

Collaborating
FOR **change**

*Changing Higher Education,
Transforming Lives*

Removing Bottlenecks

ELIMINATING BARRIERS TO COMPLETION



Coalition of
Urban Serving Universities



ASSOCIATION OF
PUBLIC &
LAND-GRANT
UNIVERSITIES

TRANSFORMATIONAL PLANNING GRANT

The Transformational Planning Grant (TPG) project is an initiative of the Association of Public and Land-grant Universities (APLU) in partnership with the Coalition of Urban Serving Universities (USU) to support a cohort of seven public urban research universities as they spend a year planning and designing new business models and innovative approaches to increase access, improve success rates and find greater cost efficiencies. The Bill & Melinda Gates Foundation (BMFG) is funding the project.

COALITION OF URBAN SERVING UNIVERSITIES

The Coalition of Urban Serving Universities (USU) is a president-led organization committed to enhancing urban university engagement to increase prosperity and opportunity in the nation's cities and to tackling key urban challenges. The Coalition includes 43 public urban research universities representing all U.S. geographic regions. The USU agenda focuses on creating a competitive workforce, building strong communities, and improving the health of a diverse population. The Coalition of Urban Universities (USU) has partnered with the Association of Public and Land-grant Universities (APLU) to establish an Office of Urban Initiatives, housed at APLU, to jointly lead an urban agenda for the nation's public universities.

ASSOCIATION OF PUBLIC AND LAND-GRANT UNIVERSITIES

The Association of Public and Land-grant Universities (APLU) is a research, policy and advocacy organization representing 234 public research universities, land-grant institutions, state university systems, and affiliated organizations. Founded in 1887, APLU is North America's oldest higher education association with member institutions in all 50 U.S. states, the District of Columbia, four U.S. territories, Canada, and Mexico. Annually, member campuses enroll 4.7 million undergraduates and 1.3 million graduate students, award 1.1 million degrees, employ 1.3 million faculty and staff, and conduct \$41 billion in university-based research.

Overview

Improving student success by achieving higher retention and graduation rates requires a multifaceted approach. Institutions are exploring several interventions in academic related activities, such as course alignment, scheduling, and redesign to spark campus transformations, drive student success, and support the wellbeing of urban communities.

This document, one in a series of reports from the Transformational Planning Grant (TPG) project, examines removing campus bottlenecks that slow student progress and block pathways to student success and timely, cost effective degree completion.

TPG is an Urban Initiative launched by the Association of Public and Land-grant Universities (APLU) in partnership with the Coalition of Urban Serving Universities (USU) with funding from the Bill and Melinda Gates Foundation (BMGF). Its aim is to increase student success and highlight transformative, replicable promising practices being implemented by public research urban institutions to support student success and the social, cultural, and economic wellbeing of communities nationwide.

At the heart of this urban initiative is the desire to highlight urban serving universities as community change agents and to share their success strategies.

What are bottlenecks?

Bottlenecks can be broadly described as anything that impedes students' ability to progress towards graduation. Bottlenecks can cause both the student and the institution to incur increased educational costs, waste time, and delay degree completion.

What causes bottlenecks?

Many factors contribute to bottlenecks. Some of the most common on college campuses are as follows.

- **Physical Space Limitations and Room Capacity.** Imagine restricting a learning experience to the size of a room. That's what happens when student enrollment in lab science courses, for example, are limited to accommodate the available lab space.
- **Courses with High DFW (non-passing grades; grades of D, F and W) Rates.** These courses are generally used to serve a relatively large number of undergraduates and they have a high proportion of students who do not produce a successful academic outcome (grade). Courses with high DFW contribute to high course repeat rates. As a result, enrollment in the courses fill up quickly as the number of students repeating courses overlap with new student enrollments, impacting course availability.
- **General Education Requirements.** Commonly called "gateway courses" or entry level courses, many students choose or are required to complete these courses to meet general education requirements, progress to upper level courses, or to enter a major area of study and fulfill degree completion requirements. Some gateway courses are also needed to prepare for post-baccalaureate professional positions. Often these courses have large student enrollments.
- **Faculty and Student Preferences.** Ironically, course availability on many college campuses are sometimes driven by the scheduling preferences of faculty and students, to have as few courses as possible scheduled on Fridays, or early morning, late afternoon and evening hours.
- **Specialization.** These are select courses that may be offered on an irregular basis or with a few, particular faculty members. More likely to occur in upper division required courses, specialization courses might only be taught by one faculty member or offered on an irregular, "need" basis, making it difficult for students to anticipate

changes or plan schedules around so few choices. Even if financial resources are available for campuses to hire additional faculty to teach in specialized areas, it may be difficult to complete targeted searches in a timely manner.

- **Limited Resources.** Having to do more with less is as common to higher education as any industry. A need for additional sections or courses may be identified, but the university may lack financial resources to hire additional instructors.

Bottlenecks impede student progress, impact teaching and learning, can increase costs, and may negatively impact the ability of universities to facilitate student success.

Cost to the Institution

Failure rates in gateway courses (high enrollment, introductory courses) contribute heavily to overall institutional drop-out rates between a student's first and second year. Additionally, as the number of students repeating courses overlap with new student enrollments, entry into required courses become harder for all to access.

Bottlenecks at the end of a student's degree program can extend time to graduation and ultimately cost the

institution, as the student may enroll in courses not required for their degree program. Also, institutions that rely heavily on graduate students or adjunct instructors to teach gateway courses may experience cost-savings in the short-term, but deficits later on.

Failure to invest in professional development for staff members, or to hire tenure-eligible faculty who can contribute to the research and service missions along with teaching, may incur greater long-term costs for institutions.

Why are bottlenecks an issue?

Bottlenecks cause problems. They impede student progress, impact teaching and learning, can increase costs, and may negatively impact the ability of universities to facilitate student success.

Cost to the Student

Limited course availability, in terms of the weekday and time when courses/sections are offered, puts additional stress on students who may be navigating multiple job and class schedules along with family priorities. Bottlenecks resulting from unrealistic scheduling of required and specialization courses may force students to take classes they don't need just to maintain their enrollment status or minimum credit hours required to receive financial aid.

Ultimately the added courses can extend time to complete a degree and add unnecessary expense. Students who are unsuccessful in courses with high DFW rates may decide to drop-out in subsequent terms. Those that do not drop-out may find repeating courses multiple times discouraging. As time is added to degree completion, students may make poor decisions that affect major and career choices at, and after, college and that prevent degree completion entirely.

What are the opportunities?

Institutions and students have much to gain when bottlenecks are addressed.

- **Benefits to the student.** Reducing bottlenecks allow students to plan course selection in advance and follow degree plans/maps without fear of drifting off-path. Students on track for timely, degree completion can save thousands of dollars in tuition and financial aid, and be available for career opportunities that may arise as they near degree completion.
- **Benefits to the institution.** Cost savings can be tremendous to institutions that reduce bottlenecks. With better alignment between faculty and classroom resources, institutions are able to offer more sessions of the most oversubscribed courses. This allows more students to take needed courses.

Survey of the General Public

COST AND VALUE. A majority of Americans (57%) say the higher education system in the United States fails to provide students with good value for the money they and their families spend. An even larger majority—75%—says college is too expensive for most Americans to afford. At the same time, however, an overwhelming majority of college graduates—86%—say that college has been a good investment for them personally.

MONETARY PAYOFF. Adults who graduated from a four-year college believe that, on average, they are earning \$20,000 more a year as a result of having gotten that degree. Adults who did not attend college believe that, on average, they are earning \$20,000 a year less as a result. These matched estimates by the public are very close to the median gap in annual earnings between a high school and college graduate as reported by the U.S. Census Bureau in 2010: \$19,550. A more detailed Pew Research Center analysis (see Chapter 5) shows that this gap varies by type of degree and field of study.

STUDENT LOANS. A record share of students are leaving college with a substantial debt burden, and among those who do, about half (48%) say that paying off that debt made it harder to pay other bills; a quarter say it has made it harder to buy a home (25%); and about a quarter say it has had an impact on their career choices (24%).

WHY NOT COLLEGE? Nearly every parent surveyed (94%) says they expect their child to attend college, but even as college enrollments have reached record levels, most young adults in this country still do not attend a four-year college. The main barrier is financial. Among adults ages 18 to 34 who are not in school and do not have a bachelor's degree, two-thirds say a major reason for not continuing their education is the need to support a family. Also, 57% say they would prefer to work and make money; and 48% say they can't afford to go to college.

Pew Research Center, Social and Demographic Trends, *Is College Worth It?* College Presidents, Public Assess, Value, Quality and Mission of Higher Education

Institutions that resolve bottlenecks are also able to better track and project course needs rather than just react, many times, with last-minute, stop-gap efforts.

How does an institution identify bottleneck courses?

Bottleneck courses can be identified using a variety of techniques and metrics.

- **Fill date.** High demand courses fill up quickly. Bottleneck can be recognized by monitoring when a course reaches maximum enrollment during the registration period.

- **Outcomes.** Monitor previous outcomes. An institution's operational definition will vary based on how the institution operates and how student enrollments are done. For example, bottlenecks may be the result of courses that enroll at least 60–100 undergraduates annually and have a DFW rate of 15% or higher overall or for any measured subgroup.
- **Physical space usage.** Examine when and how academic space is allocated each semester, which courses are scheduled, in which spaces, at which times of the day, and how far in advance of registration.

- **Sequencing.** Properly sequence courses that are at the lower end of common, multi-course sequences, and/or courses required for all students in one or more medium to large majors.
- **Waitlist review.** Compare the number of students left on a course waitlist at the end of enrollment periods with the institution's capacity to add sessions or hire additional instructor.



BRIGHT IDEAS

How does an institution resolve bottleneck courses?

There are multiple solutions to address bottlenecks. They may vary based on the root cause of the bottleneck.

High DFW Rates

- Course re-design (active learning; course refresh)
- Faculty professional development
- Collaboration across same courses or courses within a sequence (bring faculty together to share resources and/or make curriculum changes collaboratively)
- Different pedagogical approaches
- Utilize Learning Assistants (LAS)
- Create bridge programs
- Examine course placement testing systems
- Remedial education or integrating remedial modules into course
- Integrate early alert systems
- Hire teaching specialists/instructors for gateway courses (full-time instructors with teaching and service responsibilities)
- Optimal utilization of technology (i.e., learning management systems, clickers, institutional support for technology)

Scheduling

- Closely monitor course fill dates and waitlists, particularly for high-priority courses; provide additional sections when able
- Establish a proactive model for funding high-demand course additions
- Establish regulations for course and classroom scheduling to maximize classroom use
- Provide and encourage more online and hybrid courses, or Saturday classes
- Partner with nearby institutions for students to fulfill course requirements at another institution

Policies & Practices

- Leverage advisors and/or software platforms to ensure students are aware of the wider range of course and program options available to complete General Education and major requirements
- Require/encourage students to change majors early on if key milestones are not met
- Establish policies for the number of times a student may attempt a course

Conclusion

Bottlenecks are not static but moving targets. This factor adds to the complexity of identifying bottlenecks and alleviating their barriers to degree completion.

Shifts in student demographics, degree requirement changes, enrollment fluctuation, and new trends in student majors and career interest can transform (increase or reduce) course demand rapidly. However complex the challenge, reducing and eliminating bottlenecks is critical for institutions to increase student success. Bottleneck issues can be invasive, negatively impacting students for not just one semester, but many bottlenecks can impact students for two, three or more semesters.

Resources

Hickok, G., & Shaver, T. (2013). Higher Education Can't Wait. *Inside Higher Ed*. Retrieved from <https://www.insidehighered.com/views/2013/04/26/colleges-cant-wait-systemic-reform-must-make-changes-now-essay>

Blakesley, J. F., Murray, K. S., Wolf, F. H., & Murray, D. (1998). Academic scheduling. In E. Burke & M. Carter (Eds.), *Practice and Theory of Automated Timetabling II* (223–236). Springer-Verlag Berlin Heidelberg. Retrieved from <http://www.unitime.org/papers/patat98.pdf>

The National Center for Academic Transformation—<http://www.thencat.org>

How to Redesign a College Course Using NCAT's Methodology—<http://www.thencat.org/Guides/AllDisciplines/TOC.html>

Class Scheduling Policies—<https://provost.umich.edu/wp-content/uploads/sites/16/2015/01/ClassClassroomSchedulingPolicy.pdf>

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