Digital Learning Innovation Trends

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For more information or assistance, please contact resources@everylearner.org

Authoring Team

Tanya Joosten, Ph.D., DETA

Dr. Joosten is a senior scientist and director of digital learning research and development at the University of Wisconsin - Milwaukee. She is also the co-director of DETA.

Kate Lee-McCarthy, M.A., OLC

Kate Lee-McCarthy is the director of grants and finance at Online Learning Consortium and the innovations team lead for the Every Learner Everywhere network.

Lindsey Harness, Ph.D., DETA

Dr. Harness is an assistant professor of communication at Alverno College and a qualitative researcher at DETA.

Ryan Paulus, M.A., DETA

Ryan Paulus is a graduate research assistant at DETA and a recent Master's graduate in sociology.

Table of Contents

Introduction

The Online Learning Consortium (OLC) received a three-year grant (2015-2018) to conduct the Digital Learning Innovation (DLI) competition, which was designed to "accelerate the adoption of digital courseware for general education or gateway courses at accredited institutions in higher education." With grant funding from the Bill & Melinda Gates Foundation, the DLI Awards (DLIA) recognized faculty and institutions that were judged to have produced exemplary work in digital learning and innovations. The purpose of the DLIA was to identify effective practices in postsecondary digital learning targeted at improving outcomes for underserved students. The National Research Center for Distance Education and Technological Advancements (DETA) partnered with OLC to analyze DLI submissions and identify important trends in digital learning and innovation.

In 2018, as an Every Learner Everywhere partner, the Online Learning Consortium assumed the role of the digital learning innovations coordinator with a goal to identify new and emerging trends in that space, focusing in particular on adaptive technology. In order to achieve that goal, OLC again partnered with DETA to perform an adapted environmental scan to systematically review relevant data and identify opportunities that could influence future pathways of the network.

Executive Summary

Underrepresented students enrolled in postsecondary educational institutions in the U.S. are faced with key barriers and challenges that have created an equity gap. By considering the needs of underrepresented students, faculty and institutions are able to implement digital courseware solutions to take a step towards closing the equity gap and improving student learning, course completion, persistence, and degree completion. Along with the imperative to improve student outcomes and close the equity gap, digital learning innovations have the potential to improve instruction and learning effectiveness by facilitating effective pedagogies of and to improve the efficiency in higher education.

These digital learning innovations have features that help:

1. Lower costs for students by replacing high-cost course materials with low-cost or free options;
2. Improve chances for success in bottleneck and foundational courses and decrease the need to retake these courses;
3. Decrease the time to complete courses and programs through a more convenient and flexible format with ubiquitous access from mobile devices;
4. Reduce tuition costs and increase degree completion by ensuring quality courses and student success; and
5. Enhance student learning by providing effective pedagogy, instruction, and student support.

Minimizing costs and improving the quality of learning are intrinsically tied together with several of the digital learning innovations. Although the innovations may improve access and be more efficient, there is an initial investment that is required by institutions and faculty. Faculty require time and funding to support their professional development in using new innovations. Institutional implementation of innovations requires proper infrastructure—human, technical, and financial. Fidelity of implementation can help or hinder any adoption of a digital learning innovation. Therefore, it needs to be thoughtfully planned and implemented with care within an institution and within a course. Although there is evidence that more academic leaders view digital learning innovations as part of their strategic plan, faculty are still reluctant to invest the time to adopt these solutions.

Some institutions and faculty are long-time adopters of digital learning innovations. Learning management systems (LMS) and mobile devices are thought of as core learning technologies at the majority of institutions and systems throughout the U.S. With the advancements in mobile versions of technologies and learning tools' interoperability allowing for the integration of courseware into LMS, students have one-stop learning from their device anywhere and anytime. Yet, there are faculty and institutions that are newcomers to digital learning innovation. The onboarding of these entities, while redundant, has created a spiral effect or waves of adoption of core learning technologies situated as emerging technologies. These core learning technologies remain critical to advancing student success and closing the equity gap. Moreover, students appreciate them.

With the increase in digital learning innovations, it is evident that institutions, faculty, and researchers find themselves with large amounts of data about teaching and learning that they previously were unable to capture at scale in traditional, face-to-face, and onsite courses. Although some faculty have been using data within the LMS for years to guide their support for their students and their instruction, there are new opportunities to advance methods in collecting and analyzing data to enhance the understanding of and the ability to predict student success. Additionally, these data can be visualized for easier consumption and in themselves have the opportunity to improve student learning.

Methodology

The focus of this effort was to illustrate trends in digital learning innovation. Digital learning innovations were located through a scan of the postsecondary environment through various data sources in order to identify prominent innovations that have the potential to improve student outcomes in postsecondary education. Digital learning innovations included technologies, such as adaptive learning and open education resources, that improve access, equity, and learning. A timeframe for the collection of relevant data was established from January 1st, 2018, to September 1st, 2019.

Previous DLI award analysis was included as one data source. Other data sources included industry leaders, national organizations advancing technology and learning, prominent research centers, influential research journals (peer reviewed), popular news and media outlets, funded initiatives, key institutions, vendors or products of interest, and other key publications from national organizations or efforts to see what themes and topics are relevant in the current landscape. Over a dozen data sources were reviewed.

Documents, including articles, reports, web content, and more, were pulled directly from databases and organizations' sites when possible. Informal interviews were conducted with various academic leaders in the field at key organizations. Articles were summarized noting key themes and findings until themes were saturated, at which point key themes were noted but articles were not summarized. Articles were saved and compiled on a server for additional review or verification. In sum, over 400 articles were reviewed.

About the Organizations

OLC is an organization that supports a community of postsecondary practitioners, researchers, and administrators setting the global standard for quality and innovation in online, blended, and digital learning. OLC is dedicated to increasing access and advancing quality digital teaching and learning experiences.

DETA was established in 2014 by funding from the U.S. Department of Education (ED), Fund for the Improvement of Postsecondary Education (FIPSE). The objective of DETA is to promote student access and success through evidence-based digital learning practices and technologies. Specifically, DETA identifies and evaluates instructional and institutional practices through rigorous research with particular interest in underrepresented individuals.

The **Every Learner Everywhere** network was established in May 2017 with 12 network partners, with OLC being one of the 12 founding partners. The mission of Every Learner Everywhere is to help institutions use new technology to innovate teaching and learning, empower instructors, and improve student outcomes—especially for first-generation college students, low-income students, and students of color. This report, the environmental scan referenced in this report, and DETA's research and analyses were specific deliverables to the Every Learner Everywhere network, a major initiative funded by the Bill & Melinda Gates Foundation.

The DLI Competition & Awards

Over 200 faculty- and institution-led award proposals were submitted over a three-year life cycle of the award (2016 to 2018) addressing the use of digital courseware guided by several areas of impact, including access, accessibility, accountability, affordability, implementation, innovation, interoperability, organizational learning, sustainability, and quality. The submissions led to more than 1,000 pages of qualitative data that were analyzed using an inductive approach. A majority of these proposals were faculty-led and were new or maturing projects at public 4-year institutions. They were further cross-sectioned for additional analysis based on the phase of the technology implementation and the type of digital courseware solution implemented. These adoptions were in various stages including planning, newly implemented, and maturing adoptions. The goal was to analyze the national submissions to better understand trends in the use of digital courseware to improve student outcomes. Moreover, there was much confirmed and learned about students, faculty, and institutions.

Findings illustrated:

1. Underrepresented student barriers include having limited resources, in particular financial resources;
2. Underrepresented students are often underprepared and encounter academic and institutional barriers;
3. Faculty and institutions are putting students first and are considering students' needs; and
4. Faculty and institutions are responding to student barriers and challenges by implementing digital courseware to facilitate new instructional and pedagogical approaches for courses better supporting students in achieving success.

Cross-cutting themes included minimizing costs, providing convenience and flexibility, improving student outcomes, offering research-drive instructional and pedagogical approaches, using data and analytics, developing proper infrastructure, and ensuring course design. Later analysis indicated that the primary challenges addressed in ascending order were improving students' outcomes, altering instructional approach and pedagogy, minimizing costs of textbooks and tuition, improving learning efficiency, increasing convenience and flexibility, targeting bottleneck courses, decreasing time to course credit or degree completion, and enhancing student support.

Overview of Trends

In this study, digital learning innovations are defined either as scalable solutions to fill known gaps in student learning and challenges, or as digital course development and adoption. Digital learning innovations can take the form of digital courseware, core learning technologies, design-based processes, or associated solutions that faculty and institutions can implement to move the needle on student access and/or learning.

The following is a categorization of digital learning innovations across postsecondary institutions that have an interest in creating equitable opportunities for students:

Primary Trends

Adaptive Learning

Open Education Resources

Gamification and Game-based Learning

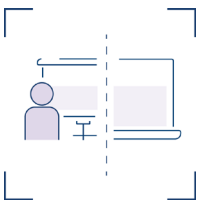
Massive Open Online Courses

LMS and Interoperability

Mobility and Mobile Devices

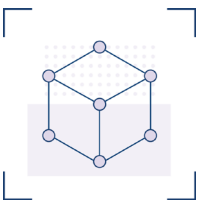
Design

Secondary Trends



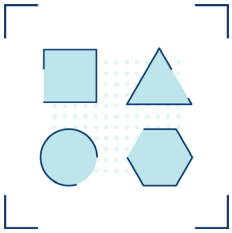
Blended Learning

Dashboards



Virtual Reality and Artificial Intelligence

Primary Trends



Adaptive Learning

Adaptive learning technologies provide students with learning activities, an assessment of their learning, and feedback on their learning. Based on their level of achievement, they are provided **an adaptive pathway that is personalized to their strengths and weaknesses** demonstrated on the assessment. Importantly, adaptive learning technologies are a broad umbrella and can look very different from one product to another.

Although using adaptive learning reveals itself as a trend—particularly in the DLI award submissions and winners—there is little empirical research that is published. However, evidence was also found via noteworthy conferences, popular reports, and published texts. For instance, the University of Central Florida and Arizona State were award winners and have presented their adoption and research efforts at several key conferences, including conferences by OLC, EDUCAUSE Learning Initiative (ELI), and WICHE Cooperative for Educational Technologies (WCET). The Horizon Report and ShapingEDU identified it as a trend. Saba and Shearer (2018) published a text that Ko reviewed (2018), focusing, in part, on adaptive learning and Moore's transactional distance model. Yet, Dziuban and Moskal of University of Central Florida and their colleagues are responsible for publishing one of the few empirical research studies that was discovered in the data analysis.

EXAMPLES

- **RealizeIt**
- **ALEKS**
- **BioBeyond**
- **Smart Sparrow**

DLI AWARD 2018 WINNERS

Arizona State University
Transforming college algebra: Eliminating developmental math and using adaptive courseware to enable student success

University of Central Florida
Using innovative adaptive courseware to enable student success in gateway mathematics courses

Georgia State University
Changing the paradigm: Creating an adaptive learning course to improve student outcomes and engagement in large section introductory classes

Ivy Tech Community College
Removing barriers to student success with BioBeyond

Mohave Community College
Increasing engagement and access with BioBeyond

Open Education Resources (OER)

OER is course content, materials, or activities that are ***open*, meaning that they are easily accessible by instructors and students.** They may be free or low cost, are usually produced by members of the community rather than publishers or vendors, and are usually easily accessible rather than behind a paywall. OER solutions include repositories to locate OER and courseware or other technologies that help create and disseminate OER to students.

OER reveals itself as a trend particularly in popular news and media and in the DLI award submissions and winners. Faculty and institutional proponents believe that OER as textbook alternatives can help reduce the price of higher education for students. Many faculty and institutions leave costly published textbook options and move to OER, particularly in certain courses such as gateway, foundational, or bottleneck courses and in STEM-related courses. OER is implemented with the hopes of positively influencing student success.

Although popular among the awardees, there is not an extensive amount of empirical research that is published. There is a journal, International Review of Research in Open and Distributed Learning, with a focus on publishing research in open learning with a few empirical research articles on OER, but the majority of research lies in Massive Open Online Courses (MOOCs) recently. However, it is popular in some reports and known efforts. The Horizon Report identifies it as a trend for 2020, yet it isn't revealed in the ShapingEDU work in a brief mention of openness in increasing access and equity. ShapingEDU is planning the launch of an open access journal in the near future. Surprisingly, the OpenED conference led by David Wiley and Lumina Learning has come to a close after 16 years, while the OLC and WCET are gaining momentum in new OER efforts.

Both adaptive learning and OER were prominent solutions facilitated by digital courseware adoptions through the lifecycle of the DLI Awards. The field is hopeful that additional empirical research linking the efforts to student success will be published in the future as innovation projects mature and yield significant results, as demonstrated in the use cases witnessed during the award submissions and conferences sessions.

EXAMPLES

Repositories
Merlot, OER Commons, OpenStax

Courseware
Equella, Pressbooks

Other Technologies
Adobe DC, Dropbox, Github, Google Docs, Google Drive, Wordpress

Learning Management Systems

DLI AWARD 2018 WINNERS

Salt Lake Community College
Redesigning quantitative literacy pathways for student success: Improving learning efficiency, access and outcomes in community college math using OER courseware

Bay Path University
Scaling adaptive learning for a predominantly low-income and diverse population of adult women undergraduates in a centralized course management model: Capitalizing on OER adoptions to lower costs and improve learning

Bossier Parish Community College
Engaging and retaining underprepared, under-resourced learners through an OER mobile-responsive, gamified delivery platform designed to leverage features of deep game structure, online retail, social media, and cognitive applications for learning.

Gamification and Game-based Learning

Gamification is learning that **incorporates gaming elements** into the learning activity (content and interaction), assessment, or course. Common examples of these include point systems and badges.

Game-based learning is when **games are used to facilitate learning**. This learning is often related to the learning of concepts to enhance cognitive knowledge or the learning through the simulation activities to enhance students' cognitive, behavioral, and affective abilities that often parallels real-life situations.

Even though interactive activities and simulations have been used for decades in postsecondary education, game-based learning and the gamification of learning continue to be a trend in higher education over the past decade. Analysis of the data revealed numerous empirical articles published. The increase in the pervasiveness of gaming among children and adults due to the advancement of technologies and the internet, along with gaming becoming a social phenomenon gaining the attention of scholars and researchers due to the engaging effects, has provisioned the testing in postsecondary education for teaching and learning, yet integrating games or gamifying a course can be a challenge. Therefore, the replication and scaling of game-based learning and gamification is slow, while interest in the scholarship of gamification is steadfast.

DLI AWARD 2018 WINNERS

Bossier Parish Community College
Engaging and retaining underprepared, under-resourced learners through an OER mobile-responsive, gamified delivery platform designed to leverage features of deep game structure, online retail, social media, and cognitive applications for learning

Massive Open Online Courses (MOOCs)

Astonishingly, Massive Open Online Courses (MOOCs) are still prevalent in postsecondary education. With the discovery of connectivist MOOCs well over a decade ago and the popularity of misjudged content MOOCs from prominent universities, such as Stanford, within the last decade, it is clear that MOOCs are not moving the needle on providing postsecondary-level students access to quality higher education learning.

MOOCs did raise the profile of online learning across the globe, but they are unlikely to solve the problems of digital learning innovation to improve equality in postsecondary education for under-represented students as some entrepreneurs and educators originally proposed. Also, the majority of institutions have realized that MOOCs are not the solution for innovation in online education. However, they still have a place in higher education, potentially as more MOOCs are being offered as a part of graduate certificate programming. They are being marketed with a fee or tuition and are situated to meet the demands of upskilling or reskilling the workforce in high-demand areas like data science.

The finding of MOOCs as a trend could be a result of the lengthy process required to publish research findings or due to the availability of learning data in MOOCs. Importantly, MOOCs are providing substantial data sets that allow researchers to explore the use of data to enhance our understanding about learning. This exploration includes developing new or improved methods and research designs, including data identification (behaviors, outcomes) and collection techniques. Although the majority of these MOOCs are content-driven, findings reveal their utilization in understanding mass education, MOOC instructional models, supporting MOOC learners, and more. Notably, the influence of this research on improving postsecondary education and for underrepresented students may be minimal.

The revelation as trends of gamification, game-based learning, and MOOCs is driven by the prominence in relevant research journals due to their general popularity across the country and the globe.

LMS and Interoperability

Learning Management Systems (LMS) and the interoperability of these systems is a trend in innovation. Being that some of the first systems that transformed into LMS were developed in the 1990's, it is not clear whether LMS are a digital learning innovation trend.

However, LMS is still a trend in popular media. For instance, EDUCAUSE discusses innovation and in describing workforce shift emphasizes the importance of the LMS and vendor relations as well as the need for a greater understanding of the LMS by the IT workforce.

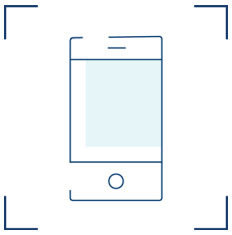
Additionally, the DLI Awards found that LMS and the ability of the LMS to integrate digital courseware within the system and within course sites was important. Faculty reported that it was a requirement and developed course plans based on this assumed functionality, but obstacles are often experienced that prevent the use of this interoperability and alternatives have been explored. Also, numerous research journals continue to publish articles examining different technological functions of LMS (e.g., asynchronous discussions) or to discuss generally how management of the LMS can help at-risk students be more successful (see Sandoval, González, Alarcón, Pichara, & Montenegro, 2018).

DLI AWARD 2018 WINNERS

Norfolk State University
Learning without barriers: Creating an accessibility and affordability environment for first generation students

Bay Path University
Scaling adaptive learning for a predominantly low-income and diverse population of adult women undergraduates in a centralized course management model: Capitalizing on OER adoptions to lower costs and improve learning

University of Florida
Using IOLab to provide access to rigorous at-home data acquisition labs for the introductory physics sequence, supporting authentic lab practices and collaborative sensemaking of "laboratory" data



Mobility and Mobile Devices

Mobile devices are **untethered devices that offer cellular communications** including voice and data. The generation of mobile devices is moving from the dominant 4G or 4th generation to 5G and next-generation wireless, WiFi 6. With the widespread adoption of mobile devices, their fast data speed, and the substantial number of applications available, mobile devices have become an extension of students. Their use of mobile devices to access their learning and their expectation of seamless interactivity greatly influence digital learning.

Mobile devices and mobility are a dominant trend, due, in part, to the social use of these technologies. Almost every student comes through the door with a mobile device or many. Numerous children are using mobile devices for entertainment and learning as well. The use of mobile devices within universities and across the nation by certain demographic groups is noteworthy (see Chronicle of Higher Education, PEW Internet) and there are several reports that have named mobile as a trend to watch (e.g., Horizon Report). Also, student use of courseware and core technologies is influenced by their mobile device. Ensuring usability and accessibility from a mobile device is critical to student learning and satisfaction. Evidence, such as what can be found in the award submissions and limited research articles, supports these claims.

Learning activities designed to take advantage of mobile device applications and/or functionality are more difficult to design, develop, and scale. Often, these mobile learning activities include game-based or gamified learning or other interactive, such as student response systems or scavenger hunts. These types of learning activities designed to specifically take advantage of mobility and its associated functionality were not revealed as a trend in the analysis.

The LMS and mobile devices seem to be two staples in digital innovation that continue to have broad adoption and implications for student learning. These two are core technologies and infrastructure components across postsecondary institutions that influence student expectations and continuity of their learning experience.

DLI AWARD 2018 WINNERS

Norfolk State University
Learning without barriers: Creating an accessibility and affordability environment for first generation students

Bossier Parish Community College
Engaging and retaining underprepared, under-resourced learners through an oer mobile-responsive, gamified delivery platform designed to leverage features of deep game structure, online retail, social media, and cognitive applications for learning

Design

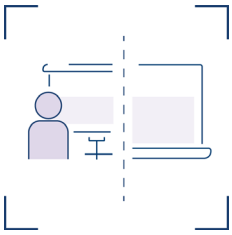
Design refers to the **structuring of the learning environment and interactions** so that students can learn. It usually consists of attending to the design of a course and/or the instruction, including student interactions with content, other students, and the instructor, to ensure alignment between learning objectives, assessment, and activities. Design also often includes considerations of organization of a course, course technologies, and materials, leanness and richness of content and interactions, and learner support, or creating clarity and ease of learning for students, in the online environment.

Design once was a side conversation or afterthought when it came to innovation, yet design is a trend in this report as it is revealed as a redundant theme across projects and higher education discussions. It was a prominent theme in the research journals, where research was focused on better informing instructors' abilities to create and design courses that will help students be both successful and improve learning. Also, it was identified in the Horizon Report for 2020, further signaling this elevation.

Instructional and course design are prevalent in the data collected. In new and developing digital learning innovation projects, design became an emerging issue in the later years of data analysis (most recent analysis). Design is something that many have known to be important for over a decade. For instance, Wiggins and McTighe (2005) backwards design became a popular process used in blended and online learning, and other methods and models for design have been promoted as well (e.g., Analysis, Design, Development, Implementation, and Evaluation (ADDIE)). Also, while design has become more notable in the discussion of digital learning innovations due to the importance of strategically thinking about effective practice in courseware design, other design-related phenomenon are emerging, including faculty and professional development, the role of the instructional designer, the career pathway of the instructional designer, learning engineers and engineering, and user design (UX) and learner experience design (LX) research methodologies. This is not courseware or technology, but a trend itself and very crucial to the effective implementation of innovation and instruction of students using digital technologies.

Secondary Trends

Secondary trends in digital learning innovation are trends that were not prominent throughout the data set, but may have been identified as a theme for at least one data source.



Blended Learning

Blended learning occurs when **face-to-face and online environments are strategically integrated** to meet students' needs across environments and seat time is replaced with, or supplemented by, pedagogically advantageous online activities.

Blended learning is sometimes referred to as hybrid or flipped learning—conceptually, the terms are interchangeable. However, flipped can sometimes refer to a different pedagogical model that does not necessarily reduce seat time and where online activities predominantly involve content dissemination.

Blended learning was a new trend in the DLI Award submissions and in the research journals analysis. Also, it seems to be an approach being utilized more frequently in STEM within the timeframe analyzed. Moreover, blended learning was reported as a trend in the 2019 Horizon Report. OLC has a long history of blended learning, including the blended workshop and conference, blended certification for faculty, and the blended localness grant fund. It appears blended learning may be making a resurgence.

DLI AWARD 2017 WINNERS

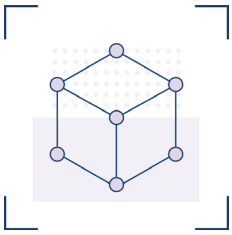
University of New England
Implementation of Blended Pedagogy to Improve Student Learning Outcomes and Retention in a Large Restructured Gateway Anatomy & Physiology Course for Allied Health Majors: a Learner Centric Strategy

Dashboards

Dashboards are **aggregators of data** from a data warehouse or storage system that presents data to the user or viewer. Often, this data is presented in a combination of quantitative expressions and data visualization allowing users to better understand the data.

Universities, such as the University of Michigan and University of Central Florida, are creating homegrown systems for students. Other universities are looking to harness the power of the dashboards available within LMS. These student dashboards are created to improve student outcomes by allowing students to see their own data in relation to other students' and gauge their performance. Also, the sharing of students' data with the students themselves allows students to gain a sense of agency over their performance and potentially motivates them to take control over their academic achievement. There are few research studies to support these efforts, and some have had controversial outcomes or shown an inverse impact on student success.

Dashboards are often referred to as learning analytics efforts, but they seem to be the key vehicle used to visualize learning analytics data to potentially improve student success. There are several state, national, and international efforts driven by groups (usually funded privately or through grants) to advance the research of learning analytics and their use in practice to improve student learning. Work in this area often focuses on identifying at-risk students using only student information system (SIS) data. However, there has been recent movement towards the use of multiple data sources (SIS, LMS, survey, courseware app data) and the inclusion of behavioral data to identify and test interventions that can improve student outcomes. It appears that an effective intervention for learning analytics research has yet to be identified and scaled.



Virtual Reality (VR) and Artificial Intelligence (AI)

Virtual reality is the use of digital data and programming to **simulate a different reality** through various stimuli (e.g., visual, audio). Currently, VR goggles (e.g., Oculus) are used to access this digital information or data that creates the virtual reality.

Artificial intelligence (AI) is often grouped with machine learning. Artificial intelligence is the use of digital data and programming to create applications to **perform cognitive human tasks**.

Virtual reality (VR) is often grouped with virtual worlds, augmented reality (AR), mixed reality (MR), and extended reality (XR). Virtual reality and its associated technologies tend to push the edge of engineering creativity and capacity and have high entertainment value, which makes them of great interest.

An example of AI is the intelligent tutoring system within the ALEKS adaptive learning application (Baker, 2016; Schroeder, 2019). Additionally, Inside Higher Ed quoted a RAND Corporation report that stated, "AI has so far found a perch in three 'core challenges' of teaching: Intelligent tutoring systems, automated essay scoring and early warning systems to identify struggling students who may be at risk of not graduating."

Virtual reality and artificial intelligence, more recently, have both been and continue to be reported by the Horizon Report, ShapingEDU initiative, and other efforts. However, these pockets of innovation are very isolated at this point and are not seeing diffusion across an institution or institutions to improve student access or success. For instance, faculty and institutions do not yet have the skillset or technology to create VR simulations or AI-driven software applications, as needed, to meet pedagogical goals of their courses and learning needs for their students. Nevertheless, the innovations are quite engaging and have the ability to serve educational and learning functions. As the design and development of VR and AI become more accessible to institutions and faculty, diffusion may increase. For now, research, testing, and pilots are limited. Most is accomplished through vendors that offer these innovations and/or vendor-sponsored research.

Conclusion

This analysis identified seven major and three secondary trends in digital learning innovation. The goal of adaptive learning and OER implementations to advance institutional efforts in providing access and quality while improving student success—in particular, among courses that pose greater challenges for underrepresented students. There are an array of use cases across the country, but there is an absence of empirical research linking these innovations to short-term or long-term student success. Gamification, game-based learning, and MOOCs are trends driven by the prominence of empirical research published in peer-reviewed journals resulting from their general popularity across the country and the globe. The impact on day-to-day teaching and learning of postsecondary students is minimal. The last two major trends are core infrastructure technologies that are used by the large majority of students, have the ability to integrate other administrative and learning technologies within them, and provide students with a continuity of a digital home. Research continues to be conducted, often on the functions of the technology, and news covers the general happenings and broad reports of their use. Of the three secondary trends, two (dashboards or learning analytics and virtual reality/associated realities/artificial intelligence) tend to be generally accepted as emerging innovations, yet there is a lack of use cases, evidence of effectiveness, and scaling of effective practice. If targeted towards a broad cross-institutional challenge (e.g., student support), there may be a great opportunity to improve student learning, student satisfaction, and lessen faculty workload as well as reduce administrative costs. Blended learning, on the other hand, appears to be a re-emerging trend with substantial amounts of use and evidence of impact, but a renewed emphasis in STEM. Quoted often as the best option for learning, blended learning may be the future of all physical campuses.

Citations

The analysis in this report includes documentation and evidence from several data sources over almost two years.

A selection that was referenced is listed by trend.

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