



THE NEXT
150

STRATEGIC TASK FORCE AREA REPORT

Undergraduate Education Strategy

21.May.2018



Table of Contents

I. TASK FORCE CHARGE.....	3
II. TASK FORCE MEMBERSHIP	5
III. EXECUTIVE SUMMARY	6
IV. PROCESS.....	6
V. OPPORTUNITIES & CHALLENGES.....	6
VI. THEMES FOR STRATEGIC PLANNING.....	9
RE-ENVISION GENERAL EDUCATION	9
PROMOTE DEGREE FLEXIBILITY AND INTEGRATION	12
CREATE A SCAFFOLDING FOR STUDENT SUCCESS	14
LEVERAGE TECHNOLOGY AND INNOVATION	16
CONNECT WITH COMMUNITY	20
VII. RECOMMENDATIONS FOR ACTION	21
VII. CONCLUSIONS	22

I. TASK FORCE CHARGE

Dear Colleagues:

The University of Illinois at Urbana-Champaign has experienced tremendous progress and innovation in Undergraduate Education over the past five years. The Fall 2014 Conversations on Undergraduate Education engaged nearly 700 faculty, staff, and students and led to the Grand Challenge Learning Initiative, campus-level Student Learning Outcomes, and the ePortfolio System. The University is doing more to understand student learning through the creation of the Council for Learning Outcomes Assessment.

New programs have been created that connect disciplines like Computer Science with Linguistics, that expand Illinois' reach like the iMBA program, and that allow for better specialization as in the concentrations in Psychology. In addition, CITL was created to support faculty teaching efforts.

The University continues to support and grow undergraduate research. Groups have met to assess the student experience with on-line learning platforms, mental health, and accessibility issues.

To build on this progress and to create the best foundation for the success for Undergraduate Education, we are initiating the development of a comprehensive strategy for Undergraduate Education as part of the next phase of strategic planning.

Based on consultation with campus leadership, including the Deans with whom you are associated, you have been identified to contribute critically to this process by serving on the Undergraduate Education Strategy Task Force. Tracy Sulkin has agreed to lead this Task Force, whose efforts will culminate in a report.

Given the shifting landscape of higher education, we want you to consider ways that our university can offer relevant and meaningful education to prepare our students for the 21st century. Some broad themes to consider include: the essential core of a 21st-century Liberal Arts Education for a land grant university; the structure of degree programs, certificates, and cross-disciplinary educational experiences will allow students to assemble the skills and knowledge they need to succeed; how to prepare students to become effective online learners and to embrace the importance of learning through the lifespan; how to capitalize on technology to improve the student experience and expand Illinois's ability to reach students all over the world; the role of design thinking and entrepreneurship in the preparation of our students to become agents of progress and thoughtful change; the development of opportunities and the implementation and advancement of technology and data analytics to support access and student success; the need to continue to grow our efforts to make our campus a diverse and inclusive environment; and enhancing resources and guidance for faculty to achieve teaching excellence.

We want the task force to think boldly and broadly about undergraduate education. You need not come up with specific outcomes to be achieved. Rather, we hope you will identify comprehensive and far-reaching goals and areas to be explored. While it is not necessary to provide a high level of detail at this point, it is important to outline major themes along with the processes and timelines that will be necessary to accomplish those major goals. Specifically, the task force should address the following:

The Next 150 Strategic Plan Undergraduate Education Strategy Task Force

- In what areas does Illinois have the greatest opportunity to positively impact student learning and engagement?
- What opportunities and challenges do we face in Undergraduate Education over the next five to ten years?
- What specific actions would be most effective in realizing our potential in Undergraduate Education related to cross-disciplinary education, structures of degrees, student success, and student services? What new investments would be necessary to implement those actions? Please distinguish short (24 months), medium (3-5 years), and long-term horizons (5-10 years) for the actions.
- Undergraduate Education presents many opportunities for community engagement and better understanding of cultural differences. How best can we connect with our local, state, and global community through service learning, volunteerism, and civic engagement?
- How can we best engage the entire UIUC community in this effort? Are there specific opportunities or ideas to bring together faculty from all disciplines?

Your team might wish to consider additional questions to help guide the development of multiple strategies for Undergraduate Education at our institution. In developing the comprehensive strategy, we ask that you develop, as the product of your efforts, a process for engaging key internal and external stakeholders and drawing on the diversity of disciplinary expertise on the campus.

We ask that your task force also connect with other groups at work on Undergraduate Education, including the MOOC and Online Strategy Advisory Committee (MOSAC), the Technology Entrepreneur Center, the Council for Undergraduate Deans, the Student Accessibility Task Force as well as advisors and student affairs professionals.

An update to the Provost's office will be due April 23, 2018 with a report following by May 21. Please contact Staci Provezzis (sprovezz@illinois.edu), Associate Provost for Academic Effectiveness, in the Provost's Office with questions or requests that emerge during your review.

We appreciate your willingness to serve on this task force.

Sincerely,

Robert J. Jones
Chancellor

Andreas C. Cangellaris
Vice Chancellor for Academic Affairs and Provost

II. TASK FORCE MEMBERSHIP

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III. EXECUTIVE SUMMARY

The Undergraduate Education Strategy Task Force, recognizing the central importance of undergraduate education and the many strengths of the University of Illinois at Urbana-Champaign as a leader in this area, has worked to offer a comprehensive vision for the undergraduate experience that creates intellectual leaders for the 21st century, develops innovative partnerships that extend the reach of the University of Illinois at Urbana-Champaign in the state and beyond, and builds a relational community that supports the success of all students. The task force identified three main opportunities and challenges that provide the context in which strategic planning and implementation should take place—*improving recruitment, retention, and access; enhancing the on- and off-campus experience; and adapting to the pace of change*. To meet these opportunities and challenges, the task force focused its efforts on five themes: 1) re-envisioning general education; 2) promoting degree flexibility and integration; 3) building a scaffolding for student success; 4) leveraging technology to promote innovation; and 5) connecting with community. Underlying all of these themes is the University's ongoing commitment to advancing excellence and access.

IV. PROCESS

The Undergraduate Education Strategy Task Force was convened in March 2018 by the Chancellor and Provost, with a charge to think broadly about the undergraduate experience and to offer ideas about how we can provide our students with a meaningful education for the 21st century.

The task force met weekly from March through May, with subcommittees formed to discuss particular themes in more depth. Committee members also consulted with other stakeholders on campus, such as the Council of Undergraduate Deans, the MOOC and Online Strategy Advisory Committee (MOSAC), the Provost's Undergraduate Student Advisory Board, and the Chancellor and Provost Accessibility Review Committee.

This report reflects the task force's collective views on the opportunities and challenges facing undergraduate education and its recommendations about next steps for campus.

V. OPPORTUNITIES & CHALLENGES

Undergraduate education lies at the very heart of the mission of the University of Illinois at Urbana-Champaign as a land grant institution. Our worldwide reputation for innovation in research and creative endeavor extends to the education we provide to our students and to the communities we serve.

To maintain this stature and to meet the challenges of the 21st century, we must continue to advance our goals of excellence and access. Indeed, the committee sees these aims as foundational and inseparable; they are values central to our identity as a university, and they

should remain the primary motivating factors in all of our strategic decisions about undergraduate education.

The challenges that face us, and indeed all institutions of higher education, are daunting, but they are matched by the opportunity to articulate a bold vision for the place of universities in our society, the continuing value of a university education, and the commitment of the University of Illinois at Urbana-Champaign to leading the way in defining a path forward.

To succeed and thrive in the current environment and to develop a compelling vision for the future requires that we address the fundamental importance of diversity in promoting academic excellence. Diversity—of student, faculty, and staff backgrounds; of ideas and approaches; and of paths to degrees—is the bedrock upon which a first-rate undergraduate education is built. Accordingly, the University should advance its efforts to make our campus a diverse and inclusive environment, both in the recruitment of prospective students and in the on-campus experience of students inside and outside the classroom, and should empower students to think big, to cross disciplinary boundaries, and to take intellectual risks.

The task force identified the following three opportunities and challenges as particularly central to the University's efforts in undergraduate education over the next decade:

Improving Recruitment, Retention, and Access

The opportunity to receive an Illinois education should be available to the broadest swath of society possible, and the University must value an extensive range of personal attributes that contribute to building a rich and diverse student body. Reconsidering and expanding traditional measures of evaluation for prospective students, including real-world experiences, to complement or supplant measures like ACT or SAT scores, offers the potential to recruit students from the largest and most representative variety of backgrounds to broaden the Illinois experience. The University should create stronger pipelines to both well- and lesser-resourced high schools and develop clear and consistent pathways from community colleges into undergraduate programs, with the goal of developing true partnerships across the state.

We must also recognize that we operate within a competitive environment, in which other institutions are recruiting potential students, particularly in-state students, by offering financial assistance and advertising an equivalent academic experience. While fundraising for financial aid must continue to be a priority, so must we take advantage of the opportunity to clearly articulate the value proposition of our undergraduate programs, and to provide consistent marketing of programs of study that emphasize the student experience and the distinct value of an undergraduate education at research universities in general, and at the University of Illinois at Urbana-Champaign in particular.

In addition, developing multiple paths to degrees that accommodate different interests, experiences, and preferred paces of learning can help to improve retention and graduation

rates. Exploring collaborative and unified co-curricular services to engage student life needs that shape academic success will create a more equitable and supportive campus-wide experience for all students.

Enhancing the On- and Off-Campus Experience

Promoting excellence means not just attending to the academic needs of a wide variety of students, but also considering the support needs of our students, faculty, and staff and insuring that all are integrated into our community. Academic support should include both student-focused programs that acknowledge and accommodate a variety of academic and life experiences, and opportunities for faculty and staff to learn about strategies for reaching the broadest range of student learning styles, educational backgrounds, and personal experiences. Social, classroom, and other campus spaces should reflect the diversity of our population and complement the classroom experience. The Diversity and Inclusion Goals and Actions recommended for the 2018-23 strategic plan provide an excellent framework for taking advantage of this opportunity.

Members of the Illinois community do not speak with one voice. Opportunities to engage with and learn from individuals from different backgrounds and cultures should be a ubiquitous part of the undergraduate experience. An Illinois education should be built on a foundation that supports developing social awareness and cultural understanding, discovering commonalities and differences, and developing lifelong skills and fluency in discussing divergent viewpoints in productive and civil ways. Classroom and student life experiences should recognize and examine critical societal issues in each field of study, and foster productive dialogues to prepare students to engage with these issues after graduation.

In thinking about the future of undergraduate education, there are opportunities to enhance students' general education experiences, as well as their work to develop expertise within a field. In both areas, the challenge is to retain rigor and coherence while also building in sufficient flexibility for students and faculty to be entrepreneurial, to cross traditional disciplinary boundaries, and to extend the Illinois experience beyond the Urbana-Champaign campus.

Adapting to the Pace of Change

What is often referred to as the "digital disruption" is leading to profound changes in all aspects of society, which have accelerated dramatically after the recovery from the economic downturn of a decade ago. The Third Industrial Revolution took advantage of electronics and information technology to automate production, and in the view of many economists, it is now making way for a Fourth Industrial Revolution that is proceeding at breakneck speed and affecting nearly every industry in every country.

University curricula are based upon norms and practices developed over centuries. Given the pace of change in technology and societal needs, it is critical that we design an infrastructure for creating new curricula and adapting current curricula that ensures quality while also permitting rapid changes. Nimble processes will allow units flexibility to design degree programs to meet evolving student and industry demands.

Advancing technology to enhance undergraduate education must be accessible and scalable to students and instructors. Implementation must allow for physical locations, such as the Center for Innovation in Teaching and Learning (CITL) and the new Siebel Center for Design, where faculty from across the campus can utilize and schedule innovative courses. Adoption of new technology must be thoughtful and open doors to undergraduates from all backgrounds and in all areas of study.

Due at least in part to the broader developments in society, the needs of students are also changing. Digital distractions inside and outside of class, student health and wellness concerns, family needs, and other priorities intersect with course demands in ways that can influence student achievements in the classroom. The University needs to continue to support and expand programs that help students develop effective pathways to balance priorities and accommodate unexpected challenges that arise during their undergraduate experience.

VI. THEMES FOR STRATEGIC PLANNING

In light of these broader goals, the task force identified five themes related to strategic planning for undergraduate education. These include the general education curriculum, degree flexibility, student support, technology and innovation, and community connections. In what follows, we offer detail on each of these.

Theme 1—Re-Envision General Education

A robust general education curriculum is at the very heart of our mission as a public land grant institution: the Morrill Act itself explicitly sought to promote “liberal and practical education.” While general education has been a central component of the University of Illinois at Urbana-Champaign’s curriculum since its inception, the current structure was adopted by the Senate of the Urbana-Champaign campus in 1989. The two major provisions of that proposal were to revise general education requirements and to create a campus General Education Board to oversee the approval of new courses and to administer the curriculum more generally. Since that time, there have been changes to the requirements (most recently, the U.S. Minority Cultures requirement that will go into effect in Fall 2018), but the basic structure has remained. We propose that university take the opportunity to evaluate strengths and weaknesses of the current model of general education, particularly with regard to its ability to prepare students for current and future opportunities and challenges.

The task force recommends further conversation to:

- 1) Articulate a philosophy and rationale for general education in the 21st century

The stated purpose of general education is to insure that students “gain and use broad knowledge beyond the specialized learning they will do in a major field of study” (<https://courses.illinois.edu/gened>). We propose the need for an expanded justification that highlights the value and continuing relevance of general education, with a focus on learning outcomes and a clear vision of what defines an Illinois education.

- 2) Consider the structure of general education

The current general education model requires a minimum of 11 standard (i.e., 3 hour) courses, with more for students who do not meet the composition and “language other than English” requirements prior to matriculation. These required hours are equivalent to the number prescribed for many majors on campus.

At the time the current general education requirements went into effect, it was common for students to have a single major, and, perhaps, a minor. In recent years, however, interest in, and opportunities for, double majors, dual degrees, minors, certificates, and the like have increased. It is reasonable to ask whether the current requirements enhance or limit students’ flexibility to pursue coursework outside their primary specialization, and, indeed, whether current students require the same encouragement as those of years past to seek courses outside of a major. In addition, it is important to ensure that the requirements are consistent with and contribute to the vision of an Illinois education.

- 3) Explore the scope and nature of requirements

The current topical areas in the general education curriculum are language other than English, composition I, advanced composition, humanities & arts, social & behavioral sciences, natural sciences & technology, cultural studies, and quantitative reasoning I & II. We should consider whether these areas are collectively sufficient to prepare students for their post-graduation careers and lives as citizens. Are there other topics about which all Illinois graduates should be acquainted, but that can fall between the cracks of the current substantive requirements?

More generally, we propose examining whether general education should continue to focus mostly on breadth in content, or whether Illinois should also encourage, or explicitly require, breadth in experiences. For example, existing (or future) general education courses could receive attribute codes for whether they include experiential learning, individual or group research, etc. Such an approach also would make clearer to students where opportunities for skill-building lie.

4) Evaluate instructional delivery models

Most general education courses are offered in standard formats—bricks and mortar or online full-semester, first/second eight weeks, or winter/summer session courses. It is worthwhile to assess whether the goals of general education can also be met through shorter-term workshops, or course modules that could be mixed and matched depending on a student's interests and needs. Indeed, with modular libraries of content available, one could consider reconfigurable course offerings to suit personal learning goals, or the blending of different courses to create entirely new offerings. This focus on customization could be extended in other ways as well—for example, related to the approval of service learning or research-based courses for general education credit.

5) Revamp processes for approval

The approval process for new general education courses is sometimes perceived as long and cumbersome. While it is critical that new courses be rigorously evaluated, alternative mechanisms that would allow for more nimbleness would be beneficial.

One idea would be to offer expedited review for courses developed by faculty who participated in a general education proposal "boot camp," where they worked with experts and colleagues across campus to workshop potential general education courses. Such an approach would also bring faculty together across disciplinary boundaries and could therefore produce new and innovative offerings.

In addition, a different infrastructure for general education administration might help to address some of the issues in the current model. We propose an Office of General Education, perhaps part of the Campus Center for Advising and Academic Services, perhaps separate, that would have a small staff to administer general education and coordinate efforts across campus. The mission of this office would be to complement the work of the Senate Education Policy Committee and curriculum committees in departments and colleges, and would replace at least some of the duties of the current General Education Board.

6) Understand the impact of unit practices

Colleges and departments vary in their practices regarding general education courses. Some, for example, prescribe specific general education courses for a particular major, and others do not. Units also differ in how straightforward it is for students to "double count" courses. Such flexibility is a strength, as it enables faculty and students to customize experiences. However, this variation in practice can sometimes be confusing to students, and can have unintended consequences for the breadth of education they receive and/or in their ability to pursue dual majors or degrees.

The use of data analytics to more fully understand how these requirements route students from different degree programs through general education coursework could help to identify possible bottlenecks or negative externalities, while also preserving flexibility at the level of units.

7) Empower student choice

An advantage of the current model of general education is that it offers students flexibility to design their own pathways within the requirements. As discussed above, this presents an opportunity to leverage data analytics tools to assess these pathways and to enable students to select general education courses that serve as useful preparation for courses they intend to take in the future, that build on the content and skills gained in previous coursework, and/or that hone skills that are useful in a desired career or post-graduate degree program.

Theme 2—Promote Degree Flexibility and Integration

To enable students to cross intellectual boundaries, take calculated risks, and make the most of their Illinois education requires flexibility not only in the general education curriculum, but also in degree programs. The committee queried several student groups about their thoughts on building “transformative undergraduate experiences,” and the most common feedback dealt with access to courses and study in majors other than their own. Our students are curious, excited to learn, and eager for the freedom to pursue their curricular interests.

Accordingly, to promote students’ discovery across curricular boundaries, we propose that the University seek to:

1) Reduce barriers to dual degrees

Many students wish to pursue majors in two different departments, but this task is generally considerably easier and more straightforward if those two departments fall within the same college than if they cross different colleges. For example, a student in the College of Liberal Arts and Sciences could pursue majors in disciplines as disparate as English and Economics within the 120 hours required for the degree (so long as all general education and major requirements were met). If that same student wished to pursue majors in English and in Agricultural and Consumer Economics (in the College of Agricultural, Consumer, and Environmental Sciences), he or she would need at least 150 hours to graduate. This is because the latter requires a student to earn a dual degree rather than a second major within the same degree.

These rules, especially when combined with college-level and department-level regulations about dual degrees, work to incentivize students to combine some fields of

study and to disincentivize the combination of others. They also result in more opportunities available to students whose primary majors are in larger colleges.

The extra hours required for a dual degree vs. a double major also mean that this opportunity is more accessible to students from well-resourced high schools who enter the University with substantial numbers of college credits from Advanced Placement or International Baccalaureate exams, and/or to those whose financial situations enable them to take winter or summer courses or extend their time to graduation.

One potential challenge is how to incentivize cross-college collaboration and openness to dual degrees and curricular flexibility more generally. The task force noted that faculty and administrators are often eager to pursue innovation, but have concerns about the flow of tuition funds. The implementation of the new campus budget model provides an opportunity to address these issues, and it is critical that financial considerations not stand in the way of innovation.

2) Consider the development of modular degree programs

In addition to reducing barriers to dual degrees, the University should also investigate possibilities for new degrees based on “curriculum blocks” offered by departments and colleges. For example, a student interested in science communication might combine a module in Astronomy with one in Journalism, one with interests in arts and community development might combine a module in Dance with one in Social Work, one with interests in international development might take modules in Civil and Environmental Engineering and in Political Science, and so on.

The result would be degrees that fall between Individual Plans of Study and the more structured “+ X” programs (e.g., the current CS + X options), as the modules could be combined in different ways. However, if certain pairs of modules were to be regularly chosen by students, they could be linked in a more formal manner. Thus, we also encourage the development of programs that codify academic collaborations between colleges and departments that share a population of students with common interests.

3) Expand opportunities for 3 +1 and 4 +1 programs

Accelerated undergraduate/graduate degree programs, such as the 4+1 and 3+2 formats, allow for additional flexibility in students’ educational pathways. These programs save students both time and money by allowing them to complete multiple degrees in fewer semesters than it would take them to complete each degree separately. Accelerated programs also build community by bolstering mentorship between students and faculty, and between graduate students and undergraduates. Such programs may also improve students’ success in post-graduation placements and have the potential to increase revenue to the units that offer them.

4) Establish new blended degree programs

Online learning offers the opportunity to provide an Illinois education to a larger and more diverse student audience, and to democratize access for those who are less able to participate in the residential experience and/or who wish to combine time on campus with extensive experiential learning experiences, domestically or abroad. For some populations of students, then, hybrid degree programs that blend residential and online experiences can provide the best of both worlds.

Theme 3—Build a Scaffolding for Student Success

The University offers a myriad of student support services for undergraduates and benefits from talented and dedicated faculty and staff who are committed to student success. Nonetheless, it is widely recognized that the needs of students are evolving, as are the opportunities to connect with and support them. It is important that campus be agile enough to adapt to these changes, and that we adopt a broad and forward-looking approach to student support.

The task force makes the following recommendations regarding student support services:

1) Ask the right questions

Student “success” is often invoked in discussions about undergraduates, but there are many possible definitions of success. Do we mean students’ levels of academic success (i.e., GPA or test scores) while at the University? Well-being while pursuing their studies? Graduation and retention rates? Preparation for life after college? The best answer is likely some combination of all of these dimensions.

Data analytics provides an opportunity to identify the factors that promote and impede student success, both overall and for specific populations of students (e.g., by college or major; by first generation college student or underrepresented minority status; by in-state, out-of-state, and international residency). However, to make the most of these analyses and to use the results to build or revise programming, it is critical to know *what* to ask. A first step in doing so is to undertake a more comprehensive assessment of the nature of student vulnerabilities and to solicit the feedback of those on campus who work directly with students facing difficulties.

2) Build a campus-wide culture that supports mental health and wellness

Both faculty and student affairs members of the task force see the cultivation of a campus-wide culture that promotes mental health and wellness as central to student success.

Such a culture could manifest itself in small ways, such as making support a part of classroom instruction by encouraging instructors to list tutoring and mental health resources on the syllabus, in the same manner as information about disability accommodations and dealing with campus emergencies. In addition to educating students and faculty about resources, such an approach would also serve to normalize accessing support.

A culture of support could also manifest in bigger ways such as “one-stop-shopping” units (either campus-wide or at the level of colleges) that students, faculty, and staff could look to for support and services of all types, including counseling, academic advising, and tutoring and to receive triage-type evaluations and referrals to appropriate resources. Students often benefit from several different types of services, but do not always know where to begin. Similarly, faculty and staff who are concerned for or about a student may be unsure as to whether they should refer him or her to the Counseling Center, to McKinley Health Services, to his or her academic advisor, or to another office on campus. Simplifying the point of entry to services would be of help to both students and faculty/staff.

As the University navigates the provision of student services, the question of centralization vs. decentralization looms large. However, past experience shows that this need not be an either/or proposition. For example, the Career Center provides services to students across campus, and also liaises with vibrant career services efforts within academic units. This is a model that could be followed for tutoring, counseling, and other student assistance services.

3) Integrate student services and support into learning environments

As many of the examples above illustrate, a key component of building a supportive campus-wide culture is integration. Historically, universities have largely separated student services from academic affairs. In recent years, however, an evolving understanding of students and their needs has led to reforms to make these barriers more permeable. At Illinois, for example, an initiative has begun to “embed” counselors in the colleges, easing the transaction costs for students to seek mental health assistance and allowing counselors to gain a more in-depth understanding of the cultures of various units and the needs of students within them. Several colleges have also sought to develop peer tutoring or mentoring programs for their undergraduates, tailoring academic support to their particular programs. The task force sees these as positive developments, and urges the expansion of such an approach across campus.

The need for better integration also manifests in connections between learning environments, both physical (for example, between older classrooms and facilities in several buildings on the Main Quad vs. newer classrooms in the Armory and the Engineering Quad) and technological (e.g., the use of learning management systems).

Integration across the board to help our students navigate the campus and all of the many programs, resources, and systems available to them would concretely and significantly improve the undergraduate student experience. Better harmony in learning spaces, both formal and informal, speaks powerfully to the idea of investing in all of our undergraduates.

4) Prioritize diversity and inclusion in faculty development

In building a culture of support, there is a substantial opportunity for faculty development, both in terms of enhancing “big picture” understanding of the context in which instructors work, and in offering advice on dilemmas they may experience on a day-to-day basis. On the latter, among the examples pointed out to the task force were that instructors sometimes unintentionally use figures of speech that are unclear to students for whom English is not a first language, find themselves in situations where they are unsure as to pronounce students’ names and are uncertain about how best to proceed, or invoke language that assumes familiarity with the norms of higher education that may not be uniform across students. We can start by providing instructional resources to help faculty and staff become aware of issues such as these and their impact on undergraduates. In an era of information overload, one way to think about providing this support to faculty would be as “professional development on your desktop” (a “daily digest” type model). This approach could be supplemented by more intensive workshops on power and prejudice for faculty charged with creating new and transformative learning experiences to ensure that programs designed to support diversity do not inadvertently perpetuate unconscious, exclusionary systems.

Theme 4—Leverage Technology and Innovation

Computer technology continues to evolve in its technical capabilities and is increasingly influencing the way people communicate and interact. Computers are no longer just tools for efficient assembly of information and rapid calculations. In many areas of inquiry, computation increasingly drives our understanding, with predictive models often being the necessary starting point for innovative research.

Undergraduate education has been undeniably influenced by technological innovations, most notably the Internet and electronic media, but, as discussed above, the fundamental modalities of instruction and the underlying business model remain essentially the same. There are many possibilities for introducing technology in the educational experience to enhance both quantitative and qualitative understanding of complex topics. These possibilities include visualization, computing, and interactive and haptic simulation, which are useful complements to pedagogical practices like flipped classrooms, active learning, and hands-on project activities designed for learning-by-doing. Online teaching may also be enhanced by introducing these technology-based complements, both under synchronous and asynchronous delivery. Computer-based testing could also be considered an important area to pursue for the

enhancement of both on campus and online teaching practices, striving to improve security and academic integrity of the assessment process.

Introduction of technology should never become a crutch but rather facilitate the learning process and improve understanding of the subject matter, thus motivating students to strive for excellence. In addition, members of the task force see technology as a key component to invigorating outreach efforts for undergraduate recruiting, aiding the creation of a more diverse student pipeline from high schools and community colleges. These efforts should be viewed as essential to improving the affordability and accessibility of our undergraduate programs. Our aspiration should be to leverage technology to establish a comprehensive program that positions the University of Illinois at Urbana-Champaign at the forefront of modern undergraduate education.

To meet these goals, the task force recommends that campus evaluate the use of technology for:

1) Outreach with K-12 educators across Illinois

Technology can help to facilitate innovative partnerships with schools, from elementary to high schools. For example, the University could develop hybrid education models to bring Illinois courses to students throughout the state. This would have particular promise for students from schools or school districts where Advanced Placement, International Baccalaureate, and other programs that enable students to earn college credit in high school are rare.

In addition to a focus on students, we could also use technology to partner with educators, connecting them with the Siebel Center for Design and new instructional facilities across campus. Putting these tools in the hands of K-12 teachers will help them to provide first-rate training to students throughout the state, offering a common base of experience with technology and reducing divides between well-resourced and less-well-resourced communities. The use of technology in this way facilitates innovative pipelines for growth, but, equally important, it fulfills the University's mission to serve the people of the state of Illinois.

2) Enhancement of teaching and learning on campus

Educational technologies can enable scalable realization of innovative undergraduate educational programs that maintain or even improve quality while broadening access. In the initial phase there is a need for pilot programs that can lead the way for technology-based innovation across campus. A grassroots approach is important to get faculty buy-in and create enthusiasm. Pilot projects should take place in a technology hub serving as innovation studio where faculty and students can be risk takers and not be afraid to fail and restart with their efforts. The Siebel Center for Design could serve

as the prototypical environment where people come together to solve problems cutting across disciplines, with satellite innovation hubs organized around campus.

Some ideas for possible testbeds in undergraduate education that may have high payoff for our campus include:

-Immersive AR/VR to revolutionize teaching

In many disciplines, new pedagogical approaches are needed that focus on interdisciplinary understanding of fundamental phenomena. Virtual Reality (VR) and Augmented Reality (AR) have progressed to the point where there can be a true revolution in teaching, enabling immersive exploration of complex behavior.

-Instructional frameworks for blended curricula

Increasing demand for some degree programs, particularly engineering and computer science, has pushed enrollment to the limits of the present infrastructure. Innovative approaches are needed to scale up enrollment capacity, preserving quality while providing additional hands-on experiences that introduce students to more internship, entrepreneurial, and research opportunities. An effort to design new curricula based on blended learning is of strategic importance to maintain leadership in curricula, contain costs, and provide more access to deserving students.

-Data science for all

As discussed in the report of the Explore Data Science task force, it is critical that students be equipped to be competitive in a data-driven world. Progress is being accelerated by the convergence of various technologies, with relevant applications steadily growing and encompassing most disciplines taught on campus. To provide these offerings to all interested students requires an efficient platform for management and delivery of computational data applications.

-Automatic assessment tools/computerized testing facilities

The adoption of computer-based testing continues to grow for a range of standardized exams, from college admission to professional licensure. In academia, rich web client advances have made it possible to go well beyond mere multiple choice tests. Coupled with automatic tools for assessment, computer-based testing is suitable for both on campus and online courses and it provides high security, better safeguards against academic integrity violation,

and scheduling flexibility that may help mitigate the incidence of test anxiety. Expanding on the success of projects such as the Computer Based Testing Facility (CBTF) located in Grainger Library is essential to growing online and blended learning offerings and could be extended to on-campus programs to improve efficiency and simplify logistics.

3) Off-campus opportunities for current and prospective students

As the University further builds relationships throughout the state, most notably in Chicago, technology enables students to have the best of both worlds, spending extended time involved in internships, service learning opportunities, and faculty-led and independent research while also accessing campus courses. Blended learning approaches for course development, mediated by interactive and immersive technologies, need to be developed to guarantee a satisfying remote learning experience comparable to the one available on campus.

Such opportunities could also be extended to community college students. Building on the existing Pathways programs, a complementary effort could deliver remote instruction, perhaps team-taught between University of Illinois faculty and community college faculty, to fill gaps in foundational disciplinary courses, to assist with the transition of transfer students, and to facilitate timely graduation.

In the next several years, we will have several new important facilities on the Urbana-Champaign campus, including the Siebel Center for Design and the Engineering Instructional Facility. We envision the design center to be a focal point for faculty and students across campus to experiment with new technologies and modalities of instruction, while the engineering instructional facility can become a communication hub to connect remote communities of learners via immersive streaming. These locations and others like them across campus can act as nodes of a distributed learning ecosystem bridging activities in Urbana-Champaign, Chicago, and locations throughout the world.

4) Technology-mediated student support

Technology can also be leveraged to enrich the student experience via the availability of smart applications and resources for the development of students' professional and personal skills. Compelling possibilities include AI-assisted diagnostic tools for students to discover their academic interests and connect with degree programs and opportunities across campus; resources for the refinement of English language skills for international students; practice apps for "soft" professional skills; and tools related to personal finance, wellness, and fitness.

Theme 5—Connect with Community

The Chancellor has recently asked how we can move from being a university with engagement programs to a Publicly Engaged University. Our task force views this orientation as central to the undergraduate teaching mission in two ways. First, how can we provide enriching educational experiences to students that bridge the Urbana-Champaign campus and our communities? Second, how can we create a publicly engaged university where our research and teaching lead to advancements that will be relevant 150 years from now for the local community and the global society? In line with the recommendations of the task force on public engagement, we highlight the need to:

1) Extend experiential learning opportunities for students

University connections with local and statewide partners provide a rich repository to build internship, volunteer, and other community involvement experiences. An Illinois education should incorporate opportunities for practical as well as classroom learning, include venues for leadership development, and offer prospects for risk-taking and creative experimentation.

2) Build networks and partnerships across the state

The University can network with the University of Illinois at Chicago and the University of Illinois at Springfield to work together on programs and develop new connections. Many of our engagement programs focus on social justice issues and serving vulnerable populations (e.g., welcoming refugees, mentoring at risk youth, addressing poverty, hunger, homelessness, unemployment). The Discovery Partners Institute (DPI) in Chicago, a public-private partnership led by the University, is a good example of how campuses, community members, funding agencies, and the City of Chicago can work together around innovation, entrepreneurship, and social justice.

Opportunities also exist to connect students to the workforce. Chicago is undergoing rapid economic transformation with many companies establishing headquarters in the downtown area. Direct synergy between Chicago and the University of Illinois at Urbana-Champaign has been strong in the area of student recruiting but more limited in industrial interactions for students at earlier stages in their undergraduate programs. Units across campus are seeking to rectify this by creating programs that combine internships, coursework, and introductions to entrepreneurship (e.g., the College of Engineering's "City Scholars" program). A prominent footprint in Chicago, bringing faculty and students to the city, will provide the opportunity for significant and innovative activities in undergraduate education as well as outreach.

3) Support publicly engaged teaching across campus and beyond

There are already a number of projects underway on campus focused on publicly engaged teaching, including, for example, the Odyssey Project, the Community Learning Lab, and the DREAM/De.SH(ie) project in Englewood/Chicago. Providing support for collaboration and marketing of these programs and the development of other programs across all disciplines within the University will help to establish momentum and build a core of faculty and students involved in these efforts.

4) Develop global citizens

Our students, whether they be from Illinois or across the world, require and, indeed, demand, the education and skills to address complex global issues and to lead the next generation of problem solvers. We have highlighted throughout this report the need to incorporate this orientation in general education, degree programs, and student support services. In addition to on-campus experiences, it is critical that the University continue to support traditional study abroad programs, as well as newer innovations, such as short-term study trips with faculty and the opportunity to engage in collaborative research projects abroad.

VII. RECOMMENDATIONS FOR ACTION

The goals we have outlined in this report are undeniably aspirational, but we believe that they are within our collective grasp. To move toward realizing them, the task force has identified five short, medium, and long-term recommendations that are likely to have the biggest impact. In all cases, data-driven approaches should be emphasized as faculty, staff, and students across campus work to develop and refine actionable next steps.

Short-Term (next 24 months)

- Survey current practices and guidelines on campus regarding general education and degree requirements with the goal of identifying pathways and roadblocks to flexibility
- Identify testbed(s) for technology projects related to the enhancement of student learning
- Pilot “boot camps” for new course proposals, including modular courses
- Incorporate stakeholders in undergraduate education in developing plans for the Discovery Partners Institute and other Chicago collaborations
- Assess success of embedded student services programs and expand to other units across campus

Medium-Term (3-5 years)

- Evaluate effects of new campus budget model on cross-unit collaborations and dual degrees, and, if there are roadblocks, take steps to rectify them
- Deploy data analytics tools to chart students' pathways through the curriculum and to identify student support needs
- Create a new administrative structure for general education that will oversee implementation of a revised general education curriculum
- Pilot new partnerships between K-12 schools, community colleges, and the University, focusing on foundational courses and on design thinking and education
- Generate undergraduate admissions criteria and an admissions process that promote the twin goals of excellence and access

Long-Term (5-10 years)

- Establish new general education curriculum with consideration of content, course delivery models, and credit hours required
- Create blended degree programs in areas of demand to increase flexibility and access and to incentivize outreach and experience beyond campus
- Implement a comprehensive student support model that unites academic and student affairs and empowers students to connect with resources and prepare for life after graduation
- Pilot modular degree programs that enable students and faculty to customize curricula to adapt to new challenges and opportunities
- Integrate public engagement opportunities into all aspects of students' experience, from general education courses and degree programs to student support and off-campus opportunities

VIII. CONCLUSIONS

Societal and technological advances have led some to question the value of traditional residential undergraduate education. Members of the Undergraduate Education Strategy task force, and our colleagues across the University, argue just the opposite—that the experience provided by an institution such as the University of Illinois at Urbana-Champaign has never been more valuable. We now have the opportunity to re-envision the undergraduate experience both inside and outside the classroom and to extend our reach across the state, the

nation, and the world. In so doing, we can meet the needs of young people who are currently or may one day be our students, enrich the lives of those who will take other paths, and position ourselves to make a difference and to become a leader in charting a course for the future of higher education. The challenges are daunting, but the task force believes that the University and its faculty, staff, students, and supporters have the vision, the skills, and the commitment to meet them.