using Gen-AI to Improve the Design, Development, and Delivery of Micro-Credentials

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ABSTRACT

This chapter, according to the authors, explores the transformative potential of Generative Artificial Intelligence (Gen-AI) in the design, development, and delivery of micro-credentials, aimed at enhancing efficiency and accessibility in education.

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By analyzing research from a pilot study conducted at a private university, the chapter delves into AI-driven approaches that improve learner engagement, course completion rates, and learner satisfaction. It addresses the role of AI in personalizing learning experiences, supporting learner success, and ensuring equitable access to educational opportunities. The chapter further examines how AI-powered learning designs can streamline the creation of micro-credentials and deliver them on demand. Additionally, it offers insights into the ethical considerations of integrating AI in education, providing recommendations for educators, technologists, and policymakers on leveraging AI to democratize education effectively.

INTRODUCTION

The rapid evolution of technology continues to reshape numerous sectors, and education is no exception. In particular, artificial intelligence (AI) has emerged as a transformative tool in education, offering innovative solutions to both traditional and emerging challenges. From enhancing personalized learning experiences to driving data-driven instructional design, AI's potential to revolutionize educational systems is now widely recognized (L. Chen et al., 2020; Luckin et al., 2016; van der Vorst & Jelicic, 2019; O'Dea & O'Dea, 2023; Singh & Hiran, 2022). Within the realm of AI, generative AI represents a significant leap forward, capable of creating new content—such as text, assessments, multimedia, and even simulations—tailored to the specific needs of individual learners. This ability to generate real-time, customized educational materials opens new pathways for educators to engage with learners in more meaningful, adaptive ways. As educational institutions around the world explore new modes of delivery, the inclusion of generative AI offers unprecedented opportunities to rethink how learning is designed, delivered, and experienced.

At the same time, the global workforce is undergoing rapid changes, with industries increasingly emphasizing the need for continuous upskilling and reskilling. As a result, there has been a growing demand for flexible and accessible learning options that can accommodate the busy lives of working professionals, career changers, and lifelong learners (Brown et al., 2021). Micro-credentials have emerged as one of the most promising solutions to this need, offering focused, competency-based certifications that allow individuals to acquire specific skills in a relatively short time. Unlike traditional degree programs, which often span multiple years and cover broad subjects, micro-credentials are designed to be short, flexible, and directly applicable to real-world contexts. They are increasingly being used to bridge skills gaps in fields such as technology, healthcare, and education, providing learners with the tools to stay competitive in fast-evolving industries.