


# Chapter 10

## Hidden Gems


### Breakthrough Dynamic Landscape of Adaptive Learning Technologies for Higher Education: Bridging the Gap Between Theoretical and Practical Knowledge Projecting Student Learning Outcomes

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#### **ABSTRACT**

*The field of higher education is changing quickly and the way that student's study is being greatly influenced by technological innovations. With its foundation in artificial intelligence and pedagogical theories, adaptive learning technologies have become extremely effective instruments for meeting students' varied learning requirements. In order to project students learning outcomes, the dynamic field of adaptive learning technologies in higher education and their potential to help close the knowledge*

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## **Hidden Gems Breakthrough Dynamic Landscape of Adaptive Learning**

*gap between theory and practice. As education undergoes a transformational phase in the digital era, adaptive learning technologies enable tailored and responsive learning experiences, adapting instructional content to individual requirements. There are several educational ideas that serve as sources of inspiration for adaptive learning technologies, each of which aids in the creation and improvement of these cutting-edge resources. Adaptive learning is founded on constructivism, which emphasizes active learning and knowledge development by motivating students to interact meaningfully with the material. The reinforcement mechanisms ingrained in adaptive systems, which offer prompt feedback to promote positive learning activities are clearly influenced by behaviorism. The chapter comprehensively explores the thorough grasp of adaptive learning technologies, including their theoretical foundations and real-world applications in higher education.*

## **INTRODUCTION**

Adaptive learning is using data-driven training to tailor and adjust learning experiences to the individual requirements of every learner (Munoz et al., 2022). The personalized learning experiences may be provided by adaptive learning systems by tracking several data points, such as student performance, engagement and progress (Mirata et al., 2020). The concept of equal education opportunity guarantees that everyone has access to the same resources, but equitable education recognizes and takes into account the differences in learners by providing materials that are specifically customized to each person, helping them to meet their academic objectives (Morze et al., 2021). The goal of combining assessment, adaptive teaching, and learning is to advance educational equality for all students (Tekesbaeva et al., 2023).

The aspect of interactive learning is adaptive learning, which, unlike a conventional curriculum, meets the requirements of each individual student through personalized learning paths, helpful feedback and additional resources (Cavanagh et al., 2020). The use of adaptive learning, which may be used in three important areas adaptive content, adaptive sequence and adaptive assessment has been made easier by technological improvements (Kasinathan et al., 2017). With adaptive content, students receive customized feedback based on their individual replies (Johnson & Samora, 2016). This feedback might include tips, pertinent skill refresher resources, or extra scaffolding all without changing the order of the skills (Aleven et al., 2016). Adaptive sequence automatically modifies the next piece of information a learner encounters by continuously gathering and analyzing student input (Krechetov & Romanenko, 2020). So, based on a student's answers to earlier questions, adaptive assessment adjusts the questions that are asked to them (Martin et al., 2020). When

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