Education

Winning by degrees: the strategies of highly productive higher-education institutions

Acknowledgements

Many have made the case for increasing degree production in the United States, both to ensure economic prosperity and also as a way to address the cycle of poverty and inequity plaguing some communities. This paper presents the findings of an investigation by McKinsey & Company's Education Practice into degree productivity in higher education as a potential approach for achieving greater degree production in a time of constrained budgets. The aim of this paper is: to provide a snapshot of current levels of productivity in all U.S. higher education institutions; to understand in detail the most important drivers of productivity in a sample of eight of the most productive institutions; and to suggest approaches to incorporating those drivers across the higher education system.

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Executive Summary

College attainment rates are rising in almost every industrialized country. In the United States, however, they have remained relatively flat for the past ten years, even though completing a college degree has become increasingly critical to a person's life chances. Producing more college-educated workers is similarly critical to the nation's overall economic growth and prosperity. Based on recent research,[1] we estimate the United States needs to produce roughly one million more graduates a year by 2020—about 40 percent more than today—to ensure the country has the skilled workers it needs. Reaching this goal would mean increasing today's annual output of associate and bachelor's degree-holders by about 3.5 percent a year for the next decade.

If the United States wants to hold its position in the global economy and preserve the living standards of its citizens, reaching this goal is key. How can it be achieved? One answer would be to spend substantially more on higher education. But states have been spending less on higher education in recent years and today's economic and fiscal circumstances make a spending increase unlikely. An alternative is to produce more graduates for the same investment without compromising educational quality or restricting access to higher education[2] —in other words, to improve productivity in higher education's core process of transforming freshmen into

degree-holders. This report explores such "degree productivity" improvement.

Educational experts have long been interested in degree productivity. So far, however, no consensus has emerged on its critical drivers. Candidates include tying funding to completing a degree, promoting administrative efficiencies, improving developmental education,[3] refining transfer policies to allow for easy transition between institutions, and increasing reliance on part-time faculty. But uncertainty remains about the impact of each contending driver on degree productivity and their relative importance.

To advance this dialogue, McKinsey's Education Practice has assessed the operational drivers of degree productivity from three angles. We began by synthesizing existing research on degree productivity. At the same time, using the simplified yardstick of cost per degree completed,[4] we analyzed system-wide datasets[5] to form a broad view of degree productivity across America's higher education landscape. We then conducted detailed studies of eight high-performing institutions to understand what makes them so productive. We focused on two-year associate-granting institutions and four-year bachelor's-granting institutions with open-access or less competitive admissions policies since these are the primary educators of low-income young

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1   Anthony P. Carnevale, Nicole Smith, and Jeff Strohl, "Help wanted: Projection of jobs and education requirements through 2018," Georgetown University, Center on Education and the Workforce, 2010.

2   While educational quality is difficult to measure, for the purpose of this report we rely on available evidence and proxies including graduation rates, student satisfaction surveys, staff surveys, scores on credentialing exams, credit default rates, and general reputation.

3   Developmental education programs serve students who enter college below "college ready" standards to improve their proficiency in needed skills.

4   Cost per degree completed has two key determinants: completion efficiency and cost efficiency. Completion efficiency is defined by the ratio of students a school enrolls (measured in full-time student equivalents or FTSEs) to the number of degrees it awards. A low FTSE/degree ratio means a completion efficient system, that is, one in which enrolled students have a high chance of gaining a degree. Cost efficiency is defined by an institution's total cost divided by the number of FTSEs. A low cost/FTSE ratio means a more cost efficient system, that is, one in which more students can be served with a given set of resources.

5   Including the Integrated Post-secondary Education Data Systems (IPEDS) national dataset and state longitudinal databases from two states

The country's economic needs and ethos of opportunity also demand we do more with the resources we have, not do the same with less.

adults, together accounting for 51 percent of enrolled students nationwide. Combining findings from these three research angles enabled us to break higher education degree productivity into its component parts, identify some of the most powerful drivers, and quantify their effects across these institutions.

We found no "silver bullet" driver that could by itself dramatically improve productivity for each degree delivered. Rather, we found a set of five practices that appear to raise degree productivity in these institutions without reducing quality or restricting access.

- The first two practices, (i) systematically enabling students to reach graduation (ii) reducing nonproductive credits, contribute to raising the rate at which students complete their degrees.

- The next three practices, (iii) redesigning the delivery of instruction, (iv) redesigning core support services, and (v) optimizing non-core services and other operations, contribute to reducing cost per student.

Overall, we find that a college's degree productivity depends critically on the relationship between the proportion of its students who complete their degrees and its total costs. The impact of these five strategies on productivity suggests that if they were more widely applied to a bigger student population, the nation could produce a million more degrees by 2020 within today's education spending limits.

The challenge: improve productivity in the United States higher education system by approximately 23 percent

To produce one million more graduates a year by 2020 at today's levels of degree productivity, the United States would have to increase educational funding by $52 billion a year from its 2008 level of $301 billion.[6] Such a funding increase is highly unlikely: revenue shortfalls led 42 states to cut higher education budgets in FY09 or FY10, and 31 states are planning additional cuts in FY11.[7] State funding per student had recovered briefly from cuts made between 2002 and 2005,[8] but the latest cuts are eroding it again.

To plug spending gaps, many states have increased student tuition fees, which rose by 439 percent between 1985 and 2005, compared to rises in the Consumer Price Index and the Health Care Index over the same period of 108 percent and 251 percent respectively.[9] Partly as a consequence, student loan debt and default rates are increasing. These trends threaten both access to and demand for higher education.

Expert projections suggest that pressures on student, state, and federal[10] budgets are unlikely to relax soon. Therefore the only realistic way to generate enough graduates within existing state and student financial constraints is to produce more graduates without increases to public funds or tuition per student and without compromising the quality of degrees awarded or reducing access—in short, to increase higher-education degree productivity.

6   Calculated at 2008 dollars.

7   National Association of State Budget Officers and National Governors Association, Fiscal Survey of the States, Washington, DC (June, 2010); State higher education finance FY2009, State Higher Education Executive Officers, 2010.

8   See "Trends in higher education spending" by the Delta Cost Project for more on this topic.

9   "Is college still worth the price?" April 13, 2009 (http://money.cnn.com/2008/08/20/pf/college/college_price.moneymag/); and The College Board, *Trends in College Pricing 2009; Annual Survey of Colleges.*

10   "Findings of biannual fiscal survey show states lag behind national economic recovery," National Governor's Association News Release, June 03, 2010; and Elizabeth McNichol, Phil Oliff, and Nicholas Johnson., "States continue to feel recession's impact", Center for Budget and Policy Priorities, October 7, 2010; Conor Dougherty and Sara Murray, "Lost decade for family income," The Wall Street Journal, September 17, 2010. "Federal spending target of 21 percent of GDP not appropriate benchmark for deficit- reduction efforts," Center for Budget and Public Policy, July 28, 2010.

Our calculations show that achieving the 2020 graduate goal without increasing public funding implies an improvement in average degree productivity of approximately 15 percent to 34 percent, depending on which institutions and credentials see improvement, to give an overall average improvement of 23 percent.[11] This calculation is based on a scenario in which total tuition revenue scales with enrollment.

It is important to note that while this report makes the case for lowering the cost per degree in higher education, its findings do not support cutting overall funding. Not only would funding cuts make reaching the one million goal even harder; the country's economic needs and ethos of opportunity also demand we do more with the resources we have, not do the same with less.

Productive US institutions show that 23 percent improvement in higher education productivity by 2020 is achievable

Many different types of institution make up the diverse universe of U.S. higher education: four-year, two-year, and technical colleges; public, private for-profit, and private nonprofits; rural and urban colleges; unionized and nonunionized faculty and staff. Taking the national datasets, we classified all the institutions in the system into 12 peer groups,[12] then divided the members of each peer group into quartiles according to their degree productivity.

Institutions in the top quartiles of each peer group are already delivering graduates at levels of degree productivity ranging from 17 percent to 38 percent better than their peer group average, even when differences in the top-quartile members' missions, extent of student selection, proportion of transfer students, and other student characteristics that may influence their degree productivity are taken into account.[13] On average across peer groups, the top performing competitive bachelor's- and associate-granting institutions are 23 percent and 22 percent respectively more productive than their group average. This level of variation suggests that a 23 percent improvement in degree productivity across the system is feasible.

Our subsequent research focused on finding out what institutions in the top quartile of associate-granting and less selective bachelor-granting institutions are doing to achieve their better rates of degree productivity and which of their practices other institutions may be able to emulate.

We found that all the institutions in the top-performing quartiles achieve greater degree productivity by focusing on strategies to improve rates of degree completion and increasing cost efficiency. However, different types of institution place a different emphasis on each type of strategy and no institution emphasized all of them. On average, four-year institutions in the top quartile have improved productivity most by improving cost efficiency. They educate students at a cost per degree 23 percent lower than their peer average, of which 16 percentage

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11   If the $52 billion costs are shared across the whole higher education community, achieving the goal of a million extra students from a base of $301 billion would require a 15 percent improvement in productivity across the whole spectrum; if costs are shared by associate and bachelor capacity only (base of $190 billion), these institutions need to improve productivity by 21 percent; and if costs are shared by by all associates and bachelors capacity from institutions with open access and "competitive" admissions policies, these institutions need to improve productivity by 34 percent. Averaging these three scenarios results in a required productivity improvement of 23 percent.

12   Peer groups were defined according to Carnegie's classification (research or doctoral; bachelor's or master's; associates), Barron's admissions competitiveness criterion (most or highly competitive; very competitive; competitive or less / non-competitive), these 12 peer groups were further divided into subgroups for some analyses based on the proportion of transfer students, proportion of African American student, proportion of students receiving federal aid, and proportion of degree-seeking students.

13   Using IPEDS data.

points derive from better cost efficiency and 7 from higher completion rates. In contrast, two-year institutions in the top-performing quartile attain most of their greater degree productivity through higher rates of completion: they produce degrees at a 22 percent lower cost than their group average, of which 14 percentage points derive from higher completion rates and 8 points derive from improved cost efficiency. Together, better completion rates and greater cost efficiency account for roughly 70 and 60 percent of the degree productivity improvements captured by the four-year and two-year best practice institutions, respectively (Exhibit 1).

High-performing institutions are achieving degree productivity up to 60 percent better than their peer group average

To assess what highly productive institutions are doing to raise their rates of degree completion and improve cost efficiency, we partnered with eight highly productive institutions from different parts of the learning spectrum, each selected for their track record in degree productivity and for quality (Table 1).

Using a variety of strategies, these highly productive institutions attain up to 50 percent higher overall productivity than the average for the top quartile in their peer group and 60 percent higher than the peer group average (Exhibit 2). Using data provided by the schools, we measured the impact on degree productivity of their particular strategies and identified the five detailed below that had the most impact. Through implementing these five levers, the eight institutions studied achieve improved cost per degree three to six times greater for each lever than the average improvement achieved by top-quartile institutions (Exhibit 3).

Five strategies that increase degree productivity

This group of eight clearly does not represent the full breadth of higher education institutions. But the strongly positive impact on degree productivity of the five strategies suggest these are worth considering as part of any national, state or institution effort to produce more graduates on a limited budget.[14]

Systematically enabling students to reach graduation. Graduation rates vary widely between institutions, even within peer groups. Among community colleges, graduation rates typically range from 19 percent to 45 percent and from 37 percent to 62 percent among four-year institutions.[15] Reforms to enable students to persevere through to graduation include providing structured pathways to graduation, effective student supports and effective placement and college preparation, as well as preparing students for post-study work.

An integrated package of such initiatives can boost graduation rates enough to bring down the average cost of a degree by 11 percent to 33 percent. For instance, Valencia Community College's three-year graduation rate of 35 percent is 15 percentage points above that of peer institutions partly because the college provides students with support and tools for planning their path to graduation. It also tailors support to its different student segments and has redesigned student support services to improve their quality.[16]

Indiana Wesleyan University College of Adult & Professional Studies' six-year graduation rate of 65 percent is 19 percentage points above its peer average. The college has developed a cohort model and structured degree pathways with few electives.[17]

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14   Institutions in different segments and with different needs may choose to focus on different strategies

15   Graduation rates are IPEDS first-time, full-time graduation rates within 150% of expected time. Ranges represent top and bottom quartiles.

16   Valencia Community College closely tracks quality and performance metrics for core student support services such as financial aid processing

17   Descriptions of Indiana Wesleyan University's practices focus on the Center for Adult and Professional Studies' associate and bachelor programs, which enroll about 5,000 of IWU's approximately 15,000 students. The remaining students are enrolled in graduate programs or enrolled in IWU's residential campus.

Exhibit 1: Associate-granting institutions captured degree productivity primarily through completion, while competitive bachelor institutions did so through costs

Variation in cost per degree delivered
Percent of average cost per degree[1], USD

Competitive[2] bachelors/masters

74,268   7%   5%   8%   3%   57,153

23% higher productivity

Associates

56,289   13%   4%   4%   0%   43,974

22% higher productivity

| Average | Completion efficiency | Instruction | Core supports | Non-core services | Top quartile |
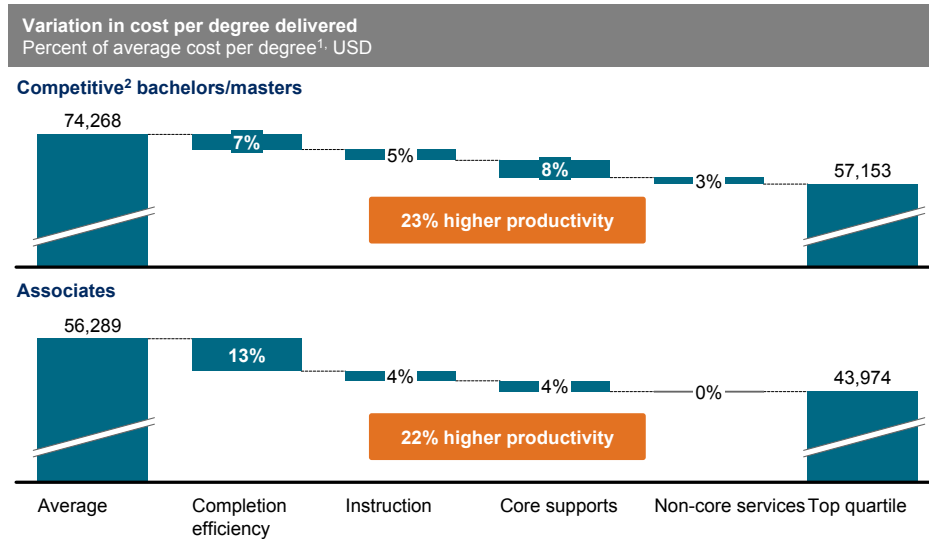
Note: Average across 6 peer subgroups
1 Cost/degree = cost/full-time student equivalent (FTSE) x FTSE/degree; FTSE/degree normalized to take into account of average time to obtain a degree and includes certificate and graduate production; 2005-07 3-year average
2 Competitive admissions policies as defined by Barron's

SOURCE: IPEDS; McKinsey analysis

Table 1: Institutions visited

	Institution	Description	Normalized Cost per degree Dollars	Enrollment FTSE
Competitive Bachelors	Western Governors	A private nonprofit institution that offers online competency-based instruction	27,495	15,870
	Southern New Hampshire	A private nonprofit institution that offers associate, bachelors, and masters degrees	52,285	5,370
	BYU Idaho	A private nonprofit institution that offers associates and bachelors degrees. Currently transitioning from awarding primarily associates to primarily bachelors degrees	42,294	14,098
	DeVry	A for-profit institution awarding a mix of degrees in various locations across the country, both online and on site	40,128*	46,926
	Indiana Wesleyan University-CAPS	A private nonprofit faith-based institution that awards associates, bachelors, and graduate degrees. For this study, the research focused primarily on bachelors degree programs offered on-site and online via the College of Adult & Professional Studies	40,851	14,233
Associates	Valencia Community College	A public, two-year community college, that awards both associates degrees and certificates	22,311	19,934
Certificates	Rio Salado	A public community college that awards primarily certificates. Delivery is through unbundled online instruction	32,043	10,224
	Tennessee Technical Centers	A public vocational training school with 23 campuses across the state	21,053	9,125

* Excludes marketing spend

Exhibit 2: Top performing institutions can achieve 30 to 50 percent greater productivity than the top quartile

Variation in cost per degree delivered
Percent of average cost per degree[1], USD

Competitive[2] bachelors/masters

57,153

14%   15%   24%   4%

40,851

29% higher productivity

Indiana Wesleyan University

Associates

43,974

19%   13%   17%   0%

22,311

49% higher productivity

Valencia CC

| Top quartile | Completion efficiency | Instruction | Core supports | Non-core services | Sample top performer |

1 Cost/degree = cost/FTE x FTE/degree; FTE/degree normalized to take into account of average time to obtain degree and includes certificate and graduate production; 2005-07 3-year average
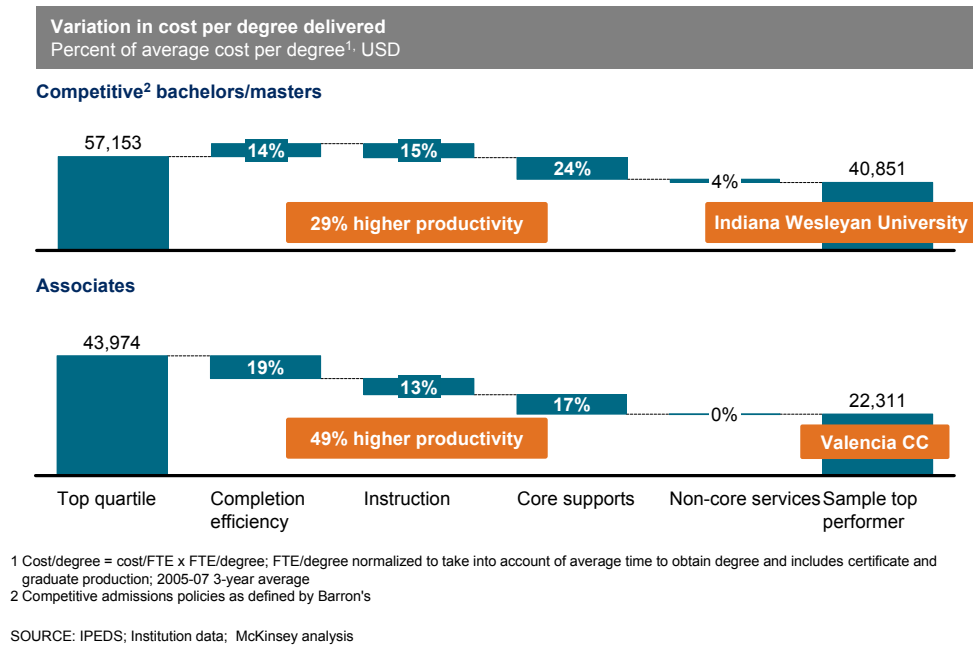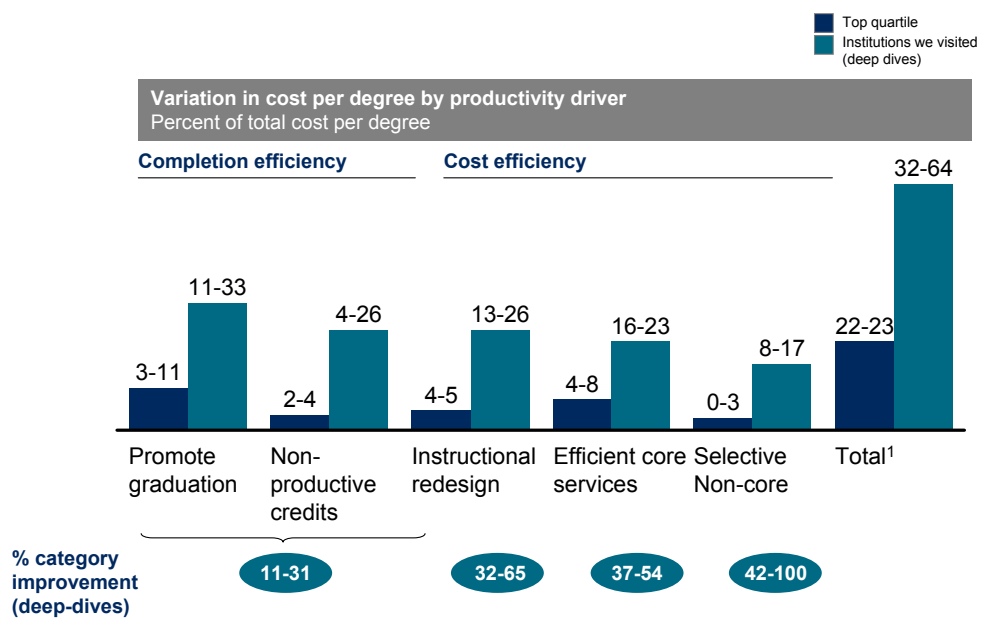2 Competitive admissions policies as defined by Barron's

SOURCE: IPEDS; Institution data; McKinsey analysis

Exhibit 3: Five strategies can result in over 60 percent higher degree productivity

Legend:
- Top quartile
- Institutions we visited (deep dives)

Variation in cost per degree by productivity driver
Percent of total cost per degree

Completion efficiency   **Cost efficiency**

32-64

11-33

4-26   13-26   16-23

3-11   8-17   22-23

2-4   4-5   4-8   0-3

| Promote graduation | Non-productive credits | Instructional redesign | Efficient core services | Selective Non-core | Total[1] |

% category improvement (deep-dives)

11-31   32-65   37-54   42-100

1 Impact is not additive as institutions do not drive productivity with all levers

SOURCE: IPEDS; Institution data; McKinsey analysis

Weekly online classes are organized to begin when cohorts fill. Cohort members encourage each other to participate, thanks to the University's emphasis on peer engagement within each cohort. Given the structured nature of the degree pathways, students generally move through the sequence of classes as a cohort, leaving relatively few behind.

Reduce nonproductive credits. Analysis of state data[18] suggests 14 percent of the credits earned by degree completers are over the threshold required by their degree. Such "excess crediting" may constitute up to 10 percent of total credits taken by all students.[19] Failed credits and credits from which students withdraw constitute another 7 percent. Although excess crediting may give students extra educational benefit, it adds to the cost of a degree and so diminishes degree productivity. The latter can be improved by 4 percent to 26 percent by initiatives to prevent such redundant efforts. Measures include better developmental education and tutoring, policies for tracking and intervening to support student progress and completion, transfer policies that conserve credits, and innovative delivery methods.[20]

For instance, Southern New Hampshire University (SNHU) and BYU–Idaho closely monitor student progress toward a degree and have policies that prevent students from becoming overcredited. As a result, none of those achieving a bachelor's degree at SNHU complete more than 150 credits to graduate,[21] compared with 20 percent at other peer institutions.

Similarly, only 7 percent of those achieving associate degrees at BYU–Idaho complete more than 90 credits, compared to 32 percent at peer institutions.

Institutions can also sharply reduce the number of credits that students fail or drop. For example, BYU–Idaho has implemented policies to prevent redundant teaching and learning, including strict policies on courses withdrawal and academic progress. Partly as a result, BYU–Idaho has failure and withdrawal rates that are up to 32 percent lower than its peer average. Some states have also enacted policies to limit the number of credits lost during transfers between institutions. Florida and Tennessee have policies ensuring that students who complete an associate degree can enter a four-year university as a junior.

Redesigning instruction. On average, institutions spend $7,000 on instructional costs per full-time student equivalent (FTSE), ranging from $4,000 for associate-granting institutions to $22,000 for elite research institutions. By redesigning the way they deliver instruction the eight institutions that we visited achieved degree productivity 17 to 26 percent better than the average without compromising degree quality.

Sometimes controversially,[22] institutions such as Rio Salado College and Western Governors University (WGU)[23] are leveraging technology to become more cost-effective, substituting full-time faculty with part-time faculty (Rio Salado) or course mentors (WGU) to

18   State longitudinal dataset provided by State which opted to remain anonymous

19   Over a period of seven years, we find that 51 percent of the credits taken in State A's public institutions did not contribute to a degree. The other 41 percentage points of unproductive credits were due to course failure or withdrawal and non-credit bearing courses such as developmental education courses taken by those students who did graduate, and over half of these non-productive credits were due to credits taken by students who did not graduate.

20   Such innovative methods include competency-based models that require students to demonstrate mastery in a set of competencies or skills in order to progress, regardless of the time they spend sitting in class, which allows some students to progress faster.

21   Bachelor's degrees typically require 120-135 semester credit hours to complete while associate degrees typically require about 60 semester credit hours.

22   See William Massy, "Creative paths to boosting academic productivity", Nov. 2010 for discussion of instructional productivity and the barriers to instructional productivity improvements.

23   Rio Salado students score at or above common, nationally normed assessments. For example, student's average score on the ETS Proficiency Profile is 450.81, which is above the national average of 440.70. This exam measures critical thinking, reading, writing, math, humanities, social science and natural sciences in comparison to peer AA institutions nationally with our college graduate cohort. Students at WGU score above national averages on credentialing exams, while the passing scores on class assessments are set by professional psychometricians to be equivalent to a B- average.

augment online teaching materials, and centralizing development of master courses.[24] Such redesigns in instruction delivery are similar to those introduced at the course level by the National Center for Academic Transformation (NCAT), which has deployed new technology on redesigned courses at 150 institutions nationwide since 1999—primarily in large-enrollment, introductory courses across a number of disciplines— achieving 35 percent average savings while simultaneously improving learning outcomes.[25]

Other institutions in our sample achieved savings with different changes in delivery. For instance, BYU–Idaho redesigned the academic calendar to include a full summer semester serving the same number of students as the traditional fall and winter semesters. Faculty compensation was incrementally increased, but only a handful of new faculty members were hired. As a result, BYU–Idaho improved its instructional costs per student by 32 percent while still compensating its faculty at higher levels than peer institutions. All the institutions we visited were carefully managing and monitoring the quality of instruction and student outcomes to ensure that quality and effectiveness improve together.[26]

More efficient core supports and services. Core support services include institutional supports (such as HR, IT, and finance,), student services (such as financial aid, counseling, and enrollment), academic support services (including libraries, museums, and audio/visual services) and plant operations. On average, institutions spend about $9,000 per FTSE on core supports and services—ranging from about $4,000 for associate-granting institutions to $21,000 for the most competitive research institutions.

The eight institutions made their core support services more efficient by introducing lean processes, organizational redesign, and better purchasing. This route to increasing productivity yielded improvements of 16 to 23 percent above the average at BYU–Idaho, Rio Salado, and DeVry University. Initiatives include converting paper-based to electronic systems, cross-training staff to eliminate staff downtime, and using self-service online portals for administering financial aid.

Clearly the quality and effectiveness of student services is of particular concern, and the eight institutions are redesigning their core services expressly to improve efficiency and quality in tandem. Some also invest part of the savings made in this area in supports such as academic and career counselors that improve student outcomes. All meticulously monitor service quality.

Optimize non-core services and other operations. Top-performing institutions also carefully assess the non-core services and other operations they must offer to fulfill their mission, to ensure they are run efficiently. In our sample, non-core services and other operations included research, public services, and auxiliary enterprises.[27] Institutions spend an average of $3,500 per FTSE on non-core services, ranging from $500 for associate-granting institutions to $21,000 for the most competitive research institutions. Competitive bachelor's-granting institutions spend $2,500 per FTSE on non-core services.

While many non-core services, such as dinning services, generate revenues and are self-supporting, 49 percent of all institutions report auxiliary service revenue insufficient to cover auxiliary service expenditures. Often these losses are significant—19

24 In many academic institutions, curriculum is developed by individual faculty for individual courses.

25 For more information on these models and instructional redesign refer to the resources at the National Center for Academic Transformation webpage (http://www.thencat.org/).

26 For instance, institutions closely monitored scores on common assessments and credentialing exams, student satisfaction, and class withdrawal rates.

27 Public services include radio stations, institutes, and conferences while auxiliary enterprises include athletics, housing, and dining. Research institutions, which are not the focus of our report, may consider research core to their mission.
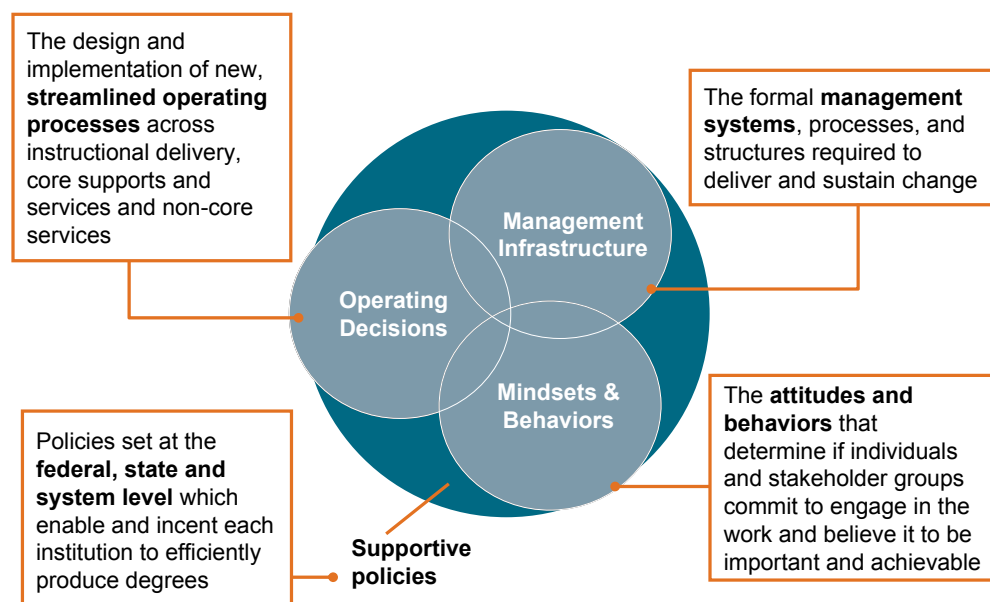
percent of institutions report losses greater than $500 per student, and 10 percent of institutions report losses greater than $1,000 per student.

By maintaining only mission-critical non-core services, institutions in our sample save up to 17 percent of their peer group average cost per degree. WGU, DeVry University, and SNHU, for example, offer little in the way of non-core services, as part of their effort to control total costs. However, we recognize that many institutions will continue to maintain non-core services to fulfill their mission. In these cases, institutions should pay especially close attention to operations which require general fund subsidies while improving efficiency across all non-core services to drive down costs to students and other stakeholders

Essential elements for transforming degree productivity

We found that the eight institutions were able to transform productivity using these five operational levers because they also had four essential elements in place (Exhibit 4): first, efficient and effective operational processes supported by appropriate technology and tools; second, effective management systems to ensure progress, build capabilities, and manage implementation; third, leaders and staff who are committed to achieving degree productivity gains alongside high-quality educational outcomes; and last, support from state and institutional policies that allow them to choose how to achieve their quality and efficiency goals. In our experience, leaving out any of these four elements may blunt the potential impact of the transformation or make them harder to sustain.

Exhibit 4: Transforming higher education operations to achieve improved productivity requires a four-pronged approach

The design and implementation of new, **streamlined operating processes** across instructional delivery, core supports and services and non-core services

The formal **management systems**, processes, and structures required to deliver and sustain change

Operating Decisions

Management Infrastructure

Mindsets & Behaviors

Policies set at the **federal, state and system level** which enable and incent each institution to efficiently produce degrees

Supportive policies

The **attitudes and behaviors** that determine if individuals and stakeholder groups commit to engage in the work and believe it to be important and achievable

SOURCE: McKinsey analysis

High performing institutions operated at the nexus of effective educational practices and good management

In addition, the eight institutions we visited had an unwavering focus on educating students. They were determined to combine effective educational practices and good management to achieve their educational mission productively.

Increasing degree productivity requires institutions and policy makers to collaborate

Colleges and universities that already achieve outstanding levels of degree productivity can serve as models for others. Their main lesson to institution leaders and policymakers is to concentrate on improving degree completion and cost efficiency. Given the urgent need to increase the number of U.S. college graduates, these institutions and their stakeholders must also commit to rapid change.

How can all institutions raise their degree productivity to the levels achieved by the highest performers? Our research suggests several steps for institutions and state and federal policymakers to consider.

First, every higher education institution should carry out an honest *self-assessment*, comparing their overall educational productivity and their performance on the five strategies of highly productive post-secondary institutions to an appropriate peer group. Next, all institutions should assess the will and skill of leadership, managers, and staff to pursue change. Without committed leadership, transformational change is unlikely to happen. If they have the will to change, they must make *firm commitments to reaching high levels of degree productivity* while maintaining or improving quality and access. Then institutions can set aspirations for improved productivity, develop a multiyear operational plan with defined performance milestones, and commit to implementing it. Some institutions will need to make only incremental changes. Others will require more fundamental transformation.

Second, the entire higher education system requires *better performance measurement, data gathering, and benchmarking* so that institutions and funders can track their progress. Institutions need a common fact base of benchmarks to serve as an external reference for their own performance. Many worthwhile efforts are underway and, together with the data in this report, they offer a starting point. States should agree with colleges on standard practices for recording and measuring productivity and publish college productivity data. Unless such data become comprehensive and accessible, states and institutions cannot be held accountable for their progress.

Third, state governments and federal policy makers must *develop and uphold policies that elevate productivity in higher education further up government agendas*. Momentum for policy action is building. To signal their commitment, state and other levels of government must require institutions to collect degree productivity data, as part of a balanced picture of their diverse contributions and impact.

Grants and policies should foster productivity innovatively, for example, through sharing best practices, or introducing competitive grants and results-based funding. But they should not dictate how better productivity is achieved. This report shows that creative institutions can improve productivity in different ways, as long as they stay focused on the goal of educating more students for the same cost while maintaining or raising quality and access.

Also, all these lessons need to be reflected in the *design of new models of teaching institutions*, so that such innovators achieve their full degree productivity potential from the outset and the gains from their experience are shared across the system. For example, more than three decades ago, the Maricopa district launched Rio Salado as a community college with an alternative way of delivering instruction. It

moved to online instruction as soon as this became feasible. Now, Rio Salado, in terms of student headcount, is the largest college in the system and the community college with the largest online enrollments in the nation. US higher education needs a new generation of such innovation at scale.

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Unless America's higher education institutions can improve the skill level of the labor force, the nation risks failing to produce the talent required to maintain its economic competitiveness. Many Americans may never fulfill their potential or see their relative living standards fall. A variety of strategies may be needed to meet this challenge head on. But their aim should be to increase the number of students who enroll, increase the rate of degree completion, and improve the output and outcomes of higher education expenditures as rapidly as possible, while maintaining a steadfast commitment to broadening access and upholding the quality of post-secondary education in the United States.

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