Current Issues in Emerging eLearning

12-18-2020

Foreword: Implementing Adaptive Learning at Scale

Karen Vignare
Personalized Learning Consortium, Association of Public and Land-grant Universities, kvignare@aplu.org

Follow this and additional works at: https://scholarworks.umb.edu/ciee

Part of the Instructional Media Design Commons, and the Online and Distance Education Commons

Recommended Citation

CURRENT ISSUES IN EMERGING ELEARNING

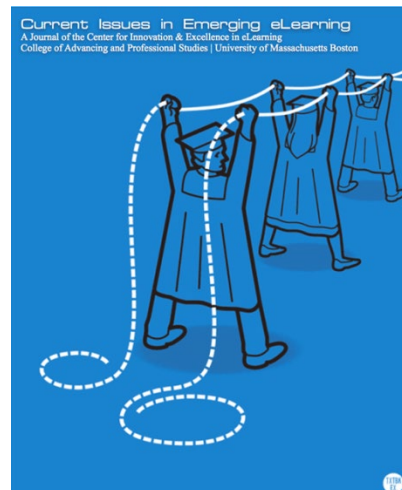Special Issue on Implementing Adaptive Learning At Scale

Volume 7, Issue 1 (2020)

GUEST EDITOR
Karen Vignare, Ph.D, Executive Director
Personalized Learning Consortium
Association of Public & Land Grant Universities

Available online at: http://scholarworks.umb.edu/ciee/

FOREWORD:
IMPLEMENTING ADAPTIVE LEARNING AT SCALE

A SPECIAL ISSUE OF *CIEE* JOURNAL SPONSORED AND GUEST EDITED BY

THE PERSONALIZED LEARNING CONSORTIUM
ASSOCIATION OF PUBLIC AND LAND-GRANT UNIVERSITIES

Karen Vignare, Ph.D, Executive Director
Personalized Learning Consortium
Association of Public & Land Grant Universities

What follows is the second of now two Specials Issues of the *CIEE* journal to have been produced and guest edited by the Personalized Learning Consortium (PLC) of the Association of Public and Land-grant Universities (APLU). Both special issues feature important research resulting from university initiatives to launch, implement and scale up the use of adaptive courseware and the strategies of adaptive learning.[1] The Personalized Learning Consortium has been working with institutions for more than five years to improve student success in high enrollment undergraduate courses. Using a combination of active learning and adaptive courseware, many universities are reporting higher passing rates but also more equitable outcomes. In this issue, we share five papers that discuss how and why higher education institutions have incorporated adaptive courseware and learning into high enrollment general education courses. The papers also provide detailed examples of levels of success achieved.

The papers in the journal issue include work from five institutions: Arizona State University, Colorado State University, Portland State University, University of Central Florida, and University of Mississippi. One paper describes a shared approach to implementation of adaptive courseware in a biology course at each institution, as well as an additional case study from each institution in a course of their choice, such as chemistry, physics, and Spanish. Student survey and outcomes results are included throughout the case studies. This paper also addresses what benefits and barriers students perceived when using adaptive courseware, along with how the alignment between adaptive courseware and course organization and structure impact student experience. Throughout the papers, the multiple authors also offer research questions for further investigation of adaptive courseware and learning.

---

[1] The first of now two PLC-sponsored *CIEE* journal issues, published as Volume 5, Issue 1 (2018) Special Issue on Leveraging Adaptive Courseware, remains freely accessible and downloadable.

In "Designing and Teaching Adaptive+Active Learning Effectively," van Leusen, Cunningham, & Johnson (2020) present adaptive+active learning as a transformative initiative, the success of which depends upon taking a system approach. The paper refers to an adaptive courseware implementation at Arizona State University (ASU), where several high-enrollment general education courses were changed from a lecture-based model to an instructional model that focused on design choices and teaching practices in which the technical capabilities of adaptive courseware were aligned to active learning techniques.

ASU's implementation under this instructional model began in 2014 when ASU partnered with adaptive courseware vendors for an introductory algebra course, a beginning biology class, and two U.S. history survey classes. In a section of the paper titled "Overview of key facilitation skills," van Leusen, et al. present two key facilitation skill changes that are needed by instructors for a successful adaptive courseware and learning implementation: use learning analytics to identify struggling learners, and a change in teaching style from lecture-centered to learner-centered. Additionally, "the need emerged to establish a team whose members collaboratively facilitated these changes and supported faculty and departments." Overall, van Leusen, et al. claim that "the system approach in the adaptive+active instructional model has improved student success at ASU, in particular in large enrollment courses."

In "A Transformative Approach to Incorporating Adaptive Courseware: Strategic Implementation, Backward Design And Research-based Teaching Practices," Buchan, Kruse, Todd & Tyson (2020) present a thorough case study of how Colorado State University (CSU) implemented adaptive courseware and learning as a PLC/APLU grantee, starting in July 2016. CSU successful implementation scaled quickly to 11,336 enrollments in targeted high-enrollment, general education courses within two years. As the title of this paper suggests, CSU took a three-pronged "transformative" approach: 1) strategic implementation of courseware, 2) backward course design, and 3) incorporation of research-based teaching practices. The goal was to "promote academic success for all students, but particularly for students from historically underserved groups, since active learning with increased structure has been shown to reduce the achievement gap."

Buchan, et al. cover CSU's in-depth approach, including providing information on how to recruit courses for adoption, courseware selection, use of analytics, faculty professional development, the development of faculty learning communities, and how to measure research-based teaching practices. Several interesting tables on student success outcomes also are presented, along with faculty feedback statements and recommendations regarding adaptive courseware. The authors note that "faculty use of research-based teaching practices in strategic alignment with active learning and adaptive courseware provided the greatest measure of success."

In "Adaptive Analytics: It's About Time," Dziuban, Howlin, Moskal, Muhs, Johnson, Griffin, and Hamilton (2020) begin by acknowledging all the challenges our educational system in the U.S. faces, presenting reference to the inequities and struggles confronting underserved students, including working adults who must deal with employee-based pressures en route to earning a degree or even a certificate. The authors present a detailed case study of an effective adaptive learning partnership involving college algebra courses at the University of Central Florida (UCF) and at Colorado Technical University (CTN), courses that have been utilizing an adaptive platform that provides students alternative paths for earning passing grades. The authors also note that, while adaptive learning has been gaining acceptance, "research results have been mixed," while not enough research has been released by those who have been working on scaling adaptive learning.

Dziuban, et al. explain that "learning analytics research is often institution-specific, examining single-use for prediction of students at-risk that can be difficult to scale and transport beyond their home institutions." Overall, Dziuban, et al. claim that courseware implementations at UCF and CTU, two institutions "with considerably different infrastructures and student populations. . . indicated that combing adaptive learning and learning analytics offers promise for helping students achieve successful outcomes in college algebra."

In "Student Perceptions of the Effectiveness of Adaptive Courseware for Learning," Monroe, O'Sullivan, Forgette, & England (2020) from the University of Mississippi (UM) assessed "student perception of the effectiveness of adaptive learning platforms in courses delivered face-to-face [at UM] and on a variety of adaptive platforms." The adaptive courseware used in UM courses included Pearson's Mastering and MyLabs, McGraw Hill's LearnSmart and ALEKS, Cengage's MindTap and Open Now, Realizeit, Smart Sparrow, Wiley Plus with Orion, Lumen Waymaker, Hawkes Learning, and Macmillan's Learning Curves.

Between Spring 2017 and Spring 2019, Monroe, et al. conducted student focus groups and administered student surveys over four rounds; the researchers present their results in this paper. For example, they find that "in all four surveys, respondents identified 'more flexibility in submitting homework and quizzes' as the number one way in which the courseware changed how they learned." Regarding student focus group results, "cost and value was their top concern about adaptive courseware." Monroe, et al. provide many more significant results garnered from both the surveys and the focus groups. However, "in both the focus groups and the surveys, more students had positive views than had negative views of digital learning platforms. The courseware features students found helpful were generally those that supported learner autonomy, which they valued more than algorithmic adaptability."

The final paper in this special issue, "Adaptive Courseware Implementation: Investigating Alignment, Course Redesign, and the Student Experience" is a review of active and adaptive learning implementation from multiple institutions: University of Mississippi, Portland State University, Colorado State University, and University of Central Florida. In this paper, O'Sullivan, Voegele, Buchan, Dottin, Kono, Hamideh, Howard, Todd, Tyson, Kruse, de Gruyter & Berg (2020) share the student and faculty feedback gathered from each institution's separate active and adaptive implementation of biology for undergraduate non-majors. In this paper, four institutions share student and faculty feedback on the implementation of adaptive courseware through a common case study: biology for undergraduate non-majors. Each institution also provided a second undergraduate course implementation case study. O'Sullivan et. al, investigate student perceptions of adaptive courseware. The case studies also address how the deliberate alignment between adaptive courseware, and course organization and structure impacts student experience. The authors highlight the collaboration and benefits of scaling adaptive courseware implementation, operating as cohort of institutions all of whom function as grantees of the 2016 APLU grant.

O'Sullivan et. al. (2020) state that adaptive courseware holds much potential for a more personalized digital learning experience. This paper shares multiyear data from the institutions regarding each of the courses discussed. The cases also demonstrate that incorporating new learning technologies creates opportunities to revisit assumptions about course development and design, and to place student engagement at the center.