Deploying Next Generation Courseware to Support Student Success in Online Learning and College Affordability

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Extended Paper Summary:

In the recent years, the field of online education has evolved from a novel and unique idea to the mainstream, with approximately one out of three students in U.S. higher education taking at least one online course **[1]**. Virtually all U.S. higher education institutions, across all sectors, have some online activity, and online enrollments continue to grow every year. The visibility with executives, institutional leaders, and their governing boards has resulted in even more focus to online learning initiatives on college campuses. As a result, most institutions have strived to create the needed infrastructure to lead their efforts often seen as vital to the future of the college or university.

The U.S. Department of Education **[2]** reported African Americans are more likely than any other demographic group to enroll and complete their entire academic undergraduate coursework online **[3, 4]**. Surprisingly, historically Black colleges and universities (HBCUs) have been slow to create online programs for their students, with only 18% of 105 HBCUs offering online degrees. This has been attributed to the fact that on-campus engagement enhances retention as compared to online **[5]**. Due to high attrition rates for African American college students, HBCUs tend to focus their attention on face-to-face course offerings and programs **[6]**. It has been documented that African American online students tend to have lower grades compared with their White peers, and significantly less likely to enroll in online courses **[7]**, which suggests that achievement gaps found in many traditional educational programs also exist in online programs **[8]**. It is noteworthy that, despite all the strategic value associated with leveraging online education as strategic asset, the achievement gaps between face-to-face and online delivery of instruction, seems to be a general observation, not specific to HBCUs, according to current research. Many institutions offering online programs are challenged to retain students beyond the first few courses. The exponential growth of online education and the heightened focus of institutional accountability adds to the complexity of this issue. There is an urgency for conducting research to determine the critical factors that may affect student persistence and online students learning outcomes (OSLO).

Student success, persistence, and completion of online courses and degree programs have been linked to many cognitive (individual differences), non-cognitive factors (e.g., motivation, interest, curiosity, responsibility, determination, perseverance, attitude, work habits, self-regulation, social skills, etc.), and leaners' engagement and satisfaction associated with the characteristics of online learning environments. Personalized learning environments, that afford diversified learning pathways tailored to every individual student, have been recently advocated as promising solutions to address these problems. Accordingly, Next-Generation Learning Management Systems (LMS) and Courseware that enable personalization are being implemented as major eLearning innovation. This include **Adaptive** and **Learner Engagement** palforms used to design digital courseware that can be integrated with any classical LMS such as Moodle™ and Canevas™, or BlackBoard™.

Contrary to commonly used **linear self-paced learning design**, consisting of a fixed sequence of eLearning that deliver the same content in the same predetermined way to each learner, **Adaptive Systems** include a range of approaches from basic pre-test enabling user to test-out of elements of a course to algorithm-powered engines, sensitive to personal history, needs and choices of the learners. Benefits include dynamically adjusting to the student, based on most recent actions, allowing learners to skip unnecessary activities, and providing automated, personalized support for a given learner. Online learning is more like working with a personal tutor and less like **linear self-paced learning design with a "**one size" fits all approach.

Learner engagement, defined as the student's cognitive and emotional energy to accomplish a learning task **[9]**, has been found to correlate with important educational outcomes, including academic achievement, persistence, satisfaction and sense of community **[10, 11]**. It arises when one prioritizes educational strategies and teaching techniques that address the developmental, intellectual, emotional, behavioral, physical, and social factors that enhance Online Student Learning Outcomes (OSLO). It also echoes a learner's interaction and cooperation with co-learners and instructors. Learner Engagement systems afford Personalization using integrated features such as simplified user interface, Microlearning, Gamification, socialization, humanization, and self-assessment allowing learners to take ownership of their learning [12]. Actionable leaner analytics are systematically collected to measure performance, while identifying learning gaps to improve student outcomes, retention, and success.

Furthermore, many higher education institutions have a strategic mission of providing access to high quality, affordable higher education to a diverse student body and making college more affordable. Although texbooks are still a traditional component in many higher education contexts, their increasing price have led many students to either delay or forgo purchasing them, resulting with high failure or attrition rates. Increasing textbook prices, coupled with general rising costs of higher education have been associated with not only college affordability, but student success and retention. Many strategies have been proposed to reduce or completely eliminate student textbook cost. One strategy, Inclusive Access, advocated by Publishers, reduces cost and the "inclusive" aspect of the strategy means that every student has the same materials on the first day of class, with the charge included as part of their tuition **[13]**. Currently many HBCUs have adopted the Inclusive Access strategy. The other prevalent strategy replaces commercial textbooks with free open textbooks and Open Education Resources (OER) **[14, 15]**. There are currently resurging interests at HBCU institution to pilot the adoption of this strategy and to build community of Practice around adoption of OER **[16]**. The next-generation courseware integrates OER and open textbooks to reduce cost.

Digital courseware is defined as instructional content that is scoped and sequenced to support delivery of an entire course through software built specifically for educational purposes. It includes assessment to inform personalization of instruction and is equipped for adoption across a range of institutional types and learning environments. The use of high-quality digital courseware at scale in higher education has the potential to improve access and outcomes for postsecondary students. However, high-quality digital courseware alone will not lead to improved OSLO. To reap the benefits of courseware, effectiveness research needs to be conducted. A methodical, planful approach to adoption is critical for successful experimentation and piloting **[17]**.

This presentation will review the characteristics and functionalities of Next-Generation courseware, with particular focus on Learner Engagement Systems, and their deployment to support student success in online learning. It will prompt a HBCUs Community discussion around a common research agenda to

make better informed adoption and implementation decisions with the goal of advancing the adoption of high-quality digital courseware at HBCU institutions and ultimately achieving improved outcomes for the minority student population we serve. We will demo and engage participants in discovering the Odigia Learner Engagement platform **[18].**

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