Our Next Giant Leap:
Road Map for Transformative Undergraduate Education

Introduction

As of 2019, Purdue is experiencing unprecedented success in undergraduate education. We matriculated the largest ever incoming class last fall, and the past year's graduating class reached record high 4- and 6-year graduation rates. [1] Modern new classrooms opened in the Wilmeth Active Learning Center and another 50 classrooms across campus have been remodeled, leveraging the hundreds of course redesigns that have been supported by IMPACT. Other new spaces and educational programming are found in the Honors College and the Bechtel Innovation Design Center, with the STEM Teaching Lab Facility to open in fall 2020. These achievements stem from the talent and hard work of our students, faculty, and staff, and are truly worthy of celebration. A Boilermaker has every reason to be optimistic about the future of undergraduate education at Purdue. Yet as President Daniels cautions in his annual letter in January 2019[2], we cannot ignore the changing realities around us that Purdue will need to anticipate and address. For example:

- Gen Z, a new and more diverse generation of students, is arriving with different priorities, expectations, and prior educational experiences.
- New instructional technologies such as adaptive learning and innovative pedagogies mean that faculty must continue to reexamine their teaching methods to better engage students in the learning process.
- Fewer high school graduates, especially in the Midwest, means increased competition for students who also have more options to consider: apprentice programs, online educational institutions, company-led colleges, or no college at all.
- Pressure from outside stakeholders continues about college costs, time to degree, and whether students are prepared for the world of work after college.

Building on our success, it is incumbent upon us to anticipate the future. What should Purdue's undergraduate program look like in 2030, and what should we do now to ensure that our undergraduate students continue to experience a high-quality education? The Road Map for Transformative Undergraduate Education is aimed at establishing a framework for considering these questions and others crucial to address as we look to the future of our undergraduate program.

Creating this roadmap for the future of undergraduate education at Purdue has been, and continues to be, a collaborative process. It began as a conversation with members of the Teaching Academy and Associate Deans for Undergraduate Education in December 2017. The conversation expanded to nine "listening sessions" over the course of the spring 2018 semester with faculty, staff, and students from across campus.[3] In fall 2018, the Teaching Academy sponsored four panel discussions with 150th Anniversary Professors to discuss some of the questions that emerged from the listening sessions:

What are the most important outcomes of a Purdue undergraduate degree?
Faculty and staff have already considered this question, and constructed a shared understanding of what all Purdue undergraduate students are expected to learn. The University Senate established three learning outcomes embedded within each discipline: Communication, Ways of Thinking, and Interpersonal Skills and Cultural Knowledge.[4] The Leadership and Professional Development Initiative, supported through Student Life, used those same embedded outcomes, added one additional outcome (Intrapersonal

Awareness & Development), and established competencies supporting each.[5] As we develop a plan for the future, how will our learning outcomes evolve to reflect new elements of a Purdue education?

What student experiences will lead to those outcomes?
Once we establish the expected outcomes of a Purdue education, how do we help students develop the academic and professional knowledge and capabilities required to meet those expectations? One theme expressed during the listening sessions is that a quality education should include a blend of academic preparation and professional skill development, and that each should be developed through curricular and co-curricular learning experiences – and integrating these whenever appropriate. How can we leverage the value of our residential campus to ensure that our students find high quality learning opportunities, both in and outside the classroom?

What programs and structures are necessary to foster a culture of great teaching and learning at an R1 institution?
High quality student learning experiences are facilitated by excellent teaching. Purdue is among the national leaders in universities that still heavily rely on tenure-track faculty in our teaching. To support Purdue faculty and staff in their efforts to continuously improve as teachers, our university must foster a culture and climate that recognizes and rewards great teaching. How can we elevate the prominence of teaching and learning at a research-intensive university? How can we best prepare our faculty and staff to be highly effective teachers?

Roadmap for the Future of Undergraduate Education

Several ongoing initiatives fit well within this framework and were mentioned by participants in the listening sessions as priorities for continued action or as examples to build on. We also heard calls for new initiatives or areas of emphasis that will be part of our roadmap for providing a truly transformative education, which is one of the Purdue Moves.[6] This document does not include specific mechanisms or structures to put in place; those will be the subject of future collaborative efforts. Instead, it suggests some preliminary ideas and outlines five components of a vision for a university that is truly an exemplar of teaching and learning excellence.

Understand, Support, and Value Great Teaching
Creating a promotion pathway and adding a Murphy award for Continuing Term Lecturers, establishing the 150th Anniversary Professors, [7] and including mentoring in the promotion and tenure process are ways that Purdue is already working towards this goal.

Looking forward, we will ask the Teaching Academy to tackle the question of what we mean by excellent teaching, and to suggest desired outcomes. We will provide the necessary training, rewards, support structures, and measures of accountability to ensure that all students benefit from excellent teaching across their entire Purdue experience. Some additional ideas: consider how to make teaching a more important factor in promotion and tenure decisions; provide training and support for teachers who want to incorporate their research into their undergraduate teaching/curriculum; develop professional development programming for all new faculty to help enable their success in the classroom.

Create a Hub for Teaching and Learning Innovation, Translation, and Scale-Up
One aspect of the Transformative Education Purdue Move is transforming teaching and learning so that classes are taught in ways that research shows is best for student learning. The IMPACT program has been leading the way, supporting over 300 instructors in transforming nearly 600 courses across all Purdue schools and colleges.[8] Instructional Innovation grants, co-funded by ITaP and the Provost's office have supported the creation and testing of new teaching technologies.

Many faculty are finding exciting, innovative ways to teach their courses, and are conducting research on

effective pedagogies. IMPACT has shown us that we have successful mechanisms to disseminate and scale-up tested innovations. Going forward, we will create a hub to more intentionally innovate, incubate, and scale-up teaching innovations. Initiatives may include funding innovation grants for instructors to incubate ideas and opportunities to prototype the classroom of the future, and a stage gate-type process to assist instructors with developing their ideas further and assist the university in scaling the idea to the broader campus. This teaching innovation hub will have a research lens, streamlining the process for conducting classroom research, and through collaboration with the Executive Vice President for Research and Partnerships, strengthen connections to external funding sources for scholarship on teaching and learning. One tool in development to help streamline this effort is a common IRB for faculty who would like to integrate their research with their course curriculum.

Facilitate Meaningful, Flexible, and Cross-Disciplinary Curricula
Purdue University is already a leader in curricular innovations such as the Degree in 3, Cornerstone Integrated Liberal Arts, and the College of Science's Learning Beyond the Classroom certificate. The faculty in Construction Management Technology redesigned their entire curriculum into team-taught courses that deliberately integrate concepts in ways that mirror real-world application. We have developed a growing collection of multidisciplinary educational offerings that span the campus, such as the Innovation and Entrepreneurship Certificate, the Systems Collaboratory,[9] and the Integrative Data Science Initiative.

To respond to the demand for students who have broad, multidisciplinary backgrounds, we will need to expand our offerings of academic programs that span departments, colleges, and disciplines. This may well require an administrative entity, such as a university college, to house, encourage, develop, and support these and future multidisciplinary offerings. Such an entity could convene and lead the conversations to arrive at campus solutions for emerging issues such as micro-credentials and how to meet students' needs for a flexible curriculum. The curriculum of the future will likely allow students to pursue more flexible degrees, new forms of credentials, and a more tailored program of study.

Leverage Characteristics of a Residential Campus to Increase Engagement
Another aspect of the Transformative Education Purdue Move is Living and Learning, and again, Purdue is already making strides in this area. The Leadership and Professional Development Initiative helps students connect their in-class and out-of-class experiences, document their leadership competencies, and visually showcase their achievements. The Honors College is a true residential college that seeks to bridge the gap between curricular and co-curricular learning. We are continuing to grow learning communities in the residence halls, such as the new Data Mine, and Student Life provides projects for engineering undergraduates in their capstone courses.

Listening session participants asked what it means to be a residential campus, now that so much learning happens online. Going forward, faculty and staff will need to be intentional in their efforts to engage in authentic student interactions outside the classroom and to be fully integrated in the residential campus. We will create effective environments that support student learning, considering both the physical spaces and cultural elements of campus. We will tie together our rich set of high impact practices (including Study Abroad, Undergraduate Research, Learning Communities, Service-Learning Workplace Experience, Honors Courses, and Capstones) and contemplate requiring at least one of these transformational learning experiences as a graduation requirement. Additionally, we will develop an initiative around student wellness, helping students build a network of resources they can call on when needed. In short, we will educate the whole student, ensuring that they are equipped with both the professional and life skills to be engaged citizens who value continuous learning.

Close Achievement Gaps
If we are able to bring this vision to life, then Purdue students will truly continue to experience an extraordinary education. However, this education must be for all Purdue students. Historically, Purdue has retained and graduated low-income, first generation, and underrepresented minority students at

lower rates than the overall student body. A focus on affordability and programs such as Purdue Promise are helping us address these gaps, but more can be done. [10]

Through our research partners in the University Innovation Alliance, the work of the Boiler Success Team, and the leadership of the Vice Provost for Diversity and Inclusion, we will continue to learn more about barriers that have led to these achievement gaps, and do what we can to eliminate those barriers. The Boiler Success Team brings attention and action to issues that drive the academic and career success of all Purdue undergraduate students, and the campus-wide nature of the collaboration means the team is well-positioned to help us improve in this area. We believe that by closing these historic gaps, we will continue to raise our overall retention and graduation rates.

How will we know if we have succeeded?

We can establish goals for student learning and development, a shared understanding of what it means to provide a high-quality academic experience, and programs and structures that promote great teaching. But the only way to know if we have succeeded in meeting the goals outlined above is to also establish common metrics for communication and assessment, so we can have a consistent approach to data collection and dissemination, and to continuous improvement. Traditional measures of academic success such as GPA, retention and graduation rates, and post-graduation outcomes will continue to be important, but listening session members encouraged us to consider other outcomes as well, such as engagement and well-being.

This initiative is a top priority of the Office of the Provost, but this is not the "Provost's Initiative." Instead it is the Purdue Road Map for Transformative Undergraduate Education, because the work that will bring this vision to life will take place all across Purdue's campus, not just in the Provost's office. Reaching our goals for Purdue's undergraduate program in 2030 will require a sustained commitment to the work we all do to support the teaching and learning - and ultimately the success of - all Purdue students.

Additional Information

1. See Retention and Graduation Rate dashboard on Purdue's Data Digest:
   https://www.purdue.edu/datadigest/
2. President Daniels' 2019 Open Letter: https://www.purdue.edu/president/email/2019/1901-med-openletter-full.html
3. https://www.purdue.edu/provost/about/provostInitiatives/excellence/summaries.html
4. Undergraduate Curriculum Council Expected Outcomes:
   https://www.purdue.edu/provost/students/s-initiatives/curriculum/outcomes.html
   Complete description of all foundational and embedded learning outcomes and associated rubrics: https://www.purdue.edu/provost/students/s-initiatives/curriculum/documents/Senate_Document_11-7_Final_Appendices_Revised_3.pdf
5. LPDI leadership and professional development competencies, and links to college-based leadership development frameworks:
   https://www.purdue.edu/vpsl/leadership/myExperience/Competencies_List.html
6. Transformative Education:
   https://www.purdue.edu/purduemoves/initiatives/education/index.php
7. 150th Anniversary Professors: https://www.purdue.edu/provost/150/index.html
8. IMPACT Program: https://www.purdue.edu/impact/
9. Systems Collaboratory: https://www.purdue.edu/collaboratory/
10. Purdue Promise: https://www.purdue.edu/purduepromise/