

Chapter 83

Educational Technology in Higher Education: Online Teaching and Learning

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ABSTRACT

This article covered the trends in educational technology in higher education primarily pertaining to online teaching and learning. It begins by discussing the background information. A review of the current technology trends was presented with a brief overview of the technology. The last portion of the background information contains a survey conducted during COVID-19 at a state college in the northeastern United States, which asked faculty about their instructional and technical needs during remote teaching and learning. Given the rapid changes in technology in the higher education arena, there are four major issues that arrive causing challenges that need to be addressed. The chapter concludes by discussing the solutions and recommendations for effectively implementing and maintaining the trending technology in higher education. When discussing new technologies there are additional requirements, such as handling uncertainty in higher education and a decrease in funding which influences the budget for these new technologies.

BACKGROUND

The background information includes the projected new technologies expected within the higher education environment. The technologies included learning analytics, artificial intelligence, hybrid learning spaces, micro-credentials and skills-based requirements, and professional development for college teaching. Also, a brief overview of online teaching and learning was reviewed. Next in the background information, this section included a summary of what happened during COVID-19 and what we learned from COVID-19. The last portion of the background information contains a survey conducted during COVID-19 at a state college in the northeastern United States, which asked faculty about their instructional and technical needs during remote teaching and learning.

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New Technologies in Higher Education

The new technologies in higher education are addressed in this portion of the background information. Each of the new technologies in higher education are introduced providing introductory information. In addition, the technologies are discussed introducing the benefits for application within the higher education environment. Later in the chapter, in the recommendations and solutions, the technical trends are discussed pertaining to the recommendations regarding funding, use of technology, and the best practices.

The newest technology developments consisted of six areas, as explained in the EDUCAUSE Horizon Report (Pelletier et al., 2022). Panelists were asked what were the newest developments in technology within the higher education teaching and learning arena (Educause Horizon Report, 2022). The Horizon Report (2022) mentioned six areas which included: learning analytics, AI learning tools, hybrid learning, hybrid/remote learning, micro credentialing, and professional development for hybrid/online learning. The pandemic helped facilitate swift movement towards AI, data collection and analytics, online learning, hybrid learning and micro-credentials (2022).

Learning Analytics

According to the Society for Learning Analytics Research (SOLAR), learning analytics is “the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs” (<https://www.solaresearch.org/about/what-is-learning-analytics/>). SOLAR lists five goals for learning analytics:

1. Supporting student development of lifelong learning skills and strategies
2. Provision of personalized and timely feedback to students regarding their learning
3. Supporting development of important skills such as collaboration, critical thinking, communication and creativity
4. Develop student awareness by supporting self-reflection
5. Support quality learning and teaching by providing empirical evidence on the success of pedagogical innovations (SOLAR, 2022)

Student data can be collected and analyzed to assess the effects of certain types of teaching which reflect student learning. Also, student data can be used to provide feedback to help improve learning, as well as predict whether a student might drop a course or fail. Linden et al. (2022) wrote that analytics could be used to catch students at the earliest stages of their first year in university before they fail out of class(es). Students are monitored and data is collected based on assignments turned in, engagement with the Learning Management System (LMS), and whether they have reached out to tutoring or other help on campus. If a student misses the first assignment in the first three weeks of class, the student receives a phone call offering assistance in completing the missed coursework (Linden et al., 2022). This type of predictive analytics can make the difference between a student failing or passing a course.

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