Chapter 9
Leveraging Generative Artificial Intelligence to Expedite UDL Implementation in Online Courses

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ABSTRACT

This chapter explores how generative artificial intelligence (GenAI) can expedite universal design for learning (UDL) in online courses, addressing challenges like time constraints and complex instructional development. It highlights GenAI tools, such as ChatGPT and Otter.ai, for their role in enhancing empathy, comprehension, and executive functions, thereby meeting diverse learning needs. The chapter describes GenAI's instructional design applications, focusing on personalizing course materials and assessments. It also presents a case story about an online graduate course to illustrate practical GenAI applications in UDL enhancement. Additionally, it examines the benefits, challenges, and ethical considerations of GenAI-enhanced UDL, stressing the need for human oversight and continuous educator adaptation to meet student needs effectively.

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Digital learning designers actively recognize the principles of Universal Design for Learning (UDL) as essential for inclusivity. However, the efficient integration of UDL into online courses is frequently hampered by time-consuming content creation and customization. With the advent of artificial intelligence (AI) technologies, we can accelerate this process, ensuring a broader reach and optimized learning experiences for all students. This chapter explores how online instructors can effectively utilize Generative AI (GenAI) in implementing UDL within online courses. It provides practical insights into using GenAI to facilitate UDL implementation, covering its applications, benefits, challenges, and real-world examples.

LEARNER VARIABILITY, UDL, AND PERSONALIZED LEARNING IN ONLINE ENVIRONMENTS

In online learning, it is pivotal to recognize and address learner variability to ensure engagement and achievement. This includes considering not only technical access like devices and internet connectivity but also cognitive access related to students' familiarity with online tools and platforms. Vasinda and Pilgrim (2023) highlight that the rise in blended and fully online K–12 instruction has made online learning a practical option for all students, including those with disabilities, to accommodate learner variability. Asynchronous learning, common in online settings, requires students to have vital executive function and self-regulation skills, elements younger students may lack, thus necessitating guidance from adults or guardians (Rao, 2021). Implementing UDL significantly aids in tackling these challenges. UDL-driven online education could incorporate features like a clear Welcome or Start page, orientation videos for course navigation, and captions and transcripts for videos (Singleton et al., 2019). Additionally, as Smith and Basham (2014) suggest, designing online courses with UDL principles ensures that all students, especially those with specific needs, fully access, and benefit from the curriculum, making UDL an invaluable pedagogical approach.

Personalized learning involves continuously identifying and responding to each student's learning needs, creating individualized learning paths tailored to each unique learner (Taylor et al., 2021). Personalized learning, situated within the UDL framework, is a systematic learning design approach that customizes instruction to individual student's strengths, preferences, needs, and goals, aiming to deliver comprehensive educational experiences that encompass enhanced access to various disciplines and the development of 21st-century skills (Zhang et al., 2020b). Personalized learning offers flexibility and support in what, how, when, and where students learn and demonstrate mastery of learning. This flexibility extends to instructional approaches, content, activities, learning objectives, outcomes, pace of