



Education
Advisory
Board

Academic Affairs Forum

The Dean's Dashboard

Data and Decision Support Tools for Improving Academic
Productivity



February 19, 2015

Western Oregon University

Monmouth, Oregon

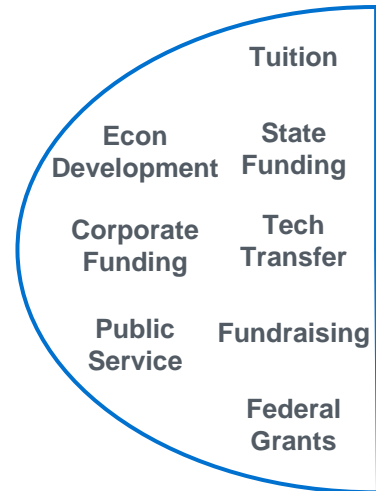
The Buck Stops Here



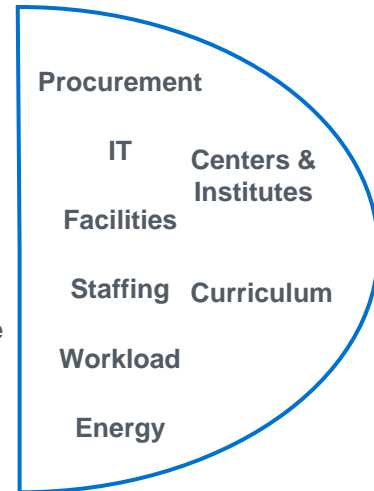
Academic Decisions Drive Vast Majority of Revenues, as Well as Most Costs

3

Academic Units Generate Nearly All University Revenue...



... And Their Decisions Drive Most Costs

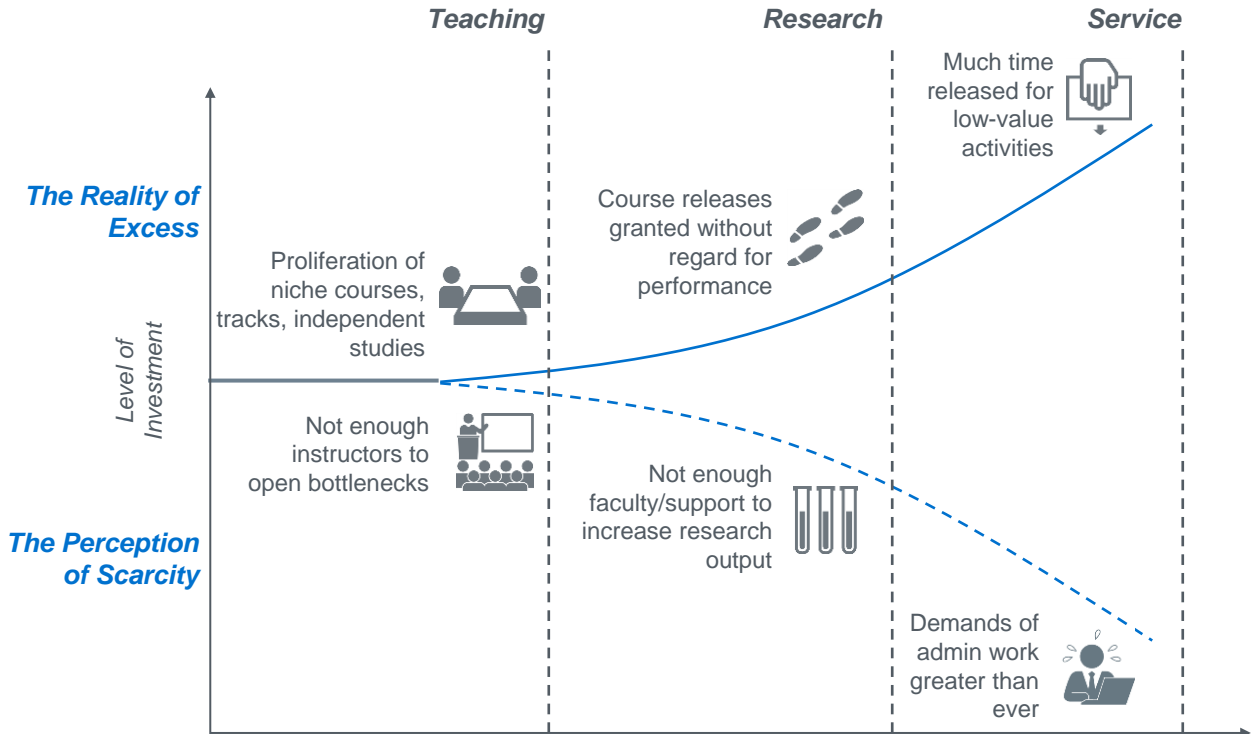


The Fundamental Challenge

How can we help faculty understand the cost and revenue implications of their decisions?

Managing in an Environment of Scarcity

The Disconnect Between Decisions and Consequences



It All Adds Up



Resources Trapped in Potentially Less Productive Uses

Reallocation
Opportunities



Unnecessary
Sections

700

Magnitude

Number of sections in multi-section courses that are not required to meet demand (~1/3 of total)

Public Research University



Considerable Faculty
Time Devoted to Admin

500

Course equivalent of **tenured faculty teaching time released** for administration (15% of total capacity)

Public Master's University



Enormous Number of
Empty Seats

50,000

Unfilled seats across all units and levels (~30K total enrollment)

Public Research University

What's Standing in Our Way?

Four Roadblocks to Improved Academic Resource Management

1 Incomplete, Inaccurate Data



Data related to academic resources spread among multiple ERPs and shadow systems of varying quality

2 Ad Hoc Allocation Processes



Even when metrics are available, deans and chairs struggle to design policy interventions to advance their goals

3 Lack of Unit-level Incentives



Chairs (and some deans) skeptical that departments will receive benefits from their efficiency gains

4 Few Reallocation Options



Difficult to reallocate specialized faculty from areas of low demand to areas of high demand

Finding and Reallocating Academic Resources



A Roadmap for Realizing Academic Ambitions



Course Offerings

- Consolidate underutilized sections
- Reduce number of small courses



Course Success

- Expand bottleneck courses
- Limit high-DFW courses



Curricular Focus

- Rationalize major curricula
- Defuse inefficient gen ed reform



Faculty Workload

- Maximize capacity utilization
- Differentiate faculty workloads



Strategic Investment

- Prioritize department efforts
- Provide unit-level incentives

Finding and Reallocating Academic Resources



A Roadmap for Realizing Academic Ambitions



Course Offerings



Course Success



Curricular Focus



Faculty Workload



Strategic Investment

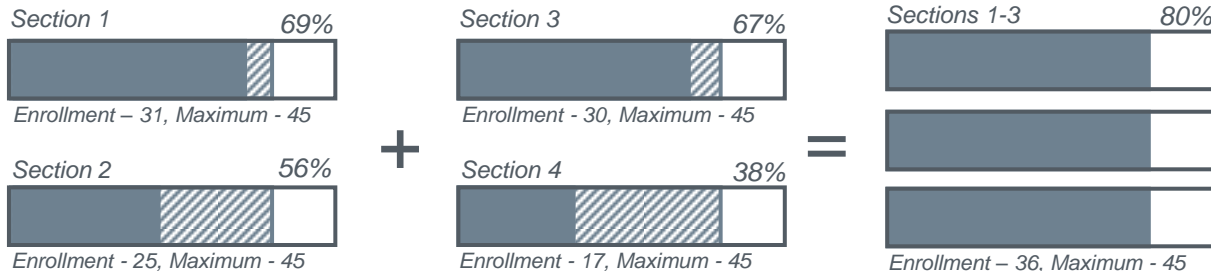
- Consolidate underutilized sections
 1. *Assign a Course Efficiency Owner*
 2. *Develop Central Scheduling Database*
 3. *Section Demand Estimates*
 4. *Section Consolidation*
- Reduce number of small courses
 1. *Course Enrollment Minimum*
 2. *Minimum Small Course Waivers*
 3. *Long-Cycle Course Offering*



An Easy Win

Significant Gains By Consolidating Sections within a Single Course

Lower Division Anthropology Course, Public Master's Univ.



<p>Collapsing Sections Assuming Optimal Fill Rate of 80%</p> <p>289 Superfluous sections</p>	<p>25% Sections taught by adjuncts</p>	<p>200 Adjunct credit hour savings</p>	<p>\$330,000 Savings from adjunct</p>
	<p>75% Sections taught by full-time faculty</p>	<p>875 Full-time faculty credit hour savings</p>	<p>\$1.5M Long-term savings from faculty</p>

1) For analyses, all courses with a maximum enrollment of zero are excluded.



Not Rocket Science

Modeling Section Demand is Ideal, but Trend Analysis Still Useful

Best Bang for Buck



Trend Analysis

- Analyze five years of course enrollments
- Predict expected enrollment based on linear trend

✓ Simple to execute

✗ Ignores differing section demand by major and level

✗ Ignores size of actual enrollment pipeline



Enrollment Model

- Estimate share of students in a given major (e.g., math) who take a given course, and when
- Impute that share of students to future enrollment projections

✓ **99% correlation between model & demand (Missouri)**

✓ Sensitive to exogenous changes in enrollment

✗ Estimates require data from enrollment mgmt or central warehouse



Degree Sequencing

- Assess degree map/audit data to predict when students “should” take courses
- If available, use student-entered course plan or course request info

✓ Theoretically most accurate

✗ Requires high-functioning degree mapping software¹

✗ Complex curricular or degree maps reduce accuracy

¹) At small institutions with few majors, the provost's or dean's office may be able to analyze degree maps by hand

Finding and Reallocating Academic Resources



A Roadmap for Realizing Academic Ambitions



Course
Offerings



**Course
Success**



Curricular
Focus



Faculty
Workload



Strategic
Investment

- Expand bottleneck courses
 1. *Centralized Waitlist Management*
 2. *Restricted Registration for Repeaters*
- Improve high-DFW courses
 1. *DFW Spread Analysis*
 2. *Gateway Course Redesign*
 3. *Summer Remediation*



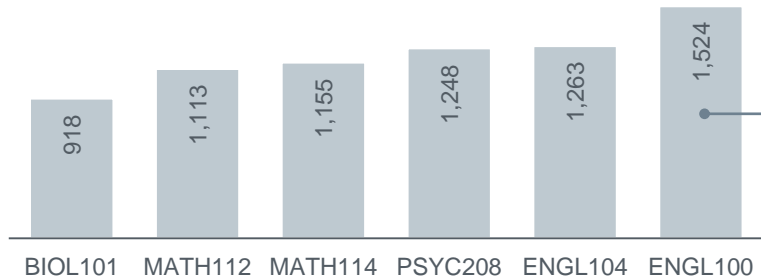
Tear Down This (Curricular) Wall

More Credits Than We Thought Wasted on Lower-Division “Gatekeepers”

12

The Gatekeeper Course Treadmill

Top Undergraduate Courses by Lost Student Credit Hours (Attempted Minus Earned), Public Master’s University



115

Additional student completions from reducing DFW rate of ENGL100 by 5%



Reduced Student Success

Poor course persistence results in lower retention and reduced graduation rates



Lost Revenue

Revenue is lost when students drop out



Wasted Capacity

High DFW's increase course repeats and wasted credits

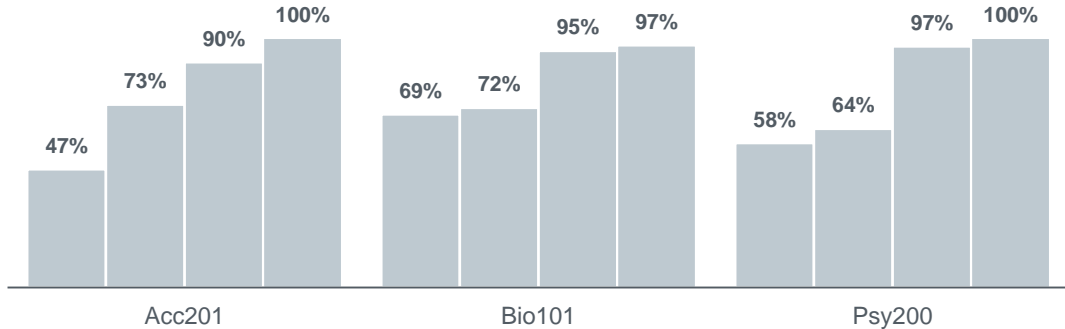


A Clear Opportunity for Improvement

High DFW Variability Within a Course Demands Further Analysis

Success Rates Vary Drastically, Even Within a Single Course

Pass Rates by Section and by Course, Fall 2013, Public Master's University



“

“The greatest (financial) impact we can make at our institution is by focusing our attention on improving retention in our lower division courses.”

*Chief Business Officer
Public Flagship Research Institution*

1) All sections in graphic have a minimum of 19 students.



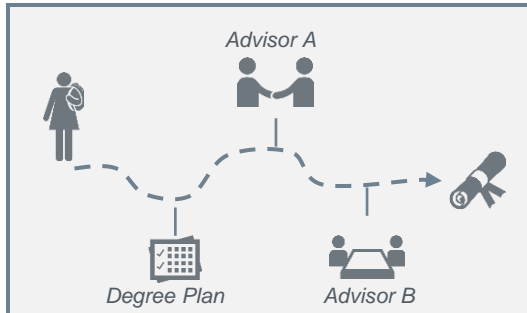
Playbook for Student Success

Promoting Continuity in Academic Advising



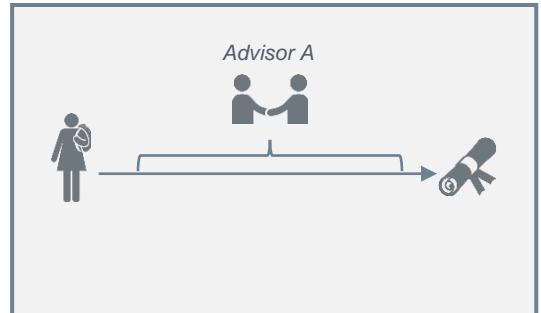
The Old Thinking

Advisors assigned based upon institutional structures and departments; often requiring reassignments for major switching



The New Thinking

Student movement through the institution dictates advisor caseloads; optimizing consistency despite major switching



Mapping Student Pathways to Degree



16

How do students flow in and out of majors at the institution?

Map Historical Paths to Degree



- Analysis of first and last major for 5 years of student records reveals significant student migration across the institution

65% Of students graduate in 1 of 10 majors

75% Of students switch majors at least once

Categorize Majors by Student Flow Patterns



- Four types of major identified based on student flow patterns:
 - **Donor Majors:** Students exit these programs and few enter
 - **Acceptor:** Students enter these majors from other programs
 - **Pivot:** Students equally enter and exit these majors
 - **Static:** Very few students enter or exit

Assign Advisors to Major Clusters



- Advisors trained in set of thematically-related majors and a sub-set of common destination majors
- Goal: 80% of students remain with the same advisor despite major switching

Next Steps

Examine requirements for majors in clusters to promote coordinated prerequisites

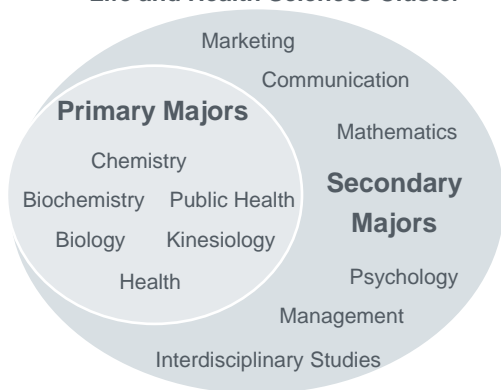


Personalization Despite Major Switching

UTSA Redeploys Academic Advising to Match Student Flow

17

Life and Health Sciences Cluster



82%

Percent of students will remain with one advisor

12

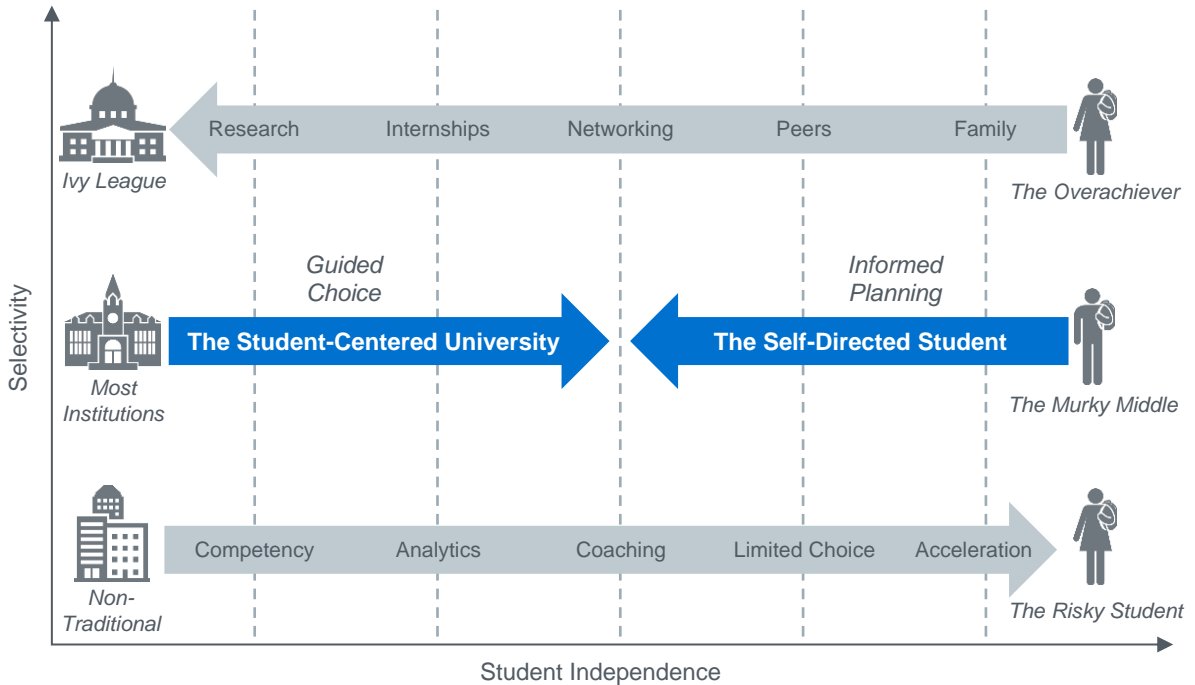
Average number of majors an advisor is responsible for

Active Ingredients

- Students assigned to an advisor based on first major declared
- Advisor cross-trained in 10-14 programs of study based on student major switching patterns
- Goal is that >80% of students can maintain relationship with 1 advisor despite switching majors
- Advisors organized in clusters reporting to a central director who reports to the provost
- Special cluster for undeclared students to assist with exploration and placement

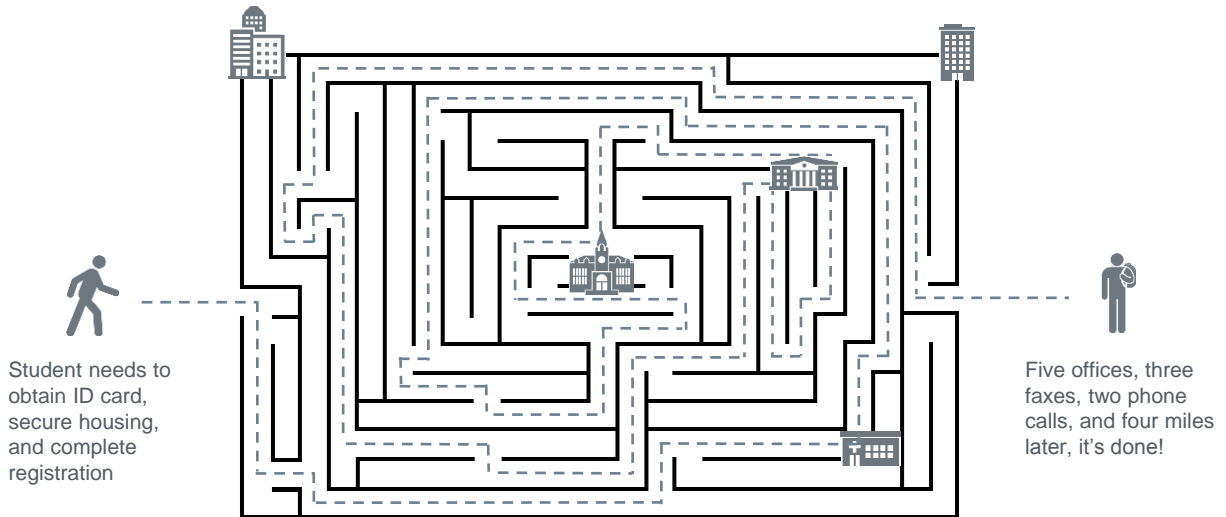
Meeting Students Halfway

Navigating Between Extremes in Student Success



Only the Strong Survive

Labyrinthine Service Structure an Unnecessary Obstacle for Students



“Because there are no one-stop registration centers and because both academic units and central support service units want to regulate the registration process, **an unfortunate student can walk several miles and cross the Mississippi River numerous times to complete registration**—assuming everything goes right.”

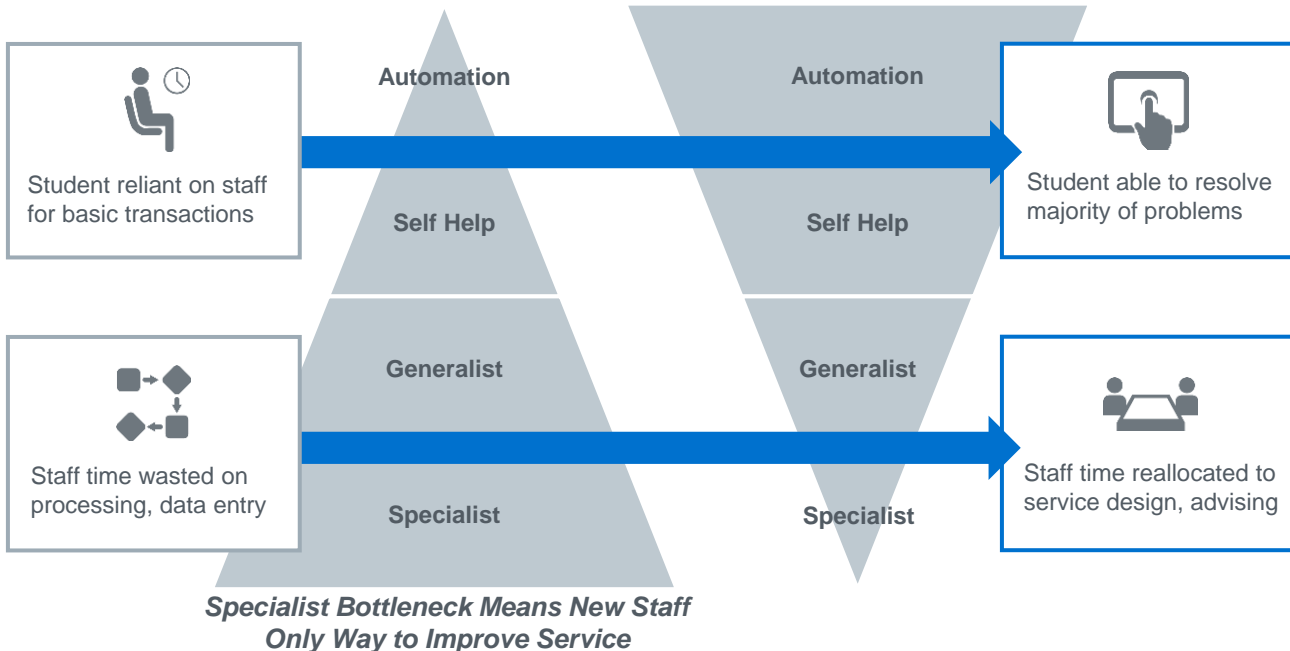
- Robert B. Kvavik and Michael N. Handberg, “Transforming Student Services,” *Educause Quarterly*



Flipping the Service Model

Traditional Support Structure Inefficient, Expensive, and Impersonal

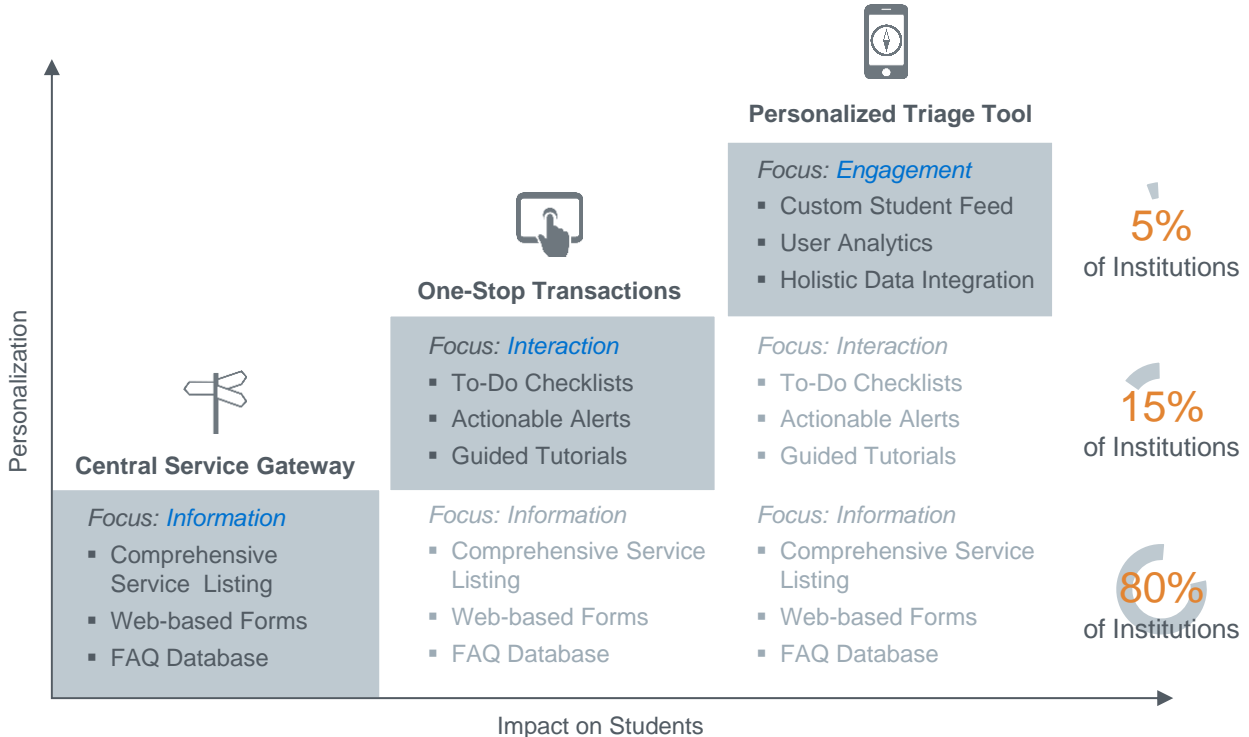
*Removing Logistical Barriers to Self-Support
Allows Staff to Reallocate Time*





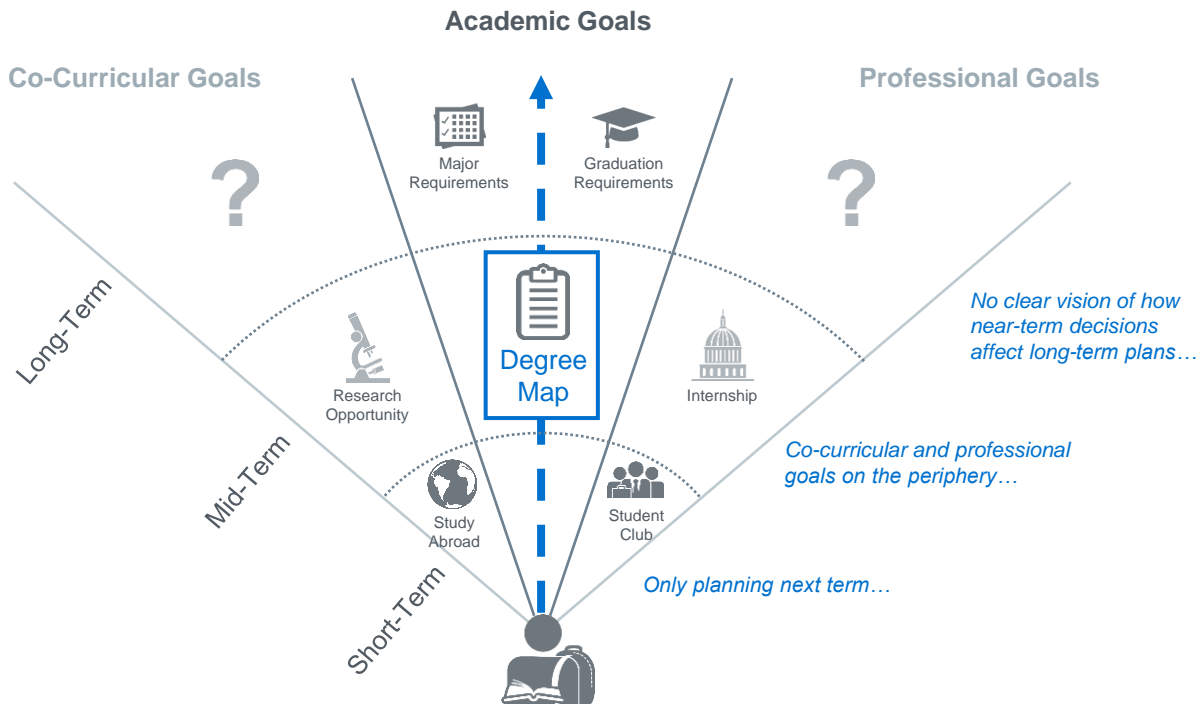
Building Tomorrow's Self-Service Portal

From Information Resource to Engagement Application



Not All According to Plan

Focus on Near-Term Academic Navigation Shortchanges Experience





The Next Generation

Today's Degree Mapping Tools Better Track Actual Student Paths

Major: Anthropology

Fall 1	Fall 3
Spring 1	Spring 3
Fall 2	Fall 4
Spring 2	Spring 4



Meaningful Milestones

- **Uses historical data** to identify courses and grade thresholds most correlated with success
- **Incorporates critical courses and grade thresholds** into degree maps



Scenario Planning

- Allows students to **model future paths to degree**, incorporating coursework and co-curricular options
- **Accounts for courses completed and future availability** to alert students when a proposed plan does not fulfill requirements



Monitoring Capability

- **Tracks student progress** against proposed degree plan
- **Responds to deviation** from the major plan with messages or requirements based on the significance of the divergence



Steering Choice Architecture in Our Favor

Behavioral Economics Comes to Higher Ed

Minor Changes in Policy and Framing Affect All Aspects of Life

Framing

"Medium" most popular coffee size, even when actual size manipulated



But Too Often, Students are "Nudged" in the Wrong Direction

Students take "full load" of 12 credits, assume they're on track for timely graduation



The Default Option

Retirement plan enrollment climbs after "opt in" changed to "opt out"



Students only register one term at a time, and many stick to minimum course requirements



Convenience

Consumers more likely to purchase food within easy reach, at eye level



Students pick courses from huge catalog based on flawed criteria, delay graduation requirements



Burdening Bad Choice

Motorcyclists must pass extra test and prove insurance to forgo helmet



Students able to withdraw from courses, drop out, or deviate from plans with easy transaction





Extending Registration's Reach

Multi-Term Commitment Enables and Encourages Long-Term Planning



Immediate Benefits to Students

Students able to plan further ahead to accommodate complex schedules, requirements, and plans

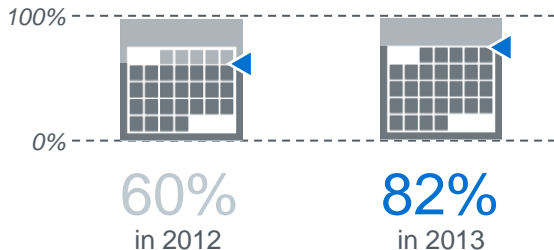
Fall to spring retention increased 3% in first year

Departments able to forecast section demand

Academic units realize cost-efficiency gains, better aligning resources and instructor workload with enrollment

Broader Impact on Campus

Student Participation is Voluntary, But High and Growing Quickly



Technical Worries Unwarranted

“I’m kind of surprised it’s not more widespread, because it’s not technologically a challenge. I think it makes a lot of sense if you can do it. It’s good resource planning.”

- Michael V. Reilly, Executive Director
American Association of College Registrars

Source: Allie Grasgreen, "Registering Toward Completion," Inside Higher Ed, April 11, 2014; "Cleveland State University - Multi-Term Registration: Course Scheduling for Student Success," AACSU Innovations Exchange; EAB interviews and analysis.

Learning from Early Adopters

Student Adoption and Sequential Course Management Key to Success



Increasing Student Adoption



Default Registration Option

Show all available terms on main registration page to “nudge” students toward participation, and alter language to reinforce year-long planning



Targeted Email Outreach

Send monthly awareness emails throughout summer and fall to students who haven't registered for additional terms

Improving Predictive Capacity



Post-Requisite Audits

Audit prerequisite course progress at the add/drop deadline, withdrawal deadline, and end of term to reduce artificial post-requisite demand



Course Waitlists

Use waitlists to dynamically adjust section enrollment, justify additional sections, and forecast need for additional adjuncts

Finding and Reallocating Academic Resources



A Roadmap for Realizing Academic Ambitions



Course
Offerings



Course
Success



**Curricular
Focus**



Faculty
Workload



Strategic
Investment

- Improve major curriculum efficiency
 1. *Withhold Lines from “Glutted” Programs*
 2. *Consolidate Non-Degree Tracks & Specializations*
 3. *Spin Off High Volume Tracks Into New Programs*
 4. *Reduce Pre-Requisites*
- Improve Gen Ed curriculum efficiency
 1. *Model Gen Ed Efficiency*



A Taxonomy of Curricular Problems

Array of Curricular Issues Impacts Student Success, Increases Costs

Common Curricular Problems



Tracks and Specializations



Excessive Pre-Requisites



Tripartite Course Sequences



Courses Not Counting For Degree



Large Lower-Division Catalog

Student Success Consequences

- Often Not Required for Graduation
- Tracks May Not “Count” on Degree
- Delay Degree Progress
- Increase Time-to-Degree
- Often Unnecessary under Semesters
- Consume Course Time Without Progression
- Provides “Free Electives” That Often Don’t Lead to Degree

Financial Consequences

- High Course Frequency Required
- Artificially Small Upper-Division Courses
- Upper Reaches of Sequence Typically Under-enrolled
- Longer TTD Leads to Bigger Bottlenecks
- Degrees, Not Courses, Drive Demand



The Rewards of Curricular Reform

Reducing Complexity Creates Real Benefits

IOWA STATE UNIVERSITY
Greenlee School of Journalism and Communication

Consolidation of Non-Degree Tracks...



5 degree
tracks cut, 2
combined



Reduced courses not
counting for graduation
from 16 to 0



Reduced frequency of low-
demand courses, canceled
or combined 4



Eliminated ~10
coordinator/director
positions (plus releases)

Improved Both Faculty Productivity...

	2007-08		2012-13
Avg. Teaching Load (Tenured)	3/2	➔	2/2
Research/ Creative Production per FTE	4.4	➔	8.9
Teaching/Advising Awards per FTE	1.3	➔	10.1

... and Student Success

	2008 Cohort		2009 Cohort
4yr Graduation Rate	47%	➔	61%



Earning Faculty Buy-in

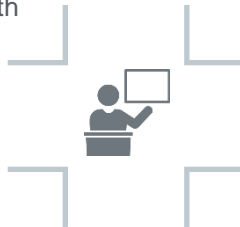
Provide Tangible Returns and Avoid Unnecessary Cuts

Realize Savings as Workload Reduction

Allocate new research or service releases, or start an incentive-based release or stipend program in line with strategic plan

Limit Course-Cutting

Avoid antagonizing course “champions” by first reducing frequency and eliminating pre-requisites as a viability check for vulnerable courses



Spin Off High-Volume Tracks into New Degree Programs

The largest tracks can often support themselves as degrees, buttressed with elective depth from the “mother” program

Refuse to Allocate New Lines to “Glutted” Programs

Establishing “glut”-related benchmarks (e.g., # of majors per course must exceed 5) provides justification for later disinvestment

Finding and Reallocating Academic Resources



A Roadmap for Realizing Academic Ambitions



Course Offerings



Course Success



Curricular Focus



Faculty Workload



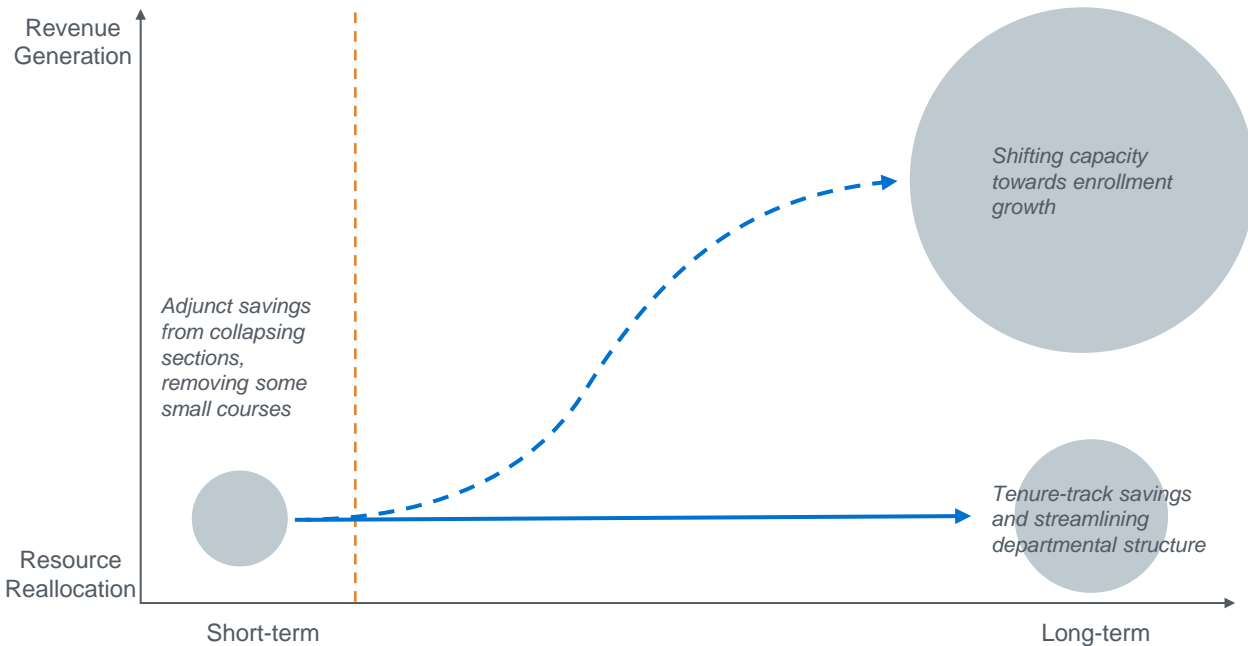
Strategic Investment





Freeing Capacity for Growth As a Solution to Long-Term Sustainability?

Impact of Resource Allocation Endeavors Over Time





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