Rethinking Higher Education: A Case Study of Institutional Transformation

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Abstract
U.S. public higher education faces increasing challenges, including changing models of educational delivery, declining state funding, alternative credentialing, demographic shifts in student populations, questions concerning the relevancy of the curriculum, increased cost, and increasing competition. This paper presents a case study of one of the most comprehensive higher education redesign efforts at an urban research university. reTHINK PSU, a presidential initiative at Portland State University (PSU), is a campus-wide effort to deliver an education that serves more students with better outcomes, while containing costs through curricular innovation, community engagement, and effective use of technology. reTHINK PSU projects follow a well-designed roadmap for developing solutions for challenges facing PSU. The initiative used the principles of open innovation, design thinking, project management, and the creation of innovation platforms to launch a series of successful projects. This paper will summarize these efforts and will outline an organizational transformation strategy that may be replicated by other institutions wanting to innovate and redesign their operations.
Keywords: Innovation, Higher Education, Design Thinking, Crowdsourcing

1. Introduction

U.S. higher education system faces significant challenges. A study of a comprehensive institutional response to these challenges is useful for scholars studying change in higher education delivery as well as to practitioners providing leadership for institutional transformation efforts in their institutions.

Portland State University (PSU) has built a culture of innovation to respond to a rapidly changing student population and competitive environment. In 2012, PSU launched The Provost's Challenge, a campus-wide innovation effort that grew into the ongoing reTHINK PSU program. The university was able to identify barriers to student success, create community-driven solutions, and build systems for execution in a disruptive competitive environment. Building on concepts and methods theorized by leading scholars on innovation, PSU discovered new ways to generate ideas through design thinking, crowdsourcing, and open innovation with a keen focus on execution. The effort demonstrates how higher education can implement short-term improvements and alignments to better serve students today while, at the same time, introducing changes to address the disruptive challenges required for long-term success.

2. Higher Education's Dilemma

"The downfall of many successful and seemingly invincible companies has been precipitated by a disruptive innovation—that is, an innovation that makes a complicated and expensive product simpler and cheaper and therefore attracts a new set of customers," state Clayton Christensen, author of *The Innovator's Dilemma,* and Henry Eyring (Christensen & Eyring, 2011). Christensen and Eyring demonstrated that successful companies in mature markets are frequently unable to adapt to disruptive changes by new entrants. New services may appear inferior to existing services, but if they meet a consumer need at a lower cost, the competitor will "inexorably migrate up the quality chain," ultimately leaving the better established entity with a much narrower slice of the market and eventually an unsustainable business model (Christensen & Eyring, 2011). In order to survive, incumbent organizations must become "ambidextrous": building the skills to enact incremental change for stability and short-term success while simultaneously responding to or even producing discontinuous or revolutionary change (Tushman & O'Reilly, 1996). This is the scenario faced by higher education today with new competitors in a rapidly changing market.

U.S. Student demographics are shifting as fewer White,18- to 24-year-olds enter college. The percentage of Americans ages 18-24 is projected to decline by 8.9 percent from 2015 to 2025 (U.S. Census Bureau, 2014), yet post-secondary enrollment will increase (Hussar & Bailey, 2016). The fastest-growing student demographic will be 25-to-34- year olds (Hussar & Bailey, 2016) who must typically balance professional and family life with their education. Black, Hispanic, and multi-racial enrollment will increase at rates approximately two to three times that of White students (Hussar & Bailey, 2016). Growth at four-year colleges and universities will slow markedly (Lederman, 2014) as new enrollment shifts to two-year institutions (The Condition of Education: Undergraduate Enrollment, 2016).

Students and universities face increasing price pressures. From 1998 to 2008, the cost of a four-year education increased at a rate more than triple that of family median income and about four times as fast as the

Consumer Price Index (Mehaffey, 2013). At the same time, the gap between the cost of education and state support continues to grow (Mehaffey, 2013). From a student standpoint, the price/performance ratio may become insufficient as "good enough" alternatives develop.

Student learning outcomes leave four year institutions vulnerable to competition. Through longitudinal studies, Arum and Roska (2011) demonstrated that 45 percent of students did not increase critical thinking, complex reasoning, and written communication skills in their first two years, and 36 percent failed to show meaningful improvements over four years. Students are furthermore not completing school, as 40 percent of freshmen do not graduate within six years (U.S. Department of Education, 2017). The attrition rate is higher still for Black, Latino, and Native American students (Ginder, Kelly-Reid, & Mann, 2015), yet these demographics represent much of the future student body.

These challenges occur as competition and school choice are increasing. In 2014, 14 percent of students at four-year degree-granting institutions enrolled in online-only programs (U.S. Department of Education, 2016); 28 percent took at least some online courses; (U.S. Department of Education, 2015) and six percent enrolled in for-profit colleges (adapted from Smith, 2015 and U.S. Department of Education, 2016). Competition is increasing more quickly than enrollment: while online higher education grew by 30 percent over the past four years, there was a 110 percent increase in the number of programs offered (2017 Online Education Trends: Online Enrollment, 2017). For-profit institutions have been successful in recruiting diverse, low income students (Deming, Goldin & Katz, 2012). Even as the threat of MOOCs appears to have ebbed, traditional institutions are accepting these and other sources as credit for online learning (Mehaffey, 2013). Online learning and for-profit education have opened the door to competition and changes in service delivery.

While traditional four-year institutions must respond to a shifting market and competitive landscape, institutional inertia works against change. Universities are hierarchical by nature through the organizational structure, rewards tied to existing models, status (tenure), and complex administrative systems (Diamond, 2008). These structural factors work against grassroots innovation. Tushman and O'Reilly (1996, p. 19) state that even more important than structural inertia is cultural inertia, the "informal norms, values, social networks…myths, stories, and heroes" that set expectations for how work is done. A strong organizational culture supports success in stable environments but acts as a barrier in times of discontinuous change (O'Reilly & Tushman, 2004). With no historical threat of competition (Christensen & Eyring, 2011), success has supported structural and cultural inertia for universities (Tushman & O'Reilly, 1996).

The dilemma faced by colleges and universities is how to update current offerings while building new, and sometimes radically different, approaches for the future. The solution lies in engaging the institution's own community through open innovation.

3. The Innovator's Response

PSU established community-driven solutions for both incremental and discontinuous innovation. In 2012, PSU launched a series of reTHINK PSU initiatives to engage faculty, staff, and students in problem identification and solution implementation. Faculty and staff across the campus could work quickly and safely take risks to develop and test innovations. The initiatives moved "skunkworks" projects to a normative model of operational and business development. Open innovation and design thinking were employed to simultaneously develop changes for short-term, mid-term, and long-term success. The projects boosted morale, increased engagement, and established a culture of innovation.

reTHINK PSU began with three questions:

1. How do we make learning more accessible, reduce costs, serve diverse students, and improve student outcomes?
2. How do we identify the right problems to solve in order to reach those outcomes?
3. How do we solve those problems in a communal way, using social approaches to discovery and learning that work so well in the classroom?

The answers to those questions began with The Provost's Challenge, a campus-wide design initiative built around speed, collaboration, community engagement, crowdsourcing, and open innovation. Faculty and staff proposed projects, interacted with others, created teams, consolidated their ideas and workgroups from across multiple proposals, and implemented their ideas. The Challenge featured a high degree of online and in-person public interaction. This approach broke through the hierarchical structure and inertia-driven culture.

The Provost's Challenge implemented a wide range of projects. Funded projects included fully formed online degrees and certificates; emporium style classrooms for hybrid online/in-person learning; individualized credit for prior learning experience through prior-learning assessment, competency-based learning and concurrent-learning assessment; ePortfolios to make learning more visible; undergraduate opportunities for authentic scientific discovery; coaching lapsed students to degree completion; improvements to orientation and advising; moving paper-based processes online; digital learning badges; and more. Some of these projects became standard practice (coaching students who have dropped out to complete their final degree requirements),

some provided fully-functional models for future projects (online degree programs), and some were not continued but none-the-less supported teamwork and creativity (digital badges). With the success of The Provost's Challenge, reTHINK PSU launched additional innovation initiatives including Flexible Degrees and Student Success Initiative.

The Flexible Degrees initiative was developed to learn how to move from successful pilot projects to consistent, sustainable programs. Implementation of online learning projects in the Provost's Challenge uncovered opportunities to tie enrollment planning, budget planning, and program development. Flexible Degrees was implemented as an open RFP to faculty and staff. This process was public but more focused than The Provost's Challenge with an aim to offer flexible learning for non-traditional students while building systems alignment. Flexible Degrees created degrees, credentials, and related online learning projects that are 75 percent or more online.

Flexible Degrees illustrates how reTHINK PSU used projects to discover strategy (rather than the traditional approach of strategic planning driving projects). By testing a wide range of approaches in the The Provost's Challenge, PSU identified viable strategies for student success and organizational sustainability.

Student Success, the third reTHINK PSU initiative, focused on identifying and removing barriers to retention and graduation as identified through the student experience. Initiatives employed the five stages of design thinking—empathy, problem definition, ideation, prototyping, and testing. Students, faculty, and staff were involved at each stage of problem identification, ideation, and prototyping. Projects were developed from ethnographic (student centered/student involved) research and data analytics.

Student Success introduced over a dozen projects to address barriers to student success identified by the PSU community. Projects included advising redesign; academic home for undeclared majors; a coordinated service network; new interventions through data analytics; and online portals for academic coaching, career services, and tutoring. These projects improved student services to create a different experience, value, and connection to the campus.

reTHINK PSU initiatives were supported by common systems: (1) an online platform for proposal submission and public feedback; (2) project management systems and personnel; (3) budget development; (4) logistical support when needed; (5) assistance in bringing multiple teams or projects together for combined efforts; and (6) transparency and public web pages—with some variations as new initiatives were launched. Each proposal process included multiple phases to support iterative design approaches. Proposals were kept short and budgets were only developed after finalists were selected. The Office of Academic Affairs and a newly created Office of Academic Innovation provided these services in order to let faculty and staff focus on innovation rather than administrative work. For participants, the solicitation process was highly interactive but fast, with a low initial time investment, low overhead for users in the process, and a robust system for public presentation and review. The process ensured consistency, transparency, and campus-wide engagement.

In the following sections, more detailed information on reTHINK PSU implementation is presented. This is followed by lessons learned and considerations for other institutions considering innovation projects.

3.1 The Provost's Challenge: Building a Culture of Innovation through Crowdsourcing

With three million dollars in one-time funding, The Provost's Challenge engaged over 1,000 PSU employees, generated 162 proposals, and funded 24 projects. Many of the 24 projects were clusters of multiple proposals. The Challenge was crowdsourced, public, and supported at the highest levels of the institution.

The Provost's Challenge employed the innovation tournament model, an approach that uses a low barrier of entry to generate large numbers of new ideas and identify the very best opportunities (Terwiesch & Ulrich, 2009). Innovation tournaments ideas for change not from senior leadership or executives, but from employees performing the work. The selection process moves through multiple rounds, with public feedback, to identify the most promising innovations (O'Reilly & Tushman, 2016).

PSU built on the traditional individual contributor approach to innovation tournaments with a team-based approach and a publicly viewable, interactive crowdsourcing platform for project submission and development. The minimum requirement was that projects be submitted by a team of at least two members. During the project submission, refinement, and selection process, faculty and staff built cross-functional teams, typically with five to 15 members. This fostered collaboration across departments, established a team orientation to problem solving, and produced richer results while minimizing the social and pedagogical risks identified by Martin (2016).

The Provost's Challenge opened in November 2012 with the announcement of three innovation streams:

- Acceleration Challenge: Online programs and degrees that served a large number of students with enhanced student success, shorter time to degree, and lower cost were eligible for awards of $100,000 to $300,000.
- Reframing Challenge: This challenge asked the community to leverage technology to reimagine credit assignment, proficiency development, credentialing, and collaboration inside and outside the Oregon University System in order to increase completion rates. Awards range from $150,000 to $350,000.

- Inspiration Challenge: Low-cost, technology-based solutions that led to improved student success and graduation (e.g. online video chat for advising, online student mentors, open-source textbooks, improved student planning and communications) could receive $5,000 to $20,000.

These streams framed the issues, providing context and challenges, while asking the community to identify the problems (barriers to student success) and solutions.

In December 2012, the public online proposal platform was rolled out, and teams had one month to submit concept proposals. Postings included tags that proposers could self-assign, helping teams bring related ideas together into single proposals. Over 1,000 faculty, staff, and students provided feedback through the website, direct email links, and twitter posts. With encouragement from the organizers, teams used the feedback to continuously reframe questions and develop iterative solutions. The open, interactive approach broadened the funnel for problem identification and solutions, and answered the question, "How do we identify the right problems to solve in order to reach the desired outcomes?"

In January 2013, the community came together for a catalytic moment for a culture of innovation at PSU. The Winter Symposium brought together over 500 faculty and staff to present their concepts, offer feedback, and discuss the context of their work. The event kicked off with presentations and a panel discussion on the rapidly changing education environment, the role of disruptive innovation, and PSU's innovation initiatives. Over three days, each team presented their concepts with five minutes per team. Colleagues offered live feedback via Twitter and the Challenge website. The first day brought the entire convocation together while projects presented in days two and three were presented to teams from related clusters. The Provost, Vice Provost for Budget and Planning, Chief Information Officer, and Vice Provost for Academic Innovation and Student Success attended every presentation.

Over the next month, teams were encouraged to combine proposals and expand collaborations. Full proposals were submitted in the online workspace, and teams continued to receive feedback. As Community members saw others working on projects—through the symposium and the online platform—it became natural for networks of individuals and teams to come together, outside of silos.

In February and March, the selection committee brought together leadership from across the campus to evaluate proposals. The Academic Leadership Team (ALT) was comprised of academic deans from each college and school, the Provost, the Vice Provost for Academic Innovation and Student Success, and Vice Provost for Budget and Planning. Teams of two evaluated 10 proposals each followed by a discussion and final decision by the Provost.

The selection committee used the PICK chart, a modified version of Lean Six Sigma PICK Chart tool developed by Lockheed Martin, that evaluates projects based on impact and difficulty to execute and the R-W-W (Real Win Worth It) tool, developed by 3M and further work by Terwiesch and Ulrich (2009), at The Wharton School, University of Pennsylvania. The projects were evaluated on student need, student impact, student interest, feasibility, mission fit, strategic fit, revenue, risks, resources, and support for team building across organizational boundaries, and more. The committee reviewed all public comments in evaluating submissions and seeking projects that might be combined.

Finalists were notifiedappend in March with budget development over the following month and final decisions in May. Final selection was made by the Provost, in consultation with Vice Provost for Academic Innovations and Student Success, Vice Provost for Budget and Planning, ALT and the president's executive committee. Project implementation began in June 2013, a timeline that encouraged teams to work over the summer, and projects launched as early as the Fall of 2013.

One project that illustrates the broad impact of the Provost's Challenge is the Online Master of Social Work (MSW) Degree Specializing in Community and Leadership Practice. This project placed the existing two-year MSW and into a three-year online format, increasing accessibility for non-traditional and geographically dispersed students. The traditional program had required at least one full day on campus and two days of internship each week. All coursework is now available both online and in the traditional classroom. The project opened the MSW degree to 40 new students each year and has consistently achieved a 93 to 94 percent retention rate. Faculty found that online students were more engaged and displayed more depth of thinking than traditional students because they were required to be actively engaged with the material. Online pedagogy and curriculum development informed the overall MSW curriculum revision process, supported "flipping" course content, and provided PSU with a model for high-quality, low-cost online learning. This nationally-recognized online degree program was implemented with a budget of less than $250,000 and within 15 months of project selection.

The ePortfolio project illustrates university-wide collaboration. ePortfolios had previously been fragmented with some students using them in only one series and others juggling multiple portfolios across different online systems. The ePortfolio initiative engaged units, departments, graduate programs, and undergraduate programs from across the university in a collective conversation to generate buy in, inspire creative thinking, and eventually choose a single vendor for project implementation. ePortfolios are now available for use by faculty and students.

A small project with a major impact was Online Major Changes. The project transformed a paper-based process with no mechanism to ensure a major was actually declared. Departments did not know who their students were, negatively affecting outreach, advising, course planning, and budgeting. Students often did not declare their major until they applied for a degree. This project built a real-time, Banner-integrated solution to display current major and degree program information; prompt for verification or updates each term; and enforce degree declaration requirements. The project was a cornerstone for assigning an advisor for each student, implementing customer relationship management (CRM) software, and creating online interactive degree mapping. In the first seven days, 3,735 majors were changed and 15,855 were confirmed. The project presented significant technical challenges, but The Provost's Challenge enabled success.

The Provost's Challenge concluded on June 30, 2015, on time and under budget. Of the three million dollars allocated to Provost's Challenge, $2,737,138 was spent. A Provost's Challenge Celebration brought together faculty, staff, and students to share successes and reflect on their work.

Through The Provost's Challenge, PSU demonstrated how universities can build robust innovation engines by undertaking multiple, small projects simultaneously and using self-organized cross-functional teams. Distributed innovation creates a network approach where even if one part of the organizational renewal effort is not viable, lacks resources, encounters challenges in execution, or is simply implemented at the wrong time, other pieces can move forward. In the process, there are large groups of faculty who have worked on redesign through technology. At PSU, one third of faculty and staff participated.

The open, distributed process addresses differences in academic culture, not only for universities overall but also within the university. Team-based open innovation develops shared cultural norms of "openness, autonomy, initiative, risk taking…and allowance for variations," success factors identified by Tushman and O'Reilly (1996). Problem posing and idea generation bring the university community into the change process and cast a wider net for problem identification and solutions. Faculty and staff are motivated and inspired in ways that are not possible under top-down decision making. By keeping the process distributed and participant-driven, universities can move quickly, solve problems at the ground level, and improve the faculty experience.

The Provost's Challenge set a standard for quick, strategic movement in the university environment. The change process was mapped out in stages, with as little as two weeks of lead time. Ideas were chosen that could be implemented at that time, not only the "best" proposals. This allowed the university to engage the community and test approaches with little risk. It set expectations that change can be developed through experimental projects, not just through a long planning process. Finally, it supported ambidexterity whereby PSU developed short-term incremental improvements and long-term disruptive changes simultaneously.

3.2. Office of Academic Innovation: Sustaining Innovation

The Provost's Challenge established a culture of innovation, transparency, and cross-functional collaboration. The initiative launched projects that continue to advance student success. It also offered fast, inexpensive tests for approaches that might not be the right fit. In looking toward the future, however, it became clear that PSU needed infrastructure to support continued innovation.

The Office of Academic Innovation (OAI) was launched during the Provost's Challenge to drive innovation throughout the university. OAI was established with an ambitious, yet critical, agenda to (1) move pilot projects to consistent, sustainable programs; (2) replicate successful projects; (3) establish opportunities for risk taking; (4) lead disruptive change to stay ahead of the competition; (5) nurture a culture of innovation; and (6) cultivate cross-functional teams for problem solving and strategy development. Rather than creating new programs through an extended campus or a separate unit, PSU implemented OAI to integrate a design and program development mindset across all areas of the university.

OAI is helping PSU develop as an ambidextrous organization to implement both short-term incremental changes and long-term discontinuous improvements simultaneously. With the OAI infrastructure, PSU was able to implement The Provost's Challenge projects while launching new innovation initiatives including Flexible Degrees.

3.3 Flexible Degrees: Opportunity and Alignment Through Open RFPs

Flexible Degrees built on the success of The Provost's Challenge projects. In fact, it was only through the implementation of Challenge projects that the goals, approaches, and concept for Flexible Degrees were developed. The Challenge provided experience with online learning, credit for prior learning, and stackable credentials projects to build new, more flexible pathways to degrees and minors. The opportunity was to tie these elements together in alignment with enrollment planning, budget planning, and student needs.

Flexible degrees offer a pathway for non-traditional learners and those students who have stopped-out to achieve completion. Undergraduate degrees or certificates can offer learners the option to enter a pathway at any level (e.g. credit for prior learning), earn credentials to support different timelines (e.g. stackable credentials), complete their pathway fully or partially online, and prepare them for the next stage after completion (e.g.

career). PSU graduate programs may additionally offer accelerated programs such as short-format certificates and collaboration with other four-year institutions.

Flexible Degrees projects were selected through an open request for proposals (RFPs). Existing online courses were leveraged to minimize the need for course development. The initiative launched in Fall 2014 with the goal of supporting 10-15 projects over three years, for a total of $1,250,000. First round responses were submitted and posted using the same public online platform as The Provost's Challenge with concept proposals and feedback followed by full proposals. Evaluation was conducted by ALT to align projects with enrollment strategies in the colleges. In the first round, 17 proposals were submitted, and seven were selected for funding, all of which were completed by December 2016. Three projects representative of the process and impact were the online Bachelor's Degree in Business, Bachelor's Degree in Urban and Public Affairs, and Bachelor's Degree in Social Work.

The School of Business Administration created an online Bachelor's Degree in Business Administration through nine new online courses, 18 online courses developed through the Provost's Challenge, and formalized partnerships with local community colleges. Through The Provost's Challenge, the school had already made academic advising available online via video chat and redesigned their online courses with high-touch components ensuring peer and student-instructor relationship building. Collaborators included the Office of Academic Affairs, OAI, School of Business Administration, Department of Mathematics & Statistics, Department of Communication, Department of Economics, University Library, Learning Center, and community college partners. The $339,763 grant included the design, initial marketing, and implementation.

The College of Urban and Public Affairs built a Bachelor's Degree in Urban and Public Affairs as a flexible degree program. The college redesigned 19 existing courses for online learning and implemented credit for prior learning. Collaborators included OAI, University Library, College of Urban and Public Affairs, School of Community Health, Hatfield School of Government, and Division of Public Administration.

The School of Social Work is currently creating an online undergraduate degree. Through the Provost's challenge, the school has already built one of the best online graduate social work programs in the country. With a full complement of online and traditional learning offerings, the school is seeing rapid enrollment and solid growth.

Through Flexible Degrees and the Provost's Challenge, online course participation increased an average of 22 percent annually from 2012 to 2016 even as overall enrollment flatlined or declined—yet this growth came with a lower fiscal burden. Hybrid and flipped classes have demonstrated documented impacts on student learning. The university has created or updated over 30 degrees, certificates, and online learning programs.

3.4 Student Success: Removing Barriers Through Design Thinking
Student Success was developed as the third strand of reTHINK PSU. The goal was to identify and remove barriers to student success based on a systematic study of student experience. Projects were developed through three approaches: (1) design thinking based on ethnographic studies and user feedback, and data analytics; (2) structured gap analysis; and (3) lessons learned through Provost's Challenge project implementation.

Major needs identified by students included dynamic online degree mapping (especially for transfer students); consistent, accessible academic advising; and a single point of entry for PSU's online resources, services, and community connections. The student needs aligned with reTHINK PSU initiatives that demonstrated the need for campus-wide best practices, online systems, workload support, and strategic direction.

The Advising Redesign project is exemplary of involving users (students and advisors) and data analytics in the problem discovery and solution design process. PSU made a deep dive into the needs of students, professional advisors, and faculty advisors over a period of three months. The process utilized community engagement sessions, one-on-one interviews, and surveys with hundreds of participants. The process was iterative, seeking input and feedback from staff at each stage of ideation and prototyping through 17 distinct activities. Feedback was posted publicly online. This project utilized an outside consultant to help design the process and maximize community engagement. The cross-functional design team drew from the Office of Academic Affairs, College of Urban and Public Affairs, School of Social Work, College of Liberal Arts & Sciences, School of Business Administration, and Graduate School of Education.

Data analytics and gap analysis led to projects that included early identification and advising for students at risk of non-completion, early identification and support for students with financial obstacles, reduction of excessive credits, reducing the number of courses with high drop-withdraw-fail rates, assessing the effectiveness of academic policies, making student success data available at the unit level, and improving communications with students.

4. Conclusion
When asking if strategic renewal is appropriate for an organization, O'Reilly and Tushman pose four questions: (1) Is performance dominated by mature strategies where growth opportunities are limited; (2) Is there a product,

service, or process opportunity that could shift your organization's strategy; (3) Is the opportunity or threat outside your core markets; and (4) Is the opportunity a threat to the firm's core capabilities and associated identity? (O'Reilly & Tushman, 2016). For most universities and colleges, the answer to all four is clearly "yes."

Future directions of research can focus on developing a deeper understanding of techniques like design thinking, open innovation, or project management in an academic context. It will also be useful to understand how an institution may structure and balance a portfolio of initiatives to achieve desired results.

reTHINK PSU demonstrated that universities can respond to quickly changing markets with nimble, strategic movement. PSU is preparing to celebrate its fourth year of project implementation. The university continues to replicate successful projects, build on opportunities identified through those projects, introduce new RFPs, and experiment with new approaches. By embracing innovation and change, PSU is able to better serve students in the emerging context of higher education today.

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