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Education as Commodity: The Case Against Online Education

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The Case Against Online Education

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There are clear advantages to online learning for both students and colleges: convenience, accessibility, cost and flexibility. But the challenges of online education have often been overlooked – especially for career and technical education where practical application and hands-on performance are central to learning. For the highly motivated, self-directed, self-disciplined student seeking knowledge in a specific domain, online education may work well. But this does not describe the overwhelming majority of undergraduates; for CTE students perhaps even less so. Online education is compelling because of its efficiency, scalability, and flexibility. But these are exactly the elements that make it susceptible to significant exploitation. This version of ReportOUT offers a critical perspective on the proliferation of online education.

Some general conclusions:

- *Online education has not lived up to its potential, according to a new report, which said fully online course work contributes to socioeconomic and racial achievement gaps while failing to be more affordable than traditional courses.*

- *Online education has failed to reduce costs and improve outcomes for students. Faculty, academic leaders, the public, and employers continue to perceive online degrees less favorably than traditional degrees.*

- *Students in online education, and in particular underprepared and disadvantaged students, underperform and on average, experience poor outcomes. Gaps in educational attainment across socioeconomic groups are even larger in online than in traditional coursework.*

Continuing efforts to strengthen educational opportunities and learning outcomes for under-prepared students and to reduce the cost of offering high-quality experiences are critical. But the evidence

is clear that much of the existing online coursework is moving this effort in the wrong direction. Students need access to education, which involves meaningful interaction with faculty and other students—not just exposure to materials that move them through a collection of information and exercises.

- *Online education is the fastest-growing segment of higher education and its growth is overrepresented in the for-profit sector;*
- *Faculty and academic leaders, employers and the general public are skeptical about the quality and value of online education, which they view as inferior to face-to-face education;*
- *Students in online education, particularly underprepared and disadvantaged students, underperform and on average experience poor outcomes;*
- *Online education has failed to improve affordability, frequently costs more than in-person alternatives and does not produce a positive return on investment;*
- *Regular and substantive student-instructor interactivity is a key determinant of quality in online education, leading to improved student satisfaction, learning and outcomes.*
- *Chronicle of Higher Education Employers had negative associations with online colleges, rating these undesirable.*

Takedown Of Online Education

By Paul Fain

Online education has not lived up to its potential, according to a new report, which said fully online course work contributes to socioeconomic and racial achievement gaps while failing to be more affordable than traditional courses.

The report aims to make a research-driven case discouraging federal policy makers from pulling back on consumer protections in the name of educational innovation.

Spiros Protopsaltis, an associate professor and director of the Center for Education Policy and Evaluation at George Mason University, co-wrote the report with Sandy Baum, a fellow at the Urban Institute and professor emerita of economics at Skidmore College. Protopsaltis is a former aide in the Obama administration's Education Department and to Senate Democrats. Baum advised Hillary Clinton's presidential campaign.

"Online education has failed to reduce costs and improve outcomes for students," they wrote. "Faculty, academic leaders, the public and employers continue to perceive online degrees less favorably than traditional degrees."

Protopsaltis and Baum's broadside on online education includes a focus on federal policy and is timed to influence discussions about changing regulations to encourage innovation in online and competency-based education, most notably the negotiated rule-making session the U.S. Department of Education kicked off this week.

The report said its review of the evidence demonstrated that:

- Online education is the fastest-growing segment of higher education and its growth is overrepresented in the for-profit sector;
- Faculty and academic leaders, employers and the general public are skeptical about the quality and value of online education, which they view as inferior to face-to-face education;
- Students in online education, particularly underprepared and disadvantaged students, underperform and on average experience poor outcomes;
- Online education has failed to improve affordability, frequently costs more than in-person alternatives and does not produce a positive return on investment;
- Regular and substantive student-instructor interactivity is a key determinant of quality in online education, leading to improved student satisfaction, learning and outcomes.

The stakes are high, its co-authors conclude.

"There is a real risk that both cost-cutting efforts and well-intentioned moves to expand access to higher education could lead to greater numbers of disadvantaged students being relegated to cheap and ineffective online instruction, with detrimental results, both in terms of outcomes and student loan defaults," they wrote.

However, several experts who read the report said it relied mostly on old data and was overly broad in its conclusions.

The paper indiscriminately trashes online education, said Fiona Hollands, associate director and senior researcher at the Center for Benefit-Cost Studies of Education at Columbia University's Teachers College.

"It's almost all old data, old news and not very even-handed," she said via email, adding that the report "reads as advocacy more than research and conveniently skips out on some of the more recent and positive stories for students in online learning."

Fully online programs widen achievement gaps and often are unfordable, says report seeking to discourage politicians from pulling back on federal policy protections.

Students without strong academic backgrounds are less likely to persist in fully online courses than in courses that involve personal contact with faculty and other students and when they do persist, they have weaker outcomes

Focus on Faculty Interaction

Protopsaltis and Baum said in the report that hybrid models of online learning avoid most of the pitfalls of fully online ones, at least when they feature strong in-person components and when online material and technology are used mostly as a supplement.

"Students without strong academic backgrounds are less likely to persist in fully online courses than in courses that involve personal contact with faculty and other students and when they do persist, they have weaker outcomes," according to the paper. "There is considerable danger that moving vulnerable students online will widen attainment gaps rather than solving the seemingly intractable problem of unequal educational opportunity." The report warned of risks to students and taxpayers that could result from attempts by the Trump administration and congressional Republicans to deregulate higher education.

For example, in its literature review, the report identified as a key theme the importance of meaningful interaction between students and faculty members. It said a lack of sufficient interaction "is likely online education's Achilles' heel."

Negotiators are set to discuss the decades-old federal standards for "regular and substantive" interaction during the rule-making session. Those requirements were at the core of a critical 2017 audit from the department's Office of Inspector General on Western Governors University.

The Trump administration last week declined to act on the audit's recommendations and its proposed $713 million fine of WGU, a competency-based, online institutions that is one of the nation's largest universities. In making its decision, the department cited the "ambiguity of the law and regulations and the lack of clear guidance available at the time of the audit period," as well as information provided by the university and its accreditor.

In the run-up to the rule-making session this week, the department proposed giving accreditors latitude to define who qualifies as an instructor for federal aid-eligible college programs. This distinction was an important part of the inspector general's audit, which the report from Protopsaltis

and Baum said "sets a low bar" for meeting the regular-and-substantive interaction requirement.

The repeal of that standard would require Congress to act. But the department could weaken it in the meantime.

The new report said the requirement should be strengthened and vigorously enforced, arguing that interaction must be with subject-matter experts, not just anyone described by a college as a faculty member.

"Unbundled faculty models that have difficulty complying should make changes to match the law instead of changing the law to match the needs of such models," the report said.

Hollands, however, said the report did not include evidence of a causal link between online education featuring regular and substantive interaction and better student academic and career outcomes. "Right now they rely mostly on a lot of survey data, correlational studies and opinions about the importance of faculty-student interaction," she said.

For-Profits and a Shifting Market

In making their case, the report's authors point to the 2006 move by Congress to drop federal aid restrictions for online program offerings from colleges. The greatest beneficiaries of this "opening the floodgates of federal student aid to fully online schools" were for-profits, the report said, adding that the sector has a "well-established and long record of predatory behavior and compliance troubles."

For-profit colleges in 2016 enrolled just 6 percent of all students but 24 percent of those enrolled in fully online programs, the report said, citing federal data. And that high concentration should raise oversight concerns for policy makers and the department.

Yet for-profits' share of online students is shrinking amid the sector's deep, multiyear collapse.

More than half of students who were enrolled in fully online programs in 2004 attended for-profits, said Sean R. Gallagher, executive director of Northeastern University's Center for the Future of Higher Education and Talent Strategy. And he estimates that less than 20 percent of students in fully online programs currently are enrolled at for-profits.

The sector's decline in some ways undermines one of the report's premises, Gallagher said.

The report notes the large enrollments of WGU, Southern New Hampshire University and Liberty University, with the three nonprofit universities now enrolling about a third of fully online students. The crackdown on for-profits that Protopsaltis helped lead so far has not extended to nonprofits with big online enrollments. And congressional Democrats have shown little interest in tightening rules for online education, although Senator Elizabeth Warren, a Massachusetts Democrat, once asked tough questions about SNHU's model.

To the extent that the paper by Protopsaltis and Baum can be seen as a revised blueprint for Democrats' talking points on educational innovation and federal policy, it may signal a willingness to apply scrutiny once reserved for the for-profits to big nonprofit players online, too.

In an interview, Baum said she's in favor of strong regulation of online programs from nonprofits, particularly those that exclude adequate faculty-student interaction. "Our concern doesn't apply only to the for-profit sector," she said.

Several experts said the report based too much of its conclusions on data from six or so years ago. As Gallagher said, this period was in the middle of the for-profit boom, which likely skewed the numbers and outcomes.

Likewise, the report cited declining perceptions of the quality of online education among faculty members and college administrators around the same time. That was during the peak hype around massive open online courses (MOOCs), which Gallagher said likely provoked skepticism by faculty members and others about online education, in part because of the self-pacing and automated aspects of MOOCs.

"It confused the idea of what an online program was, and the meaningful oversight of it," said Gallagher.

In general, perceptions about online credentials have improved, Gallagher said, including among employers.

"Employers are increasingly accepting of online education and online credentials," he said.

The report also cited a forthcoming, revised study from Caroline Hoxby, a Stanford University economist, on the problematic return on investment from fully online programs.

That research found that "fully online learning does appear to increase the rate of growth of income, but not enough to make up for the cost of the education or even, in most cases, the cost to the individual student," according to report.

However, an earlier version of the study was controversial, with many critics pointing to perceived major flaws in its data and design.

Ray Schroeder, associate vice chancellor for online learning at the University of Illinois at Springfield, said the report by Protopsaltis and Baum painted online education with too broad a brush. For example, its comparisons between online

Technology has the potential for creating meaningful opportunities for low-income students

programs and on-campus ones failed to acknowledge the low graduation rates and default rates of many traditional programs that enroll similarly high percentages of low-income, older students.

Likewise, Schroeder said the report ignored the value of subdegree credentials such as online certificates and industry certifications. And he said it did not account for the growing potential of technology like adaptive learning to boost student results online.

“The tools we have in higher education are being refined by AI, machine learning and the ways we can engage students,” said Schroeder.

For their part, Protopsaltis and Baum said they were optimistic about the utility of some of those tools.

“Technology has the potential for creating meaningful opportunities for low-income students," Baum said. But she said the risks are too high to aggressively deregulate before more evidence is in about the effectiveness of that technology.

The report’s co-authors and its critics agreed that further research is needed on the rapidly evolving field of online education, particularly as more high-quality colleges and universities ramp up their online offerings.

The Georgia Institute of Technology gets a nod in the report for its online master’s degree in computer science, which Baum and Protopsaltis said appears to be expanding access in an affordable and valuable way. Yet Gallagher said little research has been done about the rapid growth of similar online master’s programs in recent years.

“There’s huge momentum for online education,” he said.

The tools we have in higher education are being refined by AI, machine learning and the ways we can engage students


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Online Courses Are Harming The Students Who Need The Most Help

2

By Susan Dynarski

A single teacher can reach thousands of students in an online course, opening up a world of knowledge to anyone with an internet connection. This limitless reach also offers substantial benefits for school districts that need to save money, by reducing the number of teachers.

But in high schools and colleges, there is mounting evidence that the growth of online education is hurting a critical group: the less proficient students who are precisely those most in need of skilled classroom teachers.

Online courses can be broken down into several categories, and some are more effective than others.

In "blended" courses, for example, students don't do their work only online: They also spend time in a classroom with a flesh-and-blood teacher. Research suggests that students — at nearly all levels of achievement — do just as well in these blended classes as they do in traditional classrooms. In this model, online resources supplement traditional instruction but don't replace it.

In the fully online model, on the other hand, a student may never be in the same room with an instructor. This category is the main problem. It is where less proficient students tend to run into trouble. After all, taking a class without a teacher requires high levels of self-motivation, self-regulation and organization. Yet in high schools across the country, students who are struggling in traditional classrooms are increasingly steered into online courses.

Taking a class without a teacher requires high levels of self-motivation, self-regulation and organization. Yet in high schools across the country, students who are struggling in traditional classrooms are increasingly steered into online courses

For example, in so-called credit recovery programs, many students who have flunked a course in an old-fashioned classroom retake the class online. The negative consequences may not be obvious at first, because the pass rates in these courses are very high and students who take them tend to graduate from high school instead of flunking out. What could be wrong with that?

But there is something wrong with it. In reality, students who complete these courses tend to do quite poorly on subsequent tests of academic knowledge. This suggests that these online recovery courses often give students an easy passing grade without teaching them very much.

Consider a study conducted in the Chicago high schools. Students who had failed algebra were randomly assigned either to online or to face-to-face recovery courses. The results were clear: Students in the online algebra courses learned much less than those who worked with a teacher in a classroom.

Online courses have many real benefits, of course. They can help high achievers in need of more advanced coursework than their districts provide through other means. This is especially true in small, rural districts that offer few specialized, traditional courses for students working ahead of their grades.

A study in Maine and Vermont examined the effect of online courses on eighth graders with strong math skills in schools that didn't offer face-to-face algebra classes. Students were randomly assigned either to online algebra or to the less challenging, standard math offered in traditional classes.

Both groups of students were tested at the end of the school year. The online algebra students did substantially better than their counterparts in standard classrooms. They were also twice as likely to complete advanced math later in high school.

In colleges, especially in nonselective and for-profit schools, online education has expanded rapidly, too, with similar effects. These schools disproportionately enroll low-income students who are often the first in their families to attend college. Such students tend to drop out of college at very high rates.

Students with weak preparation don't fare well in online college classes as recent research by professors at Harvard and Stanford shows.

These scholars examined the performance of hundreds of thousands of students at DeVry University, a large for-profit college with sites across the country. DeVry offers online and face-to-face versions of all its courses, using the same textbooks, assessments, assignments and lecture materials in each format. Even though the courses are seemingly identical, the students who enroll online do substantially worse.

The effects are lasting, with online students more likely to drop out of college altogether. Hardest hit are those who entered the online class with low grades. Work by researchers in many other colleges concurs with the DeVry findings: The weakest students are hurt most by the online format.

For those with strong academic skills, by contrast, online learning can open up amazing opportunities.

The Massachusetts Institute of Technology offers a set of free, online courses in the economics of developing countries. Students who perform well in these classes can apply for a face-to-face master's program in economics at M.I.T. In fact, the online courses are the sole route into this special degree program. With online credit, students need to spend only one semester in Cambridge to graduate.

The M.I.T. approach reverses the high school model in which students who fail in a face-to-face class are shifted into a more challenging online format. In M.I.T.'s program, students must first demonstrate that they can tough it out in an online class. Only then are they admitted to a rigorous, face-to-face master's program.

The evidence is clear. For advanced learners, online classes are a terrific option, but academically challenged students need a classroom with a teacher's support

Online education is still in its youth. Many approaches are possible, and some may ultimately benefit students with deep and diverse needs. As of now, however, the evidence is clear. For advanced learners, online classes are a terrific option, but academically challenged students need a classroom with a teacher's support

Susan Dynarski is a professor of education, public policy and economics at the University of Michigan.

Promises And Pitfalls Of Online Education

By Eric Bettinger and Susanna Loeb

Executive Summary

Online courses have expanded rapidly and have the potential to extend further the educational opportunities of many students, particularly those least well-served by traditional educational institutions. However, in their current design, online courses are difficult, especially for the students who are least prepared. These students' learning and persistence outcomes are worse when they take online courses than they would have been had these same students taken in-person courses. Continued improvement of online curricula and instruction can strengthen the quality of these courses and hence the educational opportunities for the most in-need populations. Online courses offer the promise of access regardless of where students live or what time they can participate, potentially redefining educational opportunities for those least well-served in traditional classrooms. Moreover, online platforms offer the promise, through artificial intelligence, of providing the optimal course pacing and content to fit each student's needs and thereby improve educational quality and learning. The latest "intelligent" tutoring systems, for example, not only assess students' current weaknesses, but also diagnose why students make the specific errors. These systems then adjust instructional materials to meet students' needs.

Yet today these promises are far from fully realized.

As one new study that we completed with our colleagues Lindsay Fox and Eric Taylor shows, online courses can improve access, yet they also are challenging, especially for the least well-prepared students. These students

consistently perform worse in an online setting than they do in face-to-face classrooms; taking online courses increases their likelihood of dropping out and otherwise impedes progress through college.

Online college courses are rapidly growing. One out of three college students now takes at least one course online during their college career, and that share has increased threefold over the past decade. The potential for cost savings and the ease of scaling fuels ongoing investments in online education by both public and private institutions. Online courses have grown in the K-12 sector as well. Florida, for example, requires each high school student to take at least one online course before graduation and the Florida Virtual School offers over 150 classes to students across the state. An estimated 1.5 million K-12 students participated in some online learning in 2010, and online learning enrollments are projected to grow in future years.

Non-selective and for-profit higher education institutions have expanded online course offerings particularly quickly. These institutions serve a majority of college-aged students, and these students typically have weaker academic preparation and fewer economic resources than students at other more selective colleges and universities. As such, their ability to provide useful course work, engage students, and build the skills necessary for economic success is particularly important. Their use of online coursework is promising to the extent that it can reach the most students in need and serve them well.

While online course-taking is both prevalent and growing, especially in non-selective higher education institutions, relatively little evidence has examined how taking a course online instead of in person affects student success in college. Our new study is the first of which we are aware to provide evidence on the effects of online courses at-scale at non-selective four-year colleges. It is also the first to assess the effects of online course taking at for-profit institutions. Nearly 2.4 million undergraduate students (full-time equivalent) enrolled at for-profit institutions during the 2011-12 academic year, and the sector granted approximately 18 percent of all associate degrees.

The vast majority of online courses mirror face-to-face classrooms with professors rather using new technology to better differentiate instruction across students

Our study uses data from DeVry University, a large for-profit college with an undergraduate enrollment of more than 100,000 students, 80 percent of whom are seeking a bachelor's degree. The average DeVry student takes two-thirds of her courses online. The remaining one-third of courses meet in conventional in-person classes held at one of DeVry's 102 physical campuses. The data include over 230,000 students enrolled in 168,000 sections of more than 750 different courses.

DeVry University's approach to online education makes it particularly well suited for estimating the effects of taking online courses. Each DeVry course is offered both online and in-person, and each student enrolls in either an online section or an in-person section. Online and in-person sections are identical in most ways: both follow the same syllabus and use the same textbook; class sizes are approximately the same; both use the same assignments, quizzes, tests, and grading rubrics. Many professors teach both online and in-person courses. The contrast between online and in-person sections is primarily the mode of communication. In online sections, all interaction—lecturing, class discussion, group projects—occurs in online discussion boards, and much of the professor's "lecturing" role is replaced with standardized videos. In online sections, participation is often asynchronous while in-person sections meet on campus at scheduled times. In short, DeVry online classes attempt to replicate traditional in-person classes, except that student-student and student-professor interactions are virtual and asynchronous.

Using variation in course-taking that arises both from changes in course offerings at particular campuses in a particular term and from variation across students in the distance that they have to travel to take in-person courses, we find that taking a course online reduces student grades by 0.44 points on the traditional four- Evidence Speaks Reports, Volume 2, #15 3 point grading scale, approximately a 0.33 standard deviation decline relative to taking a course in-person. To be more concrete, students taking the course in-person earned roughly a B- grade (2.8) on average while if they had taken it online, they would have earned a C (2.4). Additionally, taking a course online reduces a student's GPA the following term by 0.15 points; and, if we look only at the next term GPA for courses in the same subject area or courses for which the course in question is a pre-requisite, we find larger drops of 0.42 points and 0.32 points respectively, providing evidence that students learned less in the online setting.

The negative effects of online course taking are concentrated in the lowest performing students

We also find that taking a course online, instead of in person, increases the probability that a student will drop out of school. In the semester after taking an online course, students are about 9 percentage points less likely to remain enrolled. This reduction is relative to an average of 88 percent of students remaining enrolled in the following term. Moreover, taking a course online reduces the number of credits that students who do re-enroll take in future semesters. While this setting is quite different, we can compare the effects on online course taking to other estimates of effects of on college persistence. For example, the literature on financial aid often finds that $1000 in financial aid increases persistence rates by about three percentage points and college mentorship increases persistence rates by five percentage points.

The negative effects of online course taking are concentrated in the lowest performing students.

As shown in, for students with below median prior GPA, the online classes reduce grades by 0.5 points or more, while for students with prior GPA in the top three deciles we estimate the effect as much smaller and, in fact, we cannot tell whether there is negative effect at all for this higher-achieving group. Thus, while online courses may have the potential to differentiate coursework to meet the needs of students with weaker incoming skills, current online courses, in fact, do an even worse job of meeting the needs of these students than do traditional in-person courses.

These analyses provide evidence that students in online courses perform substantially worse than students in traditional in-person courses and that experience in these online courses impact performance in future classes and their likelihood of dropping out of college as well. The negative effects of online course-taking are far stronger for students with lower prior GPA. The results are in line with prior studies of online education in other settings such as community colleges and highly competitive four-year institutions that also show that online courses yield worse average outcomes than in-person courses. The current negative effect of online course taking relative to in-person course taking should not necessarily lead to the conclusion that online courses should be discouraged. On the contrary, online courses provide access to students who never would have the opportunity or inclination to take classes in-person. As one indication, of the 5.8 million students taking online courses in the fall of 2014, 2.85 million took all of their courses online. Moreover, advances in AI offer hope that future online courses can respond to the needs of students, meeting them where they are in their learning and engaging them in higher education even better than in-person courses are currently able to do. Nonetheless, the tremendous scale and consistently negative effects of current offerings points to the need to improve these courses, particularly for students most at risk of course failure and college dropout.

Does Online Education Live Up To Its Promise? A Look At The Evidence And Implications For Federal Policy

4

By Spiros Protopsaltis and Sandy Baumi

Abstract

Technology has the potential to increase access to education, enhance learning experiences, and reduce the cost of providing high-quality postsecondary education. However, despite the explosive growth of online education, which has been disproportionately large in the for-profit sector, our review of the evidence shows that this potential has not been realized.

Instead, on average fully online coursework has contributed to increasing gaps in educational success across socioeconomic groups while failing to improve affordability.

Students with weak academic preparation and those from low-income and under-represented backgrounds consistently under perform in fully-online environments

Even when overall outcomes are similar for classroom and online courses, students with weak academic preparation and those from low-income and under-represented backgrounds consistently under perform in fully-online environments. Success rates are lower and employers—in addition to students, faculty, academic leaders, and the public—attribute lower value to online than to classroom degrees. A strong body of evidence, as well as industry best practices, have consistently emphasized the critical role of frequent and meaningful interaction between students and instructors for increasing the quality of the online educational experience and improving student outcomes and satisfaction. Weakening federal requirements for regular and substantive interaction between students and faculty in online courses would likely decrease educational quality, further erode employer confidence in the value of online credentials, increase barriers to postsecondary success, and expand opportunities for some institutions to exploit vulnerable students and federal student aid programs.

Acknowledgments

The Laura and John Arnold Foundation (LJAF) provided support for this paper. Results, information and opinions represent the analysis, information and opinions of the authors and are not endorsed by or reflect the views or positions of LJAF or any employee thereof.

Executive Summary

Predictions that technology will revolutionize postsecondary education have generated extreme optimism about the promise of online coursework for solving the problems of rising college prices, as well as unequal access and student outcomes. For the past couple of decades, the hope has been that students whose geographical constraints, financial limitations, and work and family obligations make it difficult for them to participate in brick-and-mortar classrooms will be able to enroll online and earn high-quality, inexpensive degrees.

Today, almost one-third of college students take courses online, with no in-person component. Half of these students are enrolled in exclusively online programs, while the remaining take at least one, but not all of their courses, online. This form of delivery is particularly prevalent in the for-profit sector: for-profit colleges enroll just 6 percent of all students, but 13 percent of students taking courses online and 24 percent of fully-online students.

However, more than a decade after Congress allowed online colleges full access to federal student aid programs, and despite a subsequent explosion in their enrollment, a growing and powerful body of evidence suggests that online learning is far from the hoped-for silver bullet. Online education has failed to reduce costs and improve outcomes for students. Faculty, academic leaders, the public, and employers continue to perceive online degrees less favorably than traditional degrees.

In a range of environments, gaps in student success across socioeconomic groups are larger in online than in classroom courses.

Students without strong academic backgrounds are less likely to persist in fully online courses than in courses that involve personal contact with faculty and other students and when they do persist, they have weaker outcomes. Not surprisingly, students with more extensive exposure to technology and with strong time management and self-directed learning skills are more likely than others to adapt to online learning where students can do the work on their own schedules. There is considerable danger that moving vulnerable students online will widen attainment gaps rather than solving the seemingly intractable problem of unequal educational opportunity.

Technology can add to the learning experience when it supplements, rather than replaces, face-to-face interaction. The outcomes of hybrid models employing this approach do not mirror the problems that emerge in fully online courses. But high quality courses are expensive to produce and maintain. It is inexpensive to post lectures online for large numbers of students to access, but high-quality courses with meaningful interaction among students and between students and faculty are not money savers.

A key theme emerging from the literature is the critical importance of student-faculty interaction in online settings. Researchers, as well as both proponents and skeptics of online education, emphasize the need to design online courses that facilitate robust interactions as an essential component for improving the quality of learning and student outcomes and satisfaction. Lack of sufficient interaction between students and faculty is likely online education's Achilles' heel. Both evidence about the cognitive components of learning and research on differences in outcomes in different types of courses confirm the central role of meaningful personal interaction between the instructor, who is the subject-matter expert, and the student.

As efforts to further expand online opportunities proceed, it is critical to design more interactive educational experiences that integrate regular, direct, and meaningful contact and communication though real-time class sessions and other synchronous interactions with peers and instructors. It is reasonable to believe that many of the problems with online learning— particularly for at-risk students—would be mitigated if these courses and programs consistently incorporated the frequent and substantive personal interaction that is central to the learning process.

In 2006, following several years of intense lobbying by online providers and the for-profit sector, Congress provided online programs with unrestricted access to student aid, but required them "to support regular and substantive interaction between the students and the instructor, synchronously or asynchronously." This key distinction was meant to clearly distinguish online from self-paced correspondence programs, which rely on self-learning, do not provide such interaction, have limited access to federal student aid, and also have a long history of fraud and abuse.

The recent rise of competency-based education, a self-paced educational model the vast majority of which is offered online, along with a high-profile federal government audit of the nation's largest competency based education provider, has

contributed to calls for weakening or eliminating the long-standing requirement for regular and substantive interaction. The House Republican proposal for reauthorizing the Higher Education Act would effectively eliminate this key requirement. This approach would not only be inconsistent with the significant evidence that clearly demonstrates the key role of faculty-student interaction in ensuring a quality online education, but would further erode employer, educator, and public confidence in its value.

In a range of environments, gaps in student success across socioeconomic groups are larger in online than in classroom courses

Our review of the evidence demonstrates that:

- Online education is the fastest-growing segment of higher education and its growth is overrepresented in the for-profit sector.
- A wide range of audiences and stakeholders—including faculty and academic leaders, employers and the general public—are skeptical about the quality and value of online education, which they view as inferior to face-to-face education.
- Students in online education, and in particular underprepared and disadvantaged students, underperform and on average, experience poor outcomes. Gaps in educational attainment across socioeconomic groups are even larger in online than in traditional coursework.
- Online education has failed to improve affordability, frequently costs more, and does not produce a positive return on investment.
- Regular and substantive student-instructor interactivity is a key determinant of quality in online education; it leads to improved student satisfaction, learning, and outcomes.
- Online students desire greater student-instructor interaction and the online education community is also calling for a stronger focus on such interactivity to address a widely recognized shortcoming of current online offerings.

For some students the choice may be between online coursework or no coursework at all. Even if success rates are relatively low in online courses, the availability of these courses may allow students to enroll in more courses, leading to the accumulation of more credits for some students. Even low pass rates might increase graduation rates. But the greatest risk is that the rush to transform higher education will widen the gulf between the college education available to those who arrive at the door with ample resources and strong academic preparation and those who depend on postsecondary education to create a path to productive lives.

Creating access to programs is a step forward, but only if those programs succeed in providing meaningful educational opportunities to students with minimal levels of academic preparation who need to develop their self-discipline, time management, and learning skills—not just have access to a specific body of information. As we seek to improve the quality of online education and reverse its poor record in an effort to ensure that it not only serves more students, but also serves them well, it is critical to promote regular and substantive student-instructor interaction. Otherwise, we risk blurring the line between education and self-learning and further opening the floodgates for unscrupulous online colleges to prey on vulnerable students and exploit out federal student aid programs.

Predictions of a revolution quite clearly exaggerated the near-term prospects for change. But that does not mean we should give up on technology's potential to enhance college learning opportunities. It does mean we should be cautious about proponents of innovation who over-promise and we should create and maintain a regulatory environment that supports the use of technology to supplement and strengthen the intrinsically interactive nature of teaching and learning.

Introduction

Long-standing challenges facing higher education—runaway prices and inadequate student outcomes, coupled with persistent access and achievement gaps—have fueled widespread hope for transformative solutions that will bend the cost curve and increase educational attainment, especially for students with very limited financial resources and inadequate academic preparation. Predictions that innovations that will revolutionize higher education and increase educational attainment across demographic groups are just around the corner frequently rely on technology as a silver bullet.

The recent rise and fall of the dream that Massive Open Online Courses (MOOCs) would transform higher education has not weakened the hype and hope, born in the 1990s, that online learning will both lower the cost of providing education and ensure access to meaningful postsecondary credentials for broad segments of the population who are not well served by more traditional college and university programs.

The hopes are rooted in reasonable logic. Online education offers students flexibility and personalized learning opportunities. Proponents have long argued that it holds the promise to transform the higher education landscape by expanding access, improving instruction, and decreasing costs for under-served populations. Students who are not geographically mobile and who have work and family obligations that make it difficult for them to manage traditional class schedules can do online coursework on their own schedules. The lack of a physical campus or classroom facilities and the potential for larger class sizes without real-time professors could lower costs and reduce prices for students. If it can make college accessible to students with limited options and busy schedules, customize the learning experience, and reduce costs for both students and institutions, online education has enormous potential to positively "disrupt" the higher education landscape and boost student outcomes.

However, more than a decade after Congress allowed online colleges full access to federal student aid programs, and despite a subsequent explosion in their enrollment, a growing and powerful body of evidence suggests that online learning is far from the hoped-for silver bullet. Not only has online education failed to reduce costs and improve outcomes for students, its return on investment for both students and taxpayers has also failed to materialize. Online students are frequently being charged more, not less, than students in traditional programs. Employers continue to perceive online degrees less favorably than traditional degrees. Academic leaders and faculty remain skeptical about the quality of online learning and its pedagogical value.

High quality courses are expensive to produce and maintain. Students without strong academic backgrounds are less likely to persist in fully online courses than in courses that involve personal contact with faculty and other students and when they do persist, they have weaker outcomes. The students most likely to enroll in online courses—and those the postsecondary system is most challenged to serve well— suffer most from this learning format. In other words,

Lack of sufficient interaction between students and faculty is likely online education's Achilles' heel

moving vulnerable students online may be more likely to widen attainment gaps than to solve the seemingly intractable problem of unequal educational opportunity.

Researchers have conducted many studies in an attempt to evaluate the success of online courses. Unfortunately, the research is far from conclusive. While some studies suggest that overall, learning outcomes are similar to those in traditional classroom courses, a number of rigorous experimental studies have found lower completion rates for online courses and, of particular concern, even larger gaps in outcomes between at-risk students and those with strong academic preparation than those emerging in classroom courses.

In searching for factors that may explain such disappointing outcomes, a key theme emerging from the literature is the critical importance of student-faculty interaction in online settings. Researchers, as well as both proponents and skeptics of online education, emphasize the need to design online courses that facilitate robust interactions as an essential component for improving the quality of learning and student outcomes. A significant volume of research and recent surveys of students, faculty and employers demonstrate that lack of sufficient interaction between students and faculty is likely online education's Achilles' heel.

The combination of the temptation of developing programs that attract large numbers of at-risk students who have federal financial aid with the mounting evidence that fully online programs have not been productive routes for these students makes structuring a reliable regulatory environment critical. The 2006 lifting of the requirement that schools had to deliver at least half of their programs, or enroll at least half of their students, in physical classes in order to participate in federal student aid programs led to the proliferation of online-only institutions, particularly in the for-profit sector.

As the U.S. Department of Education prepares to revisit and revise the current regulatory environment and Congress prepares to reauthorize the Higher Education Act, it is important to examine the evidence on online education and understand how legislative and/or regulatory changes could have a major impact on educational opportunities and outcomes for students.

In this paper, we assess the evidence about whether online education lives up to the hype. After we examine the growth of online learning, especially in the for-profit sector, we provide an overview of the literature analyzing the strengths and weaknesses of online learning programs,

with a focus on disadvantaged students' outcomes, and discuss the policy implications of the available evidence for safeguarding students and taxpayers and promoting quality educational opportunities.

Online Education's Explosive Enrollment Growth and Concentration in the For-Profit Sector

Enrollment in online education has exploded in recent years, consistently outpacing overall enrollment growth. Although the National Center for Education Statistics (NCES) did not begin collecting annual data until 2012, the NCES National Postsecondary Student Aid Study allows us to estimate the historical trend:

- Between 2000 and 2012, the share of undergraduates enrolled in online courses grew fourfold from 8 to 32 percent, while enrollment in fully online programs tripled from 2 to 6 percent.
- Between 2004 and 2012, the share of graduate students enrolled in online courses more than doubled, from 17 to 36 percent, while enrollment in fully online programs tripled from 6 percent to 18 percent.

This trend is further confirmed by the annual online enrollment data reported by the Babson Survey Research Group, which began collecting data in 2002. Specifically, from 2002 to 2012:

- Online enrollment (the number of students taking at least one online course) more than quadrupled (increased by 345 percent), from 1.6 to 7.1 million students, while overall higher education enrollment grew by 28 percent.
- The annual online enrollment growth rate ranged from 6 percent to 37 percent, outpacing overall enrollment growth every year.

By 2012, one third of all students took at least one course online, compared to less than 10 percent a decade earlier.

This growth trend has persisted in recent years, according to the NCES data. Between 2012 and 2016, online enrollment expanded by 16 percent, while total enrollment declined by 4 percent.3 Every year during this period online enrollment increased, while total enrollment decreased. Today, almost 1 in 3 college students (6.3 million or 32 percent) take courses online, with no in-person component. Half of these students (3 million or 47 percent of those taking any online courses) are enrolled in exclusively online programs (fully online), while the remaining take at least one, but not all of their courses, online (partly online). Online students represent a considerably higher share of enrollment in the for-profit sector:

- For-profit colleges enroll just 6 percent of all students, but 13 percent of students taking courses online and 24 percent of fully online students.

- At four-year for-profit colleges, more than 80 percent are taking courses online, which is more than two-and-a-half times the rate at public (29 percent) and triple the rate at private nonprofit (27 percent) four-year colleges.
- At four-year for-profit colleges, 70 percent are fully online students, which is more than seven times the rate at public (10 percent) and three-and-a-half times the rate at nonprofit (18 percent) four-year colleges.

Comparing the distribution of face-to-face and online students across sectors shows clearly the concentration of fully online students in the for-profit sector:

- Among 13.5 million face-to-face students, 75 percent attend public colleges, more than 22 percent attend nonprofits, and less than three percent attend for-profits.
- Among the 3.3 million partly online students, 85 percent attend public colleges, 15 percent attend nonprofits, and less than four percent attend for-profits.
- Among 3 million fully online students, 52 percent attend public colleges, 25 percent attend nonprofits, and 24 percent attend for-profits.
- Among online students the share of fully online students is 35 percent at public colleges, 66 percent at nonprofits and 85 percent at for-profits.
- In 2012, one in three undergraduate students at for-profit four-year colleges were enrolled fully online, a rate six times higher than for students at any other type of institution.6 By 2016, almost 60 percent of all students in the for-profit sector were enrolled exclusively online, compared with 11 percent in the public sector and 18 percent in the nonprofit sector.

Not only are fully online students disproportionately in the for-profit sector, a closer look at enrollment data indicates that a small number of large providers enroll the lion's share. (Similarly, in the nonprofit sector, three institutions—Western Governors University, Liberty University and Southern New Hampshire University—enroll about a third of the fully-online students, but overall a far smaller share of students in this sector are in such programs.):

- Ten for-profit colleges enroll over 58 percent of the for-profit sector's online students, 40 percent of the sector's students overall, and eight percent of all online students.
- 15 for-profit colleges9 enroll more than 75 percent of the sector's fully online students, 43 percent of the sector's students overall, and 18 percent of all fully online students.

Others have also described this online concentration in both the for-profit sector and among a handful of colleges within the sector. A major 2012 Senate investigation of the for-profit college industry, which included an in-depth look at 30 of the

largest companies, described the rapid expansion of online enrollment and found that the sector engaged in aggressive recruitment and marketing and produced poor student outcomes, including higher dropout rates. In particular, when comparing the outcomes of on campus and online students at the same institution, in addition to paying higher prices, the latter experienced a 39 percent higher dropout rate (64 vs. 46 percent). That same year, a paper by Deming et al. (2012) concluded that from 2000 to 2009 online for-profit colleges "increased from almost nothing to become the largest part of the sector." 12 More recently, Deming et al. (2016) found that "the 23 largest for-profit institutions, owned by publicly traded companies and offering postsecondary degrees entirely online, enrolled more than 1.1 million students in 2012 and accounted for nearly 20 percent of the growth of US bachelor's degrees (BAs) from 2002 to 2012."

In 2013 more than half of all students enrolled in institutions that are part of a for-profit chain were studying fully online, compared with about 1 percent of those attending selective public and private nonprofit four-year institutions. Non-selective public and private nonprofit colleges and universities and independent for-profits fell between these extremes. Moreover, at-risk students are disproportionately taking advantage of online coursework. Online students are more likely to be older, employed, female, independent, with children, and enrolled part-time, which are student characteristics most prevalent in the for-profit sector.

In 2015-16, when 11 percent of undergraduates were studying entirely online, 15 percent of black students were in fully online programs. Only 1 percent of students with no risk factors for failing to complete a degree and 3 percent of those with one risk factor were enrolled fully online. A quarter of students with four or more risk factors were in these programs. In addition, the share of fully online students is negatively correlated with high school GPA. For example, 14 percent of students with high school GPA between 1.0 and 1.4 were enrolled fully online in 2015-16, compared with 4 percent of those with GPA of 3.5 or higher.

Online student characteristics, which are associated with an increased dropout risk and lower completion rates, combined with the trends discussed above and the for-profit sector's poor record in affordability and student outcomes, represent a significant challenge in ensuring quality educational opportunities for disadvantaged students pursuing online degrees.

Perceptions of Online Education's Quality and Value

Despite the dramatic growth of online education, there is significant skepticism about the value of online education among faculty, academic leaders, employers, and the public.

Often cited by proponents as "a major barrier" to the adoption of online education, faculty have been and remain apprehensive about its promise and potential.19 In ten national surveys of chief academic officers by the Babson Survey Research Group during the 2002-2015 period, no more than about a third ever reported that faculty accept the value and legitimacy of online education, ranging from a low of 28 percent in 2002, 2005 and 2014, to a high of 34 percent

in 2007. Most tellingly, in 2015, which is the latest year of available data, just 29 percent reported faculty acceptance, just one percent higher than in 2002, indicating no change in perception over a 13-year period. As the survey report concluded, "a continuing failure of online education has been the inability to convince its most important audience— higher education faculty members—of its worth."

In a separate 2012 survey of a nationally representative sample of more than 4,500 faculty, 2 out of 3 (66 percent) reported that online learning outcomes are "inferior or somewhat inferior" to face-to-face courses, compared with just six percent who said they were "superior or somewhat superior".

Also, 6 out of 10 faculty (58 percent) reported "more fear than excitement" about online learning, and fewer than half (47 percent) agreed that "online education can be as effective in helping students learn as in-person instruction."

Such skepticism is not confined to faculty. When asked to rate the relative quality of the learning outcomes for online courses, the share of academic leaders reporting that online courses were "inferior" or "somewhat inferior" to face-to-face courses declined from 43 percent to 23 percent between 2003 and 2012, but increased to 29 percent by 2015, indicating persistent doubt. Moreover, the share of those who believed online education is "inferior" (as opposed to "somewhat inferior") almost doubled in recent years, from five percent in 2012 to nine percent in 2015. In sharp contrast, three-and-a-half times as many respondents believed that blended/hybrid courses hold promise as saw promise in purely online courses (42 vs. 12 percent) in 2015.

This uncertainty about the value and legitimacy of online education may also be fueled by growing concerns about the difficulties with student retention. During the 2004-2014 decade of online enrollment expansion, the share of chief academic officers who reported that student retention was a greater problem in online than in face-to-face courses increased from 27 to 45 percent.

Outside academia, the general public also remains skeptical about online education. A 2013 Gallup poll found that "Americans' overall assessment of Internet-based college programs is tepid at best." While they recognize the broader range of options and value offered compared with a traditional face-to-face education, most reported that it provides lower quality instruction and less rigorous grading and testing, and is less credible to employers. Moreover, "despite lots of media and industry buzz about the personalized nature of online instruction, Americans still view traditional, classroom-based education as better tailored to each individual."

Potentially contributing to negative perceptions of online education are recent government investigations and lawsuits that have raised concerns about the quality of such programs. A 2011 GAO undercover investigation of 15 online for-profit colleges documented significant issues with academic quality, including three out of four colleges admitting students with fake high-school diplomas and half of the colleges who enrolled such students failing to take action for substandard

student performance, including failure to attend class, failure to submit assignments, submission of objectively incorrect assignments, submission of unresponsive assignments, and plagiarism.26 For example, two colleges knew assignments were plagiarized but took no action, another college gave a passing grade to a student who submitted photos of celebrities and political figures in lieu of essay question responses, and another college awarded points for incomplete assignments.

More recently, following a 2016 lawsuit against George Washington University by a group of former online students who argued that they had paid a higher price but received a lower quality education than their on-campus peers,27 and specifically cited a lack of instruction by and limited interaction with faculty, a Faculty Senate task force investigation of the university's online education programs revealed "lack of oversight, unclear course requirements and large student-faculty ratios."

Arguably though, the most important perception is that held on the demand side of the labor market. Employers are the ultimate arbiters of the value of online education since they are best positioned to compare the skills, knowledge, and overall employability of online graduates. Several studies prior to 2010 examined employer perceptions of online degrees and reached the same conclusion: employers view candidates' online degrees as inferior to or less desirable than degrees obtained through traditional, face to-face instruction.30 A 2012 comprehensive literature review of representative studies published between 2005 and 2010 in scholarly, peer-reviewed journals that covered a wide range of disciplines that are overrepresented in online education and the for-profit sector and corresponding job markets (including health and business) 31 concluded that "there is a much greater likelihood that a candidate with an online degree would be viewed less favorably for employment purposes compared to the candidate with the face-to-face degree." The primary concern cited by employers about online learning was the lack of interaction, and in particular face-to-face communication between students and faculty.

Similarly, a 2010 survey of 449 randomly selected human resource professionals by the Society for Human Resource Management (SHRM) found that half viewed candidates with online degrees less favorably than those with traditional degrees and that online degrees were far less acceptable for higher positions in an organization.

Given the online enrollment trends, one would expect that more recent evidence would find a shift to more favorable employer perceptions; however, that is not the case. A major Chronicle of Higher Education survey in 2012 found that employers had negative associations with online colleges and this was the only type of college found to be undesirable, including for-profit colleges.

A 2013 survey concluded that "employers perceived a traditional or hybrid modality more credible than a purely online modality across multiple industries" and confirmed previous studies documenting the hesitancy among employers to hire candidates with online degrees." Another 2013 survey

of 116 health care recruiters from across the nation found that job applicants with traditional degrees were clearly most favored while those with online degrees from for-profit institutions were perceived the least favorably.

The study concluded that "the return on education for students earning college degrees online or from for profit colleges may be inhibited by employer perceptions regarding the quality of credentials earned in these environments." The same year, a survey of 656 human resources professionals found that 42 percent believe students learn less in online-only programs and 39 percent believe online-only degrees are easier to complete than more traditional ones. Unsurprisingly, 56 percent prefer applicants with traditional degrees from an average university over those with an online degree from a top university, while 82 percent believe that a hybrid education model provides the best education.

A 2014 study of hiring managers and employers found that there is still a strong preference among employers for traditional degree holding candidates, with 40 percent of respondents agreeing that an online degree was of lessor quality than a traditional degree. The same year, 38 percent of academic leaders reported that "lack of acceptance by potential employers was a "very important" or "important" barrier for the adoption of online education.

A 2016 study of employer perceptions of online accounting degrees also found that employers are significantly more willing to offer employment to an entry-level job applicant whose baccalaureate degree was obtained in a traditional (on campus) or hybrid (blended learning) environment rather than an online environment."40 Employers appear more accepting of online degrees for lower-level than for upper-level positions, consistent with findings in the 2010 SHRM survey.

In the field of education, two recent national surveys of high school principals found that applicants who had taken coursework in a traditional/residential setting were overwhelmingly preferred over applicants holding a degree earned partly or wholly online. Lack of personal interaction was the primary concern, as "online courses were perceived as not presenting sufficient opportunity for students to develop important social skills through interaction with other students and mentors."

Finally, a 2016 experimental study of the value of online degrees in the labor market found that a business bachelor's degree recipient from a for-profit online institution is 22 percent less likely to receive a callback than one from a non-selective public institution.

Regardless of the actual quality of the learning in fully online programs, students who earn these degrees will have limited labor market opportunities as long as these strong views persist among employers.

Online Student Outcomes

Several studies have attempted to aggregate the findings of a wide range of earlier studies on the effectiveness of online learning. These meta-analyses pre-date much of the more recent rigorous experimental work in the field. More than one summative investigation has judged that the research does not yield conclusive evidence of a systematic difference in learning outcomes between online and classroom courses, but that the variation in findings across the body of existing work is so great as to make it impossible to generalize. When hybrid models that blend face-to-face interaction with technology are classified as online course work, results are more likely to favor the online option. The variation in results is due to differences in methodology, the environments studied, and the nature of the courses examined.

Some of the meta-studies include only rigorous peer-reviewed studies. Others explicitly include a wider range of studies, many of which are based on simple comparisons of outcomes across small groups of students. For example, the Tallent-Runnels et al (2016) review of research on online teaching and learning includes primarily descriptive and qualitative studies. The consensus that emerges is that learning outcomes appear to be the same as in traditional courses, but students with prior training in computers are more satisfied than others with online courses. Well-designed experimental design studies may yield insights not emerging from less rigorous methods.

Some studies focus on specific courses in economics or statistics, while others examine courses in a wide range of disciplines. In most cases, it is difficult to know much about the actual pedagogical methods, either in the classroom or online. It is hardly surprising that synchronous online courses with intense faculty involvement and courses consisting entirely of recorded lectures have different outcomes or that students in developmental education courses fare differently from those in master's degree programs.

Measuring course completion rates will not necessarily yield the same conclusion as comparing test scores of course completers. This distinction underlies some of the ambiguity in the research findings on the success of online coursework, with measures of learning tending to yield more positive outcomes than successful course completion rates for online coursework.

Are hybrid classes included in the online category being evaluated? How diverse are the students in the study? These issues are particularly important, since there is broad consensus that classroom outcomes can be strengthened when technology supplements traditional teaching methods and that online learning is more successful when combined with some amount of face-to-face interaction. In other words, it is not always easy to draw a clear line between online and classroom teaching and placing hybrid models on one side or the other for evaluation purposes can significantly alter the results.

Equalizing Opportunity?

A 2017 Boston Globe editorial posited that "Online learning can ease economic inequality." The opinion piece, relying

on insights gleaned from a recent conference, argued that colleges should increase affordable, for-credit online offerings in order to create opportunities for at-risk students. Perhaps this vision will eventually be realized, but for now, this suggestion creates a significant potential threat to efforts to make meaningful progress is narrowing gaps in educational opportunities and outcomes across demographic groups.

Much of the research finding comparable outcomes for online and classroom courses, as well as the studies synthesizing that research, is more than a decade old. Despite the ambiguous findings from the large body of research comparing general learning outcomes for online and classroom courses, more recent studies using rigorous experimental techniques and focusing on the role of student characteristics have found that fully online courses have a significant negative impact on outcomes for at-risk students. In some environments, grades and other outcomes measures may be similar overall for purely online and classroom courses, but online courses appear to have significant disadvantages for less-prepared students and for those from under-represented groups. A number of studies at community colleges have found that students who take on-line classes do less well in subsequent courses and are more likely than others not only to fail to complete these courses, but to drop out of school.

Online courses, particularly those where students can do the work on their own schedules, may require more self-discipline and time management skills than traditional classroom courses. Interesting evidence on this issue emerged when two economists announced, but did not enforce, a deadline for registering for a MOOC they offered. Students who applied on time had higher grades and completion rates than those who applied late, differences plausibly related to self-discipline.

Purely online courses are also likely to limit opportunities for networking and interacting with instructors and peers, potentially hampering the educational process.48 These realities make it unsurprising that students without strong academic skills and preparation struggle without the classroom structure—even if some students thrive.

Gladieux and Swail (1999) raised concerns about online learning increasing socioeconomic gaps in educational outcomes twenty years ago and multiple studies confirm these findings about outcomes for vulnerable populations. Not surprisingly, students with more extensive exposure to technology, and with strong time management and self-directed learning skills are more likely than others to adapt to online learning.

Recent rigorous studies of community college systems have been discouraging. Smith Jaggars and Xu (2010) analyzed data on nearly 24,000 students in 23 institutions in the Virginia Community College system. They concluded that students had a greater likelihood of failing or withdrawing from online courses than from face-to-face courses and that students who took online coursework in early semesters were somewhat less likely to return to school in following semesters. Students who took a higher proportion of credits online were slightly less likely to attain a credential or transfer to a four-year institution.

Similar conclusions emerged from the Washington State Community College System (Xu & Smith Jaggars, 2011).50 Analyzing data from more than 51,000 students in 34 community and technical colleges, the researchers found that although students with better educational preparation were more likely to enroll in online courses, these students were significantly more likely to fail or withdraw from these courses than students who took traditional face-to-face classes. Students who took more online courses were also slightly less likely to complete a degree or transfer to a four-year college than those who took fewer online courses. All types of students in the study performed worse in online courses, but some groups of students had particular difficulty adjusting to online learning, including males, students with lower prior GPAs, and black students. Performance suffered more in the social sciences and the applied professions such as business and nursing than in other fields, but the performance gaps that existed among these subgroups in face-to-face courses became even more pronounced in online courses in all subject areas.

According to this research from the Community College Research Center, the differences were even greater for developmental courses than for college-level courses. In online developmental English, failure and withdrawal rates were more than twice as high as in face-to-face classes. Students who took developmental courses online were also significantly less likely to enroll in college-level gatekeeper math and English courses. Of students who did enroll in gatekeeper courses, students who had taken developmental education online were far less likely to pass than students who had taken it face-to-face.

Similarly, Kupp (2012) found that in California community colleges, students enrolled in online classes had, in the aggregate, lower completion rates and lower success rates than their peers in face-to-face classes. The authors found that online instruction significantly increased the achievement gap between Latino students, who experienced particularly large differences in success rates, grades, and withdrawal relative to their performance in face-to-face sections of the same classes, and white students. Interviews with Latino students enrolled in online courses provided insight into the importance of relationships to Latino student success. Students identified the absence of a strong student-instructor relationship as the key difference between their face-to-face and online educational experiences.

These findings are not limited to community colleges. A large study of students at a for-profit institution that offered courses with the same syllabus, instructors, requirements, and assessments found consistently worse outcomes for students taking the courses online. They earned lower grades in the courses and had lower grades the following term, particularly in the same subject area or courses for which the course in question was a prerequisite. Students were about nine percentage points less likely to remain enrolled the semester after taking an online course than after taking a similar course in a

classroom. Of particular note, the online classes reduced grades by more for students with below-average GPAs prior to the course.

In a study based on the random assignment of students in a large introductory microeconomics course at a major research university to either live lectures or watching these same lectures in an internet setting, Figlio et al (2010) found no significant difference for students with high GPAs coming into the course. But those with low GPAs had more difficulty adapting to the online context and their performance suffered. Instruction, supplemental materials, and other course elements were the same for both groups. The results were particularly strong for Hispanic students, male students, and lower-achieving students, confirming other research finding at-risk students particularly likely to suffer from fully online courses.

Evidence about gender differences is mixed, despite the fact that overall, women have higher success rates in higher education then men. Several studies have found no differences between males and females in terms of their learning outcomes in online courses, but others have found that women perform significantly better than men.

Johnson and Mejia (2014) found that students at California community colleges were less likely to complete online courses and when they completed them, less likely to pass them. This result was consistent across all groups of students, many fields of study, and most colleges in the system and persisted over the 10-year period for which data were available. Controlling for student characteristics, including prior academic achievement levels, increased the gap in success rates between the two types of courses. Online course success rates were between 11 and 14 percentage points lower than success rates in classroom courses. Of particular note, gaps across racial/ethnic groups were larger in online courses. The authors found that younger students, African Americans, Latinos, males, students with lower levels of academic skill, and part-time students were all likely to perform markedly worse in online courses than in classroom courses. The success gaps were smaller for students who already had a college degree, those who were following paths to transfer to a four-year institution, and students with GPAs above 3.0.

However, Johnson and Mejia (2014) suggest that, contrary to the findings from the Community College Research Center, the impact of the online format on long-term outcomes may differ from the impact on success in individual courses. A study by Shea and Bidjerano (2014) supports this idea. Using data from the Beginning Postsecondary Student Survey, a nationally representative sample of students who began college in 2003-04, the authors found that in the nation as a whole, controlling for relevant background characteristics, students who enrolled in some online courses during their first year at a community college were more likely than similar students who did not take any of these courses to complete a credential by 2009. Online courses can provide needed flexibility, particularly to students struggling to combine school with family and work responsibilities. Even if success rates are relatively low in online courses, the

availability of these courses may allow students to enroll in more courses each term, leading to the accumulation of more credits. Even low pass rates might increase graduation rates.

Online technology and pedagogy have developed considerably since many of the studies of this mode of delivering college courses were conducted. There is every reason to be optimistic that outcomes could improve over time as faculty and institutions have more experience. An interesting recent study examines the experiences of students at small private nonprofit colleges, which developed online courses in advanced humanities fields. The courses served students on multiple campuses and faculty found that, in an environment where personal interaction is central to the academic experience, incorporating students from other colleges was challenging. The difficulty of developing personal relationships with students was the main reservation instructors had. However, attrition rates were low and all measured outcomes improved as instructors gained experience when the courses were offered a second time.

The Critical Role of Student-Instructor Interaction

Since the early days of online education, interaction has been identified as the key element for quality. Almost 30 years ago, in defining distance education, University of Calgary professors Randy Garrison and Doug Shale argued that interaction is "education at its most fundamental form"61 and that student instructor interaction in particular was "regarded as essential by many educators and highly desirable by many learners." They emphasized the importance of student-teacher communication as essential to active learning. Even when online education was in its infancy, researchers had identified two-way and interactive communication as a key feature of distance education, and considered interpersonal communication and feedback as well as interaction among the seven critical competencies for online instructors.

This important realization about the centrality of interaction was also shared by the online education industry. In 2006, the U.S. Distance Learning Association stated that "distance education refers specifically to learning activities within a K–12, higher education, or professional continuing education environment where interaction is an integral component" [emphasis added]. A review of the relevant evidence certainly confirms that interaction is essential for ensuring quality and student success in online education.

Two major theories have been advanced to understand the effectiveness of online learning and both place a premium on instructor interaction and presence. Transactional Distance posits that interaction is critical as it minimizes the pedagogical distance between students and instructors, while Community of Inquiry argues that teaching presence helps to provide structure and direction in the online environment, including "design and organization, facilitating discourse and direct instruction." Both online and face to-face classroom instructors fulfill three basic roles: (a) educational experience designer, (b) facilitator to guide learning, and (c) subject matter expert.

In essence, the literature argues that learning is an active, dynamic process, and that social isolation is a risk factor associated with higher dropout rates. Instructor presence is integral for achieving interpersonal interaction and activities that emulate those of a "real person." Personal interaction increases student satisfaction, and by extension, motivation to learn and succeed.

Interpersonal interaction is a key feature of contemporary online learning and research over the past 20 years has consistently shown that strong student-instructor interaction increases student achievement. The following section summarizes a number of peer-reviewed studies related to this issue, all of which confirm the importance of personal interaction in strengthening the student experience.

A 1999 survey of 1,406 State University of New York online students found that student–teacher interaction was strongly related to student satisfaction and perceived learning. Students with low levels of interaction had the lowest levels of satisfaction and learning and vice versa. The study concluded that "the results clearly indicate that instructors' activity is an important factor in the success of online learning" and point "to the critical importance of active, authentic, and valued discussion to students' perceptions of satisfaction and learning in online courses." According to the study, frequent and constructive student-instructor interaction, along with clear course structure and vibrant discussion, is consistently associated with the success of online courses.

Another survey of 390 online MBA students between 1999 and 2001 at the University of Wisconsin Oshkosh found that instructor efforts to interact personally with students were positive predictors of student learning and course satisfaction. An extensive review of online learning literature in 2002 similarly concluded that quality online learning largely depends on plentiful student interaction with instructors, as well as with other students, and content. The following year, another literature review reached a similar conclusion about the central role of interaction to online learning and recommended its expansion in order to become as effective as face-to-face interaction.

A 2003 survey of more than 200 online students at a private university also found that, consistent with accepted theories, student-instructor interaction was a significant contributor to student learning and satisfaction, and that students valued additional interaction with instructors and peers. The next year, another published survey of 199 online students, which investigated their views of online instruction, found that they wanted instructors who established trusting relationships and were actively engaged with students and their learning.

A 2005 case study of an online MBA program offered by a top business school, which included interviews and focus groups with faculty and students as well as a survey of more than 100 students, found that both instructors and students viewed such interaction as a key factor in high quality online programs and an effective tool for learning. A 2006 survey of 131 undergraduate online students at Indiana State University concluded that interacting with instructors was

most beneficial. Yet another survey of 186 online students from 38 courses on six campuses in the Midwest found that instructor student communication was strongly correlated with student engagement and urged instructors to provide multiple and meaningful paths for such interactions in order to create presence, which is an integral component of a successful online course."

In examining what specific instructor actions are most important in online student-instructor interactions, a survey of 32 online instructors and 170 students from their classes at a large public university and a private online university found that, among 19 actions identified by research, all but two were considered important or very important by more than 60 percent of the instructors, while all 16 actions were rated as highly by the students. The previously cited 2006 Tallent-Runnels comprehensive review of 76 studies in online education also concluded that student-faculty interaction must be both regular and substantive and reflect a clear understanding of the content, in order to truly promote learning. The review concluded that faculty should promote interaction with students to help them construct knowledge, participate in discussions, and provide scaffolding.

Another meta-analysis of 74 studies on the role of interaction in distance education in 2009 found that the literature unequivocally supports the integral role and importance of interaction and concluded that stronger interaction and the greater engagement it promotes is associated with improved achievement and stronger outcomes.

More recent peer-reviewed studies further confirm the significance of student-instructor interaction as a key component of quality that leads to higher student satisfaction and achievement. A 2011 study of 23 online courses at two community colleges found that such regular and effective interaction encourages online students to commit more and perform better academically. This is unsurprising, according to Jaggars and Xu, given that "nearly every published online quality framework has emphasized the importance of interpersonal communication and collaboration." Specifically, in high-interaction courses, instructors posted more frequently, sought student questions and feedback through various modes, responded to students faster, and incorporated student feedback. Overall, interpersonal interaction was the only design element that predicted student grades (unlike organization, objectives, and technology) and students valued and were concerned more about their interactions with instructors than with their peers.

A 2013 survey of 223 graduate and undergraduate students found that student-instructor interaction was a significant predictor of student satisfaction, and also confirmed previous research about its centrality in the online course experience and its potentially strong impact on student outcomes and satisfaction. Another survey of online students during 2013-14 found that students perceive student-instructor interaction and teaching presence as the most important factors for learning. Specifically, 82 percent rated such interaction to be most/somewhat essential and 88 percent rated teaching presence to be more/somewhat essential

to their learning. A 2013 case study that examined the performance of two instructors across six fully online courses also confirmed the instructor's impact on student satisfaction, as well as on teaching and social presence, and by extension, learning quality.

A 2014 survey of 60 graduate online students found that online students believed they learned more in courses with high student-instructor connections, confirming once again that students learn better when both students and instructors actively participate. Students wanted a high degree of interactivity and communication, including feedback and mentoring, and deeper relationships with instructors. The authors warned that limited student-instructor online interaction leads to a disconnection and contributes to a poor learning experience.

In exploring the factors contributing to the low student retention rates in a fully online environment, driven in part by learner demotivation, researchers have suggested that live student-instructor interactions can have a positive effect in creating a better learning environment and recommend designing courses that foster more student-instructor and peer social interaction. Similarly, an earlier study also found that the absence of a live component was very detrimental to online learning.

Finally, student-instructor rapport also seems to be a key factor for student success. A survey of about 140 online undergraduate and graduate students at a medium-sized state university replicated the positive correlation between student-instructor rapport and positive student outcome measures that has been found in traditional settings, pointing to the need for a greater focus on student-instructor interaction behaviors that build rapport, an important component of teaching.

Beyond peer-reviewed research studies, the online education community has also emphasized recently the importance of student-instructor interaction for ensuring quality. Since 2012, Learning House, a major online education services provider, and Aslanian Market Research have conducted an annual national survey of 1,500 prospective and actual online students to measure their perceptions, attitudes and behaviors on a wide range of topics and issues. In its inaugural report, the authors argued that increased interaction is a key competitive advantage of online education as a delivery method:

> *Online learning not only allows institutions to serve more students at a lower expense, but it also improves teaching methodologies, enhances the learning experience, and increases interaction among students and instructors, sometimes even beyond the interaction possible in a traditional classroom.*

The same year, Learning House published a "Best Practices in Online Faculty Development" white paper, which focuses heavily on the integral role of interaction and lists leadership of the discussion forum, response to student assignments,

and other classroom interactions as being among the core online faculty responsibilities, in their effort to engage and motivate online students. The paper describes best practices in student-instructor online interactions:

> *For example, most of the faculty-student interaction occurs in a discussion forum where the faculty member responds to individual student posts. He or she provides feedback, refers the student to other posts and readings, probes for additional insights, draws parallels and helps students connect concepts. Faculty members react and respond to student comments rather than give a lecture or demonstration. The skill of presenting a compelling lecture doesn't apply to the online classroom; there, it is replaced with the skill of stimulating student thinking and learning through multiple, short comments.*

Moreover, the white paper argues that, regardless of the delivery method, "the faculty member is still the key ingredient for an effective class and meaningful student experience," and urges institutions to require robust interaction with students as a key pedagogical strategy:

> *Institutions should set the most important expectation for faculty members--the tone and type of interaction with students. Faculty member–student interaction occurs in three basic ways: discussion forum participation, feedback on assignments, and e-mail exchanges. Generally, the tone of the interaction should be supportive and encouraging so students feel motivated to apply themselves. The type of interaction should be both penetrating and expansive. Students often need to think more deeply, consider alternative points of view, and gather more knowledge on a topic. Faculty members' comments and questions in grading and discussion forums can stimulate these practices in students.*

Not only is student-faculty interaction a critical component of a quality online education, but the paper argues that such interaction must be both frequent and substantive:

> *Occasionally, people argue that quality is more important than quantity and so it is inappropriate for academic leaders to set minimum expectations for faculty participation in the classroom. They make the point that high-quality feedback once or twice a week is better than minimal feedback four or five times a week. However, this issue should not be a question of frequency or quality. The participation should be both frequent and high quality for the optimal student experience. Both are important for a good learning experience.*

Similarly, a 2012 discussion paper by the Heritage Foundation promoting online education also describes the important role of student-instructor interactions in all delivery modes: "It would appear, then, that student interactions with

professors can be meaningful either in person or online. The medium does not determine the outcome; rather, the quality of interaction depends on how the medium is used." The argument is that interactions with online instructors and classmates, together with ongoing personal relationships in the student's community should be a substitute for an on-campus social life."

More recently, commenting on research that highlights the importance of quality interpersonal interaction, the Online Learning Consortium (formerly the Sloan Consortium), which is "dedicated to integrating online education into the mainstream of higher education," agrees that instructor feedback promotes student engagement and concludes that interaction is a critical area that online education needs to work hard to provide: "Computers can distribute information and technology can make it snazzy, but the crucial element of interpersonal relationships may be harder to perfect without face-to-face contact."

This conclusion is largely supported by an analysis of the seven reports published to date on the annual "Online College Students" surveys, which confirms that students strongly value opportunities for interaction with instructors and lack of such interaction is online education's major shortcoming, despite the above suggested best practices and aspirations.

In 2012, online students cited lack of direct contact and interaction with instructors and students (37 percent) and inconsistent or poor contact and communication with instructors (24 percent) as the top two greatest disadvantages of online education, which, as the report concludes, supports the high level of importance students give to having easy and open access to their instructors. The authors then recommend that online education providers set expectations for the quantity and quality of faculty interaction with students and provide appropriate faculty support and guidance. The surveys have also found that, when selecting a program, offering "real-time" class sessions that facilitate synchronous student-instructor interactions is an important programmatic feature that students look for when selecting an online program.

In 2015, almost one-third of students surveyed (29 percent) preferred the instructor-led model of instruction, "where an instructor takes students through their learning activities," while more than a third (36 percent) would like to meet (virtually) regularly with a faculty member from their field of study to discuss courses and schedule. The authors observe that online students would like more interaction with faculty members. They argue that setting expectations for faculty interaction and using faculty members as advisors would improve student satisfaction and probably retention. In 2016, the survey found that for students, the opportunity to meet with classmates and instructors on campus was an attractive programmatic feature of online programs.

The key finding of the 2017 survey was that students want to be part of a community, with 57 percent of students citing the importance of being able to regularly engage with classmates and instructors during online classes, 27 percent desiring more contact with the instructor, and 22 percent

asking for more facilitated engagement among students in the class. In addition, more than three out of four students (76 percent) find optional virtual office hours held by instructors attractive. Once again, the authors recommend a renewed focus on increased interactivity in online settings: "Set expectations and provide training for faculty members who teach online courses to encourage and lead class discussions, as well as engage with students outside of class time, whether via office hours, email, or other means."

In summary, the surveys find that prospective and actual online students clearly demand a more interactive educational experience, which includes regular and direct contact and communication with instructors, easy access to instructors, real-time class sessions, and other synchronous interactions such as virtual office hours and meetings, instructor-led learning, and a sense of community through engagement with peers and instructors. In other words, for online education to reach its potential, a renewed focus on and commitment to regular and substantive student-interactions is essential for student satisfaction, achievement, and success. It is reasonable to believe that many of the problems with online learning— particularly for at-risk students—would be mitigated if these courses and programs consistently incorporated the personal interaction that is central to the learning process.

Return on Investment

Public policy should be based on reliable information about the value of investing in different types of postsecondary education both for individual students and for society as a whole. Much of the motivation for making education available to a wide range of students is that it opens doors to more rewarding lives and to higher earnings for individuals and also increases the productivity of the nation's labor force.

All other things equal, producing education using fewer resources will increase the rate of return to the investment. But if the quality of the education suffers, this will not necessarily be the case. Even if we can produce online education more cheaply than classroom education, if the savings are not passed onto the students and if there are higher failure rates, less learning, and weaker labor market outcomes, it could mean a long-run loss.

It is never easy to measure the value of education produced, but interesting insights come from a study by Caroline Hoxby (2018) based on integrated data from the Internal Revenue Service and the Department of Education. Hoxby examined earnings outcomes for all students who engaged in postsecondary education that was wholly or substantially online between 1999 and 2014.

Like other forms of postsecondary education, fully online learning does appear to increase the rate of growth of income, but not enough to make up for the cost of the education or even, in most cases, the cost to the individual student. The 10-year returns to fully online enrollment do not cover the

direct costs to society. The same is true for students enrolled substantially, but not entirely, online. In particular, students who persist for short periods of time see very low returns—making the evidence of reduced persistence rates for fully online students even more of a problem.

Hoxby concludes that the vast majority of online postsecondary enrollment generates earnings benefits that never cover social costs and probably do not even cover students' private costs. Moreover, her data do not support the idea that online education shifts people into higher productivity industries such as more technical fields.

Some of these results may be related to the concentration of online study in for-profit institutions. In 2015-16, when 8 percent of undergraduates at degree-granting institutions were enrolled in the for-profit sector, 30 percent of those studying exclusively online were enrolled in this sector. This enrollment pattern might raise questions about how overall performance in online learning relates to institutional type. However, most of the studies showing poor academic outcomes, particularly for vulnerable students, compare students experiencing different modes of learning within individual institutions. As noted, the concerning findings are consistent across sectors.

Reducing Costs

Theoretically, teaching more students with fewer instructors can make a big dent in the cost of providing higher education. Rather than paying three professors on campus to lecture in halls seating 100 students, a university can pay one professor to give one lecture reaching an infinite number of students at the same time. Beyond the lecture approach, students can access pre-packaged on-line courses with exercises that allow them to progress at their own pace, relieving faculty members of repeated interactions with individuals and small groups. Also theoretically, those savings can then be passed on to students in the form of reduced tuition.

The Hoxby study cited above found that exclusively online schools spend less than others on instruction, but do not have significantly lower overall costs, possibly because of the expense of curriculum development, administrative services, legal and fiscal operations, and other activities. It also found that online colleges charged students more than classroom-based colleges with similar offerings.

Hoxby's findings raise two important questions: whether online courses are really likely to reduce the resources required to produce education and whether any savings will lead to more affordable education, one of the main goals of proponents of the expansion of online education. The focus is usually on reduced labor and facilities costs. But it is possible that additional non-instructional staffing time required will at least partially compensate for savings in this area—not to speak of the technology costs for both institutions and students. Moreover, the importance of integrating personal interaction into online courses may limit the feasible reduction in instructional costs.

Another issue is that the vision of low marginal costs for online courses usually assumes that courses can be developed

once and ongoing costs will be low. There are, however, several reasons to question this vision. Bringing new faculty into the process will continue to be time-consuming and resource demanding and many faculty face steeper learning curves than for classroom instruction. In a survey of faculty asking how much time it took to plan and develop online courses relative to a comparable face-to-face course, 100 percent of respondents answered about the same time or greater, including 80 percent who answered more time or much more time.

Online courses cannot just be created and left alone any more than lecture notes can. In most fields, new developments and new insights arise frequently. Moreover, as technology evolves, the forms of online learning will change. One advantage of technology is the possibility of collecting data about what works best for students and using those data will inevitably lead to course revisions. All of this requires both faculty time and support from others, including assessment experts, course designers, and technical experts. Western Governors University spends between 25 and 35 cents in each of the subsequent three years for every dollar invested to launch an online course. After reviewing the relevant evidence, McPherson and Bacow (2015) concluded that high-quality online courses are expensive to deliver—at least as expensive, if not more, to develop and staff than traditional face-to-face courses. In contrast, a recent case study report estimated cost savings between 3 and 50 percent of average credit hour costs in four of the six institutions examined in depth.

Marketing is arguably a major cost driver and tuition inflator for online education, which may a go a long way in shedding light on the cost question. According to John Katzman, founder and CEO of major education companies (The Princeton Review, 2U, and Noodle): "Tech, spread out, becomes less expensive. But recruiting the 300th student is more expensive than the 299th and every added student is more expensive. And the two work against one another."

A critical issue is how online education has affected costs to students. A 2017 survey of about 200 online education colleges by WICHE Cooperative for Educational Technologies found that more than half (54 percent) charged their online students more in tuition and fees than on-campus students and that nine out of 21 cost components were higher for online education, while the rest were the same, thus challenging the "mythology, unrealistic expectations, and unfulfilled promise regarding the economics of distance education courses." These findings were consistent with earlier surveys.

A 2016 report by major investment advisor firm BMO reached a similar conclusion: "While conventional wisdom holds that an online degree may cost less than one obtained at a bricks and mortar school, that may not necessarily be the case…the average per credit, in-state cost for an online bachelor's program was $277, compared with $243 per credit at brick-and-mortar schools."113 Similarly, a 2017 survey of 182 chief online officers found that although a 2.5-to-1 majority views online programs as "revenue generators" rather than as "a drain on resources" (45 vs. 18 percent), three out of four (74 percent) charge the same tuition as the

on-campus rate and 23 percent of programs charge their online students more. Interestingly, large online programs with more than 7,500 fully and partly online students, are the most likely (59 percent) to call online programs revenue generators and are almost four times as likely to charge higher tuition for these courses (57 percent vs. 15 percent). Among the top reasons cited for charging online students more were online instruction and support services, online course and program development, online program marketing costs, pricing headroom for high-demand programs, and meeting revenue goals.

Overall, the available evidence undermines the argument that online education has significant potential to reduce costs for students. Whether due to the high technological and instructional costs required to provide and maintain a quality educational experience, the need for large marketing budgets, or simply because savings are turned into profits or used to subsidize other programs, online education has yet to bend the cost curve in higher education and offer an affordable option.

Online Education and Federal Policy: The Regular and Substantive Interaction Requirement

The law provides access to federal student aid for two types of programs that involve students being separated from instructors: correspondence and online education. From 1992 through 2006, both types were treated equally for purposes of federal student aid, with significant restrictions placed on them compared with traditional face-to-face programs. In 2006, Congress changed course and began to treat online programs similarly to traditional programs, thus providing unrestricted access to student aid.

However, in doing so, the law specifically required online education to provide "regular and substantive interaction" (RSI) between students and instructors, unlike correspondence programs. The history behind the RSI requirement is critical for understanding the current debate about its significance and whether it should be revised.

In "direct response to the costly fraud, waste and abuse that resulted from the participation" of correspondence programs in federal student aid, in 1992 Congress implemented the "50 percent rule," prohibiting higher education institutions from offering more than 50 percent of their programs through, or enrolling more than 50 percent of their students in, correspondence or telecommunications (online) programs." In addition, Congress placed significant restrictions on correspondence education in regards to student aid access and amounts.

After intense lobbying from online education providers and for-profit colleges, in 1998 Congress created the Distance Education Demonstration Program, which provided waivers from the 50 percent rule to about 30 institutions, primarily for-profits such as the University of Phoenix, but also including the newly established Western Governors University (WGU) and University of Maryland University College, both among the largest online universities in the nation today. As the program was set to expire, and following

another lobbying blitz,119 in 2006 Congress exempted all online programs from the 50 percent rule in a deficit-reduction bill, thus providing them full access to federal student aid, but preserved the rule for correspondence programs.120In the next four years, online enrollments more than doubled.

However, the 2006 change created a potential problem: there was no way to clearly distinguish between the correspondence and online delivery modes. For example, a correspondence course could use technology so that a correspondence course using "minor e-mail contact between students and a grader or instructional assistant (who may or may not have subject matter expertise)" could gain full access to federal student aid, and circumvent the 50 percent rule. Therefore, recognizing that "Quality standards for electronically-delivered education emphasize the importance of interaction between the instructor and student," the Department's final regulations implementing the 2006 change added the RSI requirement to clearly distinguish online from correspondence education.

In the 2008 reauthorization of the Higher Education Act, Congress codified into law this key distinction: in order for a program to be classified as "distance education" (online) it must use technology "to support regular and substantive interaction between the students and the instructor, synchronously or asynchronously." In other words, to be eligible for full access to federal student aid and avoid the 50 percent rule, online programs must provide RSI, rather than simply self-learning, which correspondence courses offer. Absent RSI, a program would be classified as a correspondence program, subject to student aid limitations and the 50 percent rule. Accordingly, federal regulations specify that in correspondence education "interaction between the instructor and student is limited, is not regular and substantive, and is primarily initiated by the student" and courses are typically "self-paced," while distance education uses technology "to deliver instruction to students who are separated from the instructor and to support regular and substantive interaction between the students and the instructor, either synchronously or asynchronously."

In 2014, the Department further clarified through non-regulatory guidance that student-faculty interaction cannot be "wholly optional or initiated primarily by the student" or occur solely "upon the request of the student." Moreover, given the lack of a statutory or regulatory definition of instructor or faculty, the Department clarified that students must interact with "institutional staff who meet accrediting agency standards for providing instruction in the subject matter being discussed." Otherwise, an IHE could conceivably label any individual, regardless of their qualifications, as "faculty" for the purposes of meeting this requirement. Given that accrediting agencies are responsible for academic quality assurance in federal student aid programs, they are also responsible for determining or approving instructor qualifications. To summarize, according to the RSI requirement, in online education:

- Interaction between students and instructors occurs regularly as a required part of the program.

    o Interaction that is wholly optional, initiated primarily by the student, or occurring only upon the request of the student (either electronically or otherwise) is insufficient.

- Interaction must be provided by institutional staff who meet accrediting agency standards for providing instruction in the subject matter being discussed.

    o Interactions between students and personnel who don't meet accrediting agency standards for providing instruction in the subject area are not substantive.

    o The amount of faculty resources dedicated to the program must be sufficient in the judgment of the accrediting agency.

- Educational models that involve different instructors performing different roles may be used to ensure regular and substantive interaction between students and instructors, but an institution must still comply with the above requirements.

Overall, federal law, regulations and guidance make it clear that RSI is a key distinction that separates online education from correspondence programs, which are subject to limitations to student aid and the long-standing "50 percent" institutional eligibility rule.

Emergence of Online Competency-Based Education and Calls for Change

As evidenced by the explosive growth of online education, RSI has not hindered the expansion of distance education programs. However, recent developments in higher education, particularly the emergence of competency-based education (CBE) have fueled calls for revising RSI.

Despite its 50-year history in higher education, there is no consensus definition of CBE, not even among CBE institutions, nor is the term defined in federal law or regulations. There also is no uniform CBE model or approach. A major Department of Education study of the field in 2002 defined "competency" as "a combination of skills, abilities, and knowledge needed to perform a specific task" and described CBE as "defining, teaching, and assessing competencies." In 2015, the Council of Regional Accrediting Commissions (C-RAC), comprised of the seven regional accrediting agencies, issued a common CBE framework that included the following definition:

> *In general, competency-based education (CBE) is an outcomes-based approach to earning a college degree or other credential. Competencies are statements of what students can do as a result of*

> *their learning at an institution of higher education. While competencies can include knowledge or understanding, they primarily emphasize what students can do with their knowledge. Students progress through degree or credential programs by demonstrating competencies specified at the course and/or program level. The curriculum is structured around these specified competencies, and satisfactory academic progress is expressed as the attainment or mastery of the identified competencies. Because competencies are often anchored to external expectations, such as those of employers, to pass a competency students must generally perform at a level considered to be very good or excellent.*

In recent years, CBE programs have experienced significant growth and attracted considerable attention in the higher education and policymaking communities, in large part due to their potential to provide a more accessible and affordable route to postsecondary education for non-traditional students, such as older and working adults, and to improve student outcomes. In 2014, a total of 52 colleges either offered (34 colleges) or had announced plans to launch (18 colleges) CBE programs. All colleges with active CBE programs offered Prior Learning Assessments (PLA) that grant credits to students for knowledge and skills previously mastered through experiential learning (professional, military or life experience). In 2014, a group of colleges offering CBE programs was formed, which today includes 30 colleges and universities and four public systems with 82 campuses. By 2015, 600 colleges were either offering, actively creating, or designing CBE programs, reflecting remarkable growth.

The RSI requirement has major implications for CBE for three reasons: First, while CBE can be offered either online, on campus, or both, the vast majority of programs are online, including those offered by the largest and most well-known providers. Second, as a self-paced educational model, similar to correspondence education, CBE often involves instructors performing different roles as "no single faculty member is responsible for all aspects of a course or competency," which is often described as the "unbundling" of faculty roles.

Finally, recent compliance findings involving online, mostly CBE, programs have fueled speculation about RSI having a chilling effect on its growth, despite no such evidence to support such concerns.140 The Department of Education's Office of Inspector General (OIG) has identified several RSI violations:

- In 2012, the OIG found that Saint Mary-of-the-Woods College, a small private liberal arts college in Indiana, had violated the 50 percent rule because its online courses did not provide RSI and thus should have not received more than $42 million in federal funds between 2005 and 2010.

- In 2014, the OIG raised flags about approvals of CBE programs. Citing lack of RSI, the OIG said such programs "are really correspondence programs."

For example, in reviewing one of the approved school's applications, the OIG found no evidence of either regular or substantive interaction, neither was interaction with faculty, as required by law, described. Instead, "coaches" replaced faculty. The Department relied on the accrediting agency's approval of the program, but the OIG's review of the accreditor's standards for faculty found that "the accrediting agency's definition of faculty and the definition of a coach in the school's application did not match." In response, the Department issued the 2014 guidance mentioned earlier.

- In 2015, the OIG released a final audit of the Higher Learning Commission (HLC), a regional accrediting agency, related to its reviews of CBE programs that found significant problems with how it applied its standards in determining the delivery methods and measurements of student learning, including whether CBE programs provided RSI. HLC approved applications for "selfpaced programs" that "did not clearly indicate that the programs would include regular and substantive interaction between students and school employees who met" its definition of faculty.

- In 2016, the OIG released an audit of another regional accreditor, the Western Association of Schools and Colleges (WASC) and found similar problems, concluding that its "control activities did not provide reasonable assurance that schools properly classified the methods of delivery for competency-based education programs," including that WASC failed to evaluate whether they were designed to ensure "faculty-initiated, regular, and substantive interaction between faculty and students."

In response to the 2015 and 2016 audits, C-RAC urged accreditors to consider compliance with RSI when evaluating CBE programs.

However, the most high-profile OIG audit was released in 2017. After several years of trying to determine whether WGU, the nation's largest and most well-established online CBE provider, complied with various aspects of federal law and regulations, the OIG concluded that about two-thirds of the 102 online courses required for its three largest programs did not meet "the key" RSI requirement. The OIG applied the following RSI test:

- Interaction that was not primarily initiated by the student
- Interaction with someone who instructs or provides knowledge about the subject matter of the course (instructor)
- Interaction relevant to the subject matter (substantive), and
- Interaction occurring with some reasonable frequency considering the school-suggested length of the course (regular)

Specifically, 32 course materials described no substantive interaction with an instructor, 27 courses described a single substantive interaction, while 10 courses described two substantive interactions. In other words, more than 6 out of 10 WGU students were enrolled in one or more of 69 courses that met the definition of a correspondence, not distance education, course, thus causing WGU to violate the 50 percent rule. As a result, the audit recommended the return of $713 million in federal student aid for the two-year period examined, plus funds received thereafter.

Of particular importance, the audit report concentrated on the issue of who qualifies as an instructor in an unbundled faculty model, such as that employed by WGU and many other online CBE providers. The OIG determined that out of the five groups of faculty (student mentors, course mentors, evaluators, product managers, and council members) only student interaction with course mentors, who provided instruction, and evaluators, who provided detailed course content feedback, qualified for the RSI requirement, as the rest of the faculty were non-teaching faculty. Moreover, the audit found interaction with course mentors was on an "as-needed basis and typically initiated by the student."

The audit report also described some interactions that do not meet the RSI requirement, including computer-generated assessment feedback; recorded webinars, videos, and reading materials; and contact with non-instructional faculty. In contrast, the OIG provided examples of substantive interactions, such as requiring the student to contact an instructor or participate in an online discussion board moderated by an instructor, or an instructor providing feedback to students on their performance tasks. Overall, the audit arguably sets a low bar for meeting the RSI requirement, both in terms of frequency and type of interactions.

Recent Policy Developments

Following the OIG audits, and especially after the release of WGU audit report, online and CBE education proponents have called for eliminating or revising RSI, arguing that it acts as a barrier to innovation by applying "an obsolete, 20th-century definition to a 21st-century" educational model and "has to go."

In both Congress and the Department of Education, RSI is now under threat. The Department of Education not only took no action on its OIG audit recommendations; it also announced a new regulatory effort that will reexamine RSI. The Republican proposal in the House to reauthorize the Higher Education Act would also gut both requirements by:

- Repealing the definition of and, by extent, the RSI requirement for, online education;
- Further weakening the definition of correspondence education; and,
- Adding a new CBE definition that has a severely weakened, and largely unenforceable, requirement for "substantive instructional interaction, including by faculty, and regular support by the institution."

While the repeal of RSI requires statutory change, the upcoming negotiated rule making provides an opportunity to either strengthen or weaken it. One route that may be explored will be to adopt the approach embedded in a Department of Education CBE experiment that was announced in 2014 to learn, among other research questions, "how institutions ensure regular and substantive interaction between students and instructors," in which 30 institutions currently participate.152 The guidance restated the 2014 policy, but also provided additional flexibility, which is a core feature of such experiments. Specifically, it specified a two-part RSI test, one concerning access to faculty and one regarding program design:

- Access to qualified faculty: "must be available to students who are struggling…or for any reason when the student wants to interact with a faculty member." Moreover, "Learning coaches, online tutoring, and other support can be offered and used and may even count for the majority of students' support (and success)," with faculty access required "at least when students need or want it." The letter then notes that when "a faculty member is not the primary monitor of student engagement with learning (as in traditional instructional models), the institution must have some combination of staffing and systems to monitor student engagement, level of performance, and to provide proactive support."
- Program design: The letter defined "regular interaction" as "periodic contact" that "can be event driven," including "through the use of email or other social media," but "should be understood as predictable regularity and built into program design" and "must create the opportunity for substantive interaction." The letter clarifies that "while an automated system for initiating contact with students could be one aspect of program design, such a system in and of itself could not meet the requirement for regular and substantive interaction." However, the letter then states that "contacts with students that create the opportunity for relevant discussion of academic subject matter could qualify as substantive interaction." Moreover, while acknowledging that assessment "takes on particular importance in outcomes-focused programs like CBE," the letter "does not require that faculty administer and/or grade all assignments, though faculty feedback on student assignments may be a very effective form of substantive interaction."

The Watchdog Is Barking, but Who Is Listening?

In the past 15 years, the OIG has repeatedly warned the Department and Congress about "the unique risks inherent in the distance education environment" and several audits, investigations and special projects have identified numerous instances of fraud and widespread vulnerabilities, including problems with verifying student identity, determining attendance, and determining cost of attendance.

Specifically, the OIG has concluded that, as "the fastest growing segment of higher education," distance education "creates unique oversight challenges and increases the risk of school noncompliance with the law and regulations," and has called on the Department, accrediting agencies, and states to adequately monitor schools for compliance. In recent years, each OIG annual management challenges report to the Secretary of Education and each semi-annual report to Congress highlights distance education as an area that poses significant risks to the integrity of federal student aid programs. Moreover, its 2015 audit found major weaknesses in the Department's oversight of online education.

In March 2018, the OIG submitted to Congress detailed comments and recommendations for needed changes in the upcoming reauthorization of the Higher Education Act. Unsurprisingly, several of its recommendations were focused on online education, and the OIG raises serious concerns about the elimination of RSI, as well as the definition of "distance education," in the House PROSPER Act. In particular, the OIG argues that their elimination, coupled with the amended definition of correspondence education that includes "interaction between the institution and the student is limited and the academic instruction by the faulty is not regular and substantive," will render meaningless the RSI requirement and thus allow programs without any substantive interaction between subject-matter experts and students to have full access to financial aid:

> *A significant difference from the former definition of distance education is that "instructor" is replaced with "faculty." Faculty could include mentors or counselors that lack subject matter expertise in the courses a student is taking. Removing the definition of distance education and replacing "instructor" with "faculty" in correspondence education would allow a school to qualify for full participation in the Federal student aid programs based on e-mail contact between students and faculty on matters unrelated to the subject matter of a program. There will be no assurance that programs provide the level of interaction Congress previously expected with instructors for full funding of distance education. Distance education funding would only be restricted in the unlikely event the programs qualify as correspondence education.*

The OIG then urges lawmakers to retain the clear distinction between correspondence and distance education by leaving intact the current definition of distance education, including the RSI requirement between instructors and students, and calls for improved oversight by the Department, accrediting agencies, and the States.

An Evidence-Based and Responsible Path Forward

In many ways, these efforts to loosen the requirements resemble the 2006 change Congress made to exempt distance education from the 50 percent rule, despite warnings by GAO and others about the risks involved,156 thus opening the floodgates of federal student aid to fully-online schools.157 Interestingly, WGU was at the center

of those efforts as well. As in 2016, the narrative is the same: federal law and regulations are standing in the way of innovation, which could expand access and reduce costs for students.158 As documented, the greatest beneficiaries of the 2006 change were for-profit colleges,159 which enroll almost one-third of all fully-online students, but less than ten percent of all students, and distance education has not reduced costs for students.160 Before we go down this path of "deregulation for innovation" again, it's important to heed the lessons of history and avoid the same consequences, both intended and unintended.

Our review of the evidence clearly demonstrates that, on average:

- Online education is the fastest-growing segment of higher education and its growth is overrepresented in the for-profit sector.
- A wide range of audiences and stakeholders—including faculty and academic leaders, employers and the general public—are skeptical about the quality and value of online education, which they view as inferior to face-to-face education.
- Students in online education, and in particular underprepared and disadvantaged students, underperform and experience poor outcomes. Gaps in educational attainment across socioeconomic groups are even larger in online than in traditional coursework.
- Online education has failed to improve affordability, frequently costs more, and does not produce a positive return on investment.
- Regular and substantive student-instructor interactivity is a key determinant of quality in online education; it leads to improved student satisfaction, learning, and outcomes.
- Online students desire greater student-instructor interaction and the online education community is also calling for a stronger focus on such interactivity to address a widely recognized shortcoming of current online offerings.

The implications of the above for federal policy are significant. First, do no harm. Weakening RSI would not only be inconsistent with the evidence that clearly demonstrates the key role of faculty-student interaction in ensuring a quality online education, but would also further erode employer, student, educator, and public confidence in and perceptions of its comparative value.

For example, adopting in federal law the flexibility provided in the ED experiment, as some recent proposals advocate, would severely undermine the substance and intent of the RSI requirement:

- By requiring "access to qualified faculty," only for students "who need or want it," this new approach would allow students who are not struggling or do not initiate interaction to progress through a program without such access, as is the case in correspondence courses, in which interaction is "limited" and "primarily initiated by the student."

- By allowing institutions to "have some combination of staffing and systems to monitor student engagement, level of performance, and to provide proactive support," when a "faculty member is not the primary monitor of student engagement with learning," as is typical in CBE and other unbundled programs, this approach would allow an institution to use a combination of 99 percent technology and/or non-qualified staff and 1 percent qualified faculty to perform these key instructional duties.

- By interpreting "regular" interaction as "periodic contact" through email and social media and "event driven" ("completion of certain key competencies, a percentage of competencies, or the submission of assessments"), this approach would allow occasional online chat rooms or virtual office hours that "create the opportunity for substantive interaction" to meet the requirement.

- By defining "substantive" as "interaction, or the opportunity for interaction, with a student that is relevant to the academic subject matter in which the student is engaged," this flexibility would conceivably allow a student who does not take advantage of an interaction "opportunity" to progress through a program without engaging substantively with faculty.

- Finally, assessment is at the heart of CBE. While acknowledging that "assessment takes on particular importance in outcomes-focused programs like CBE" and "faculty feedback on student assignments may be a very effective form of substantive interaction," this new approach would allow non-faculty to "administer and/or grade all assignments." Once again, by exempting qualified faculty from this core component of the CBE educational experience, this approach would further render the RSI requirement meaningless.

The flexibility provided by ED in the experiment should be rigorously evaluated prior to considering embedding it in law or regulations. The purpose of such experiments is to inform potential policy changes through the study of research questions. Adopting such a dramatic change without first studying its impact on a small scale infuses unnecessary risk into our federal student aid programs with potentially wide-ranging implications. Furthermore, deferring to accrediting agencies to define "instructor" and "faculty" is unavoidable, at least under the current triad system in which accrediting agencies are the authorities tasked with quality assurance. This was reaffirmed in the flexibility ED provided, which required accreditors to determine which faculty have

"the appropriate academic credentials and experience in the applicable knowledge domain." Finally, we must avoid any possibility of a student progressing through an online program, whether CBE or not, without ever interacting with faculty. Reforms that simply require "the opportunity for interaction" should be off the table, as they would set a bar even lower than correspondence education.

A responsible path forward would reflect the evidence reviewed in this paper. RSI should be preserved, if not strengthened, and vigorously enforced. Unbundled faculty models that have difficulty complying should make changes to match the law instead of changing the law to match the needs of such models.

Interaction must be with subject-matter experts, not just anyone labeled "faculty" by an institution. It is in the best interest of online providers to pursue the strategies recommended by the industry to increase interaction and thus improve their quality, student outcomes and satisfaction, and employer confidence in the value of their credentials. Not only is RSI a student and taxpayer safeguard, it is also an essential element of a successful and sustainable business model.

Online education's failure to yield cost savings for students and taxpayers, as well as the high concentration of online students in the for-profit college sector, which has a well-established and long record of predatory behavior and compliance troubles, should raise oversight concerns for policymakers and the Department of Education. The incentives for a quick profit through lower production costs and high tuition prices, subsidized by the federal government through aid, combined with an environment of deregulation, further amplifies the repeated and urgent warnings of the OIG about the significant risks in online education, which call for stronger monitoring and enforcement in this area of higher education.

Finally, it is imperative to keep in mind that RSI applies to all online programs, not just CBE programs. While the impetus for additional "flexibility" is largely driven by the rapid growth of CBE programs and the recent WGU audit, the key distinction should be maintained between correspondence and online education, regardless of the educational model employed, whether CBE or some other alternative. Online education, including CBE, has thrived while complying with the RSI requirement, so rather than changing the law or regulations to accommodate particular online education models, which already face criticism about their quality, Congress and regulators should instead focus on the evidence, which is clear: student instructor interaction is a key component of quality and strong student outcomes.

Conclusion

Continuing efforts to strengthen educational opportunities and learning outcomes for under-prepared students and to reduce the cost of offering high-quality experiences are critical. But the evidence is clear that much of the existing online coursework is moving this effort in the wrong direction. Students need access to education, which involves meaningful

interaction with faculty and other students—not just exposure to materials that move them through a collection of information and exercises.

The greatest risk is that the rush to transform higher education will widen the gulf between the college education available to those who arrive at the door with ample resources and strong academic preparation and those who depend on postsecondary education to open the doors to productive lives. Creating access to programs is a step forward, but only if those programs succeed in providing meaningful educational opportunities to students with minimal levels of academic preparation who need to develop their self-discipline, time management, and learning skills—not just have access to a specific body of information.

The intuition behind the idea that online learning has the potential to increase educational opportunities and reduce costs for students with limited time, geographical mobility, and money is clear. But the evidence reviewed in this paper raises significant questions about whether the promise of online education has been realized to date. The type and quality of online learning accessible to students—especially those with limited academic preparation and limited resources—is critical. Mounting evidence suggests that although the outcomes of hybrid learning environments that mix online and classroom experiences are similar to those of traditional classrooms, the same is not generally true of purely online courses, particularly for at-risk students attending at-risk institutions.

Undoubtedly technology will continue to progress and strategies for improving learning in classroom, hybrid, and online settings will surely emerge. It is likely to become more feasible, for example, to provide optimal course pacing and content to fit each student's needs. The latest "intelligent" tutoring systems not only assess students' current weaknesses, but also diagnose why students make their specific errors, adjusting instructional materials to meet their

The greatest risk is that the rush to transform higher education will widen the gulf between the college education available to those who arrive at the door with ample resources and strong academic preparation and those who depend on postsecondary education to open the doors to productive lives

needs. But these innovations are likely to be most effective as supplements to—not replacements for—meaningful educator-student interaction.

The negative findings about outcomes in online learning come from fully online courses. Hybrid courses do not create the same burdens for students. Taking an asynchronous class without an engaged instructor requires high levels of self-motivation, self-regulation and organization. Hybrid courses that integrate technology into face-to-face classrooms generally yield similar or improved outcomes relative to standard classrooms.

Both the aggregate data on online learning and most studies of its effectiveness at individual institutions focus primarily on for-profit or broad-access public institutions. But selective universities and liberal arts colleges are also incorporating technology into their curricula. In many cases, these institutions are using technology to enhance, rather than replace, traditional classroom experiences. Some of the better news about online programs comes from efforts targeting students who have already proved their ability to succeed in advanced academic work. Georgia Tech's widely cited computer science master's degree program is getting very positive reviews and appears to be opening opportunities to new students, rather than diverting them from face-to-face programs.165 Since this is a graduate program, all of the students have already earned bachelor's degrees, and in the case of Georgia Tech, passed rigorous admission standards. Evidence about success in MOOCs confirms the reality that students from higher-income, more educated backgrounds are most likely to participate and succeed in these courses.

Some students, particularly older students with work and family responsibilities and those in rural areas may be choosing between purely online education or no postsecondary education at all. But there is a real risk that both cost-cutting efforts and well-intentioned moves to expand access to higher education could lead to greater numbers of disadvantaged students being relegated to cheap and ineffective online instruction, with detrimental results, both in terms of outcomes and student loan defaults. The findings discussed in this paper should act as a cautionary note for efforts like California's new wholly online community college, which will be designed for adults seeking new labor market opportunities and will offer only certificates and short-term credentials. It will take careful and innovative planning and design if there is to be a reasonable prospect of delivering meaningful college-level work—as opposed to just the transmission of information—through this route. As McPherson and Bacow (2015) argue:

> *If technology is used in broad access institutions to drive cost down without regard to quality, and at the same time is used in elite higher education to further increase the cost and restrict the availability of the "best" education, we will wind up with a society both more unequal and less-productive than it could be.*

In 2011, the year Sebastian Thrun began the MOOC revolution with his course on Artificial Intelligence, Clayton Christensen predicted in The Innovative University that half of all colleges and universities would go bankrupt within 10–15 years as alternative providers replaced them. Technology would enable an entirely new business model to take hold. Writing with Michael Horn in 2013, Christensen explained that students would soon gravitate toward less expensive options. “Unbundling” of higher education would allow students to customize their own educational experiences. Students could still access face-to-face interaction when they need it, but that would no longer be the norm. These predictions of a revolution quite clearly exaggerated the near-term prospects for change. But that does not mean we should give up on technology’s potential to enhance college learning opportunities. It does mean we should be cautious about proponents of innovation who over-promise. We must carefully analyze the results of new strategies that are implemented with the goal of broadening access and/or reducing costs without compromising the quality of education. At a minimum, we must proceed with extreme caution when revising the current statutory and regulatory environment governing online education to ensure that students and taxpayers are protected from poor student outcomes that come at a very high cost.

Arguably everyone wants higher education to be more "innovative," to cut costs and improve quality for students. Technological advancements and new models of education, like online CBE, offer the potential to advance these shared goals. At the same time, when paying for an educational program, both students and taxpayers expect that teaching is involved in the provision of educational services. The RSI requirement is a key safeguard intended to ensure that online education does not become self-learning with full access to federal aid.


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Online Education: Panacea Or Plateau

By Dr. Holly J. Seirup, Dr. Rose Tirotta, & Dr. Elfreda Blue

Introduction

More and more colleges and universities across the US have adopted online instruction (Allen & Seaman, 2015; Perreault, Waldman, Alexander, & Zhao, 2008). Ginn & Hammond (2012), offer an example of the growth in a report on the adoption of online instruction by National Association of Schools and Public Affairs and Administration members. The report chronicled the increase in offerings of online courses, certificates, and Master degree programs from eight online courses in the 1990s to 15 in 2003 and 39 in 2012. Online offerings and enrollments are expansive (Ni, 2013) as colleges and universities continue to rethink the concept of instructional effectiveness, innovative pedagogy, and student retention.

Chief academic officers (70.8%) at colleges and universities agree that online education is critical to their overall strategic plan - an increase from 48.8% in 2002 (Allen, & Seaman, 2015). To ensure success of distance learning initiatives, "faculty and students must be willing to embrace, or at least grudgingly accept, online learning." (Bristow, Shep-herd, Humphreys, & Ziebell, 2011 p. 246). With 24-hour access to the internet and technological innovations (i.e. smart phones, tablets, and wifi), online education has become more appealing. Half of all graduates in the past decade have enrolled in at least one online course (Parker, Lenhart, & Moore, 2011).

The growth rate of online courses has exceeded that of traditional enrollment (Rich & Dereshiwsky, 2011). In Fall 2010, the number of students enrolled in an online program (2.78 million) represented 14% of all college or university

enrollment (Silber & Condra, 2011). Still, present trends indicate that faculty acceptance of online courses has "lagged" and the growth rate of these courses may be leveling off at a level 3.7 % lower than prior years (Allen & Seaman, 2015). The "lag" is noticeable in trends relative to MOOCs (Massive Open Online Courses). Developed and offered to provide affordable access to education, MOOCs were a growing trend until the recent decrease in the per-centage of academic leaders who believe that MOOCs "rep-resent a sustainable method of offering online courses" (Allen & Seaman, 2015, p. 6).

The most significant finding of the study is that both students and faculty prefer the traditional classroom over online education

Purpose & Research Focus

As online education continues to grow, under-standing faculty and student perceptions seems to be an imperative piece of the decision to continue to expand online offerings. The purpose of this study was to review faculty and students perceptions of online learning and to gain an understanding of the current status of distance education. Findings may inform researchers about whether faculty and student perception provide insight relative to the online education trend. Will it emerge as an essential component of university studies or is this the beginning of a plateau for online education?

REVIEW OF LITERATURE

Faculty Perceptions

Many colleges and universities have made the decision to offer online instruction as part of a strategic plan to thrive, or perhaps to survive in the highly competitive educational market (Windes & Leshy, 2014). Initially adoption and growth of online educational offerings were slow and both students and faculty were skeptical that learning objectives could be adequately achieved in an online format (Allen, et.al, 2012). Faculty had concerns related to the quality of online courses, the time required to develop and teach online, issues of intellectual property, as well as the developing the skills required to teach online. (Gerlich, 2005). Osborne, Kriese, Tobey, & Johnson. (2009) found that faculty believed that students learn less, interaction is less effective, and students believe the classes taught on line are easier than those taught face-to-face. All of which can serve as barriers to developing and teaching courses online.

Allen and Seaman (2015) found that academic leaders view "online education as the same or superior to those in face-to-face instruction" (p. 5). In fact the percent-age rating from these leaders has increased from 57.2% in 2003 to 74.1% in 2014. Yet faculty do not report the same endorsement of online education. They believe that the university is moving too much education online and that the learning outcomes are inferior to those classes taught face-to-face. This includes faculty who have experience teaching online (Allen, Seaman, Lederman, & Jaschik, 2012).

The Higher Education Research Institute (HERI)(2013-14) faculty survey found that the proportion of faculty who report teaching a minimum of one class online has increased from 14% in 2010-11 to 17.4% in 2013-14. Interestingly, those holding the rank of instructor and lecturer are more likely to be teaching online than full professors. Faculty report that as the demand for online instruction increased (Allen & Seaman, 2015; Osborne, et.al., 2009), faculty began to feel strongly encouraged to teach online (Windes & Lesht, 2014; Gerlich, 2005) In fact some report that teaching online has become an expectation not a choice (Gerlich, 2005) Allen et. al., (2012) found that "about one-third of faculty members think that their institution is pushing too much instruction online, compared to fewer than 10 percent of administrators" (p. 2).

Student Perceptions

Allen & Seaman (2015) report that the number of college and university students taking at least one online course has continued to increase, but the increase is at lower rates than in the past. There are a variety of reasons students choose to take courses online but the most common seems to be flexibility and convenience (Dobbs, et. al., 2009; Osborne et. al., 2009; Perreault, et. al., 2008). Wyatt (2005) found that online courses appeal to students balancing their desire to continue their education with family responsibilities, work schedules, as well as the inability to attend school with a traditional schedule. Initially, it seemed that students who chose online education were older and working (Dobbs, Waid, & del Carmen, 2009; Perreault et. al., 2008), but this has changed and more "traditional" students are enrolling in distance education. At the same time students continue to report missing the interaction that occurs in a face-to-face classroom experience.

Unfortunately, research reveals that students may enroll in an online course experience thinking that it is less rigorous than a traditional classroom (Osborne, et.al., 2009) and can be quite surprised to find that they have to work harder (McFarland & Hamilton, 2005-06), and that the course is more demanding (Wyatt, 2005), and more time consuming (Perreault, et. al., 2008) than the face-to-face counterpart.

METHODS

Participants

This study was conducted in two parts at a mid-sized private, four-year college in the northeast United States. In 2012, 60 graduate and undergraduate students enrolled in both traditional face-to-face and online courses participated. A fair representation of students (67%) had taken online courses in

the past (n=37); 38% (n=23) had not taken an online course at all. In 2013, surveys were sent to both faculty and students. This sample included faculty that taught online courses in the past (n = 29) and faculty that only taught face-to-face (n = 91). Seventy-one percent of the student participants had taken an online class in the past (n = 34) while 29% had only taken face-to-face courses (n = 14). Survey responses for all three surveys were voluntary. All answers were anonymous.

Survey

The student survey, created by Dobbs, Waid, & del Carmen (2009), was comprised of 59 items presented in a Likert scale (31 questions) and multiple choice/fill in (28 questions) format. Items focused on experience with online and traditional courses, perceptions about quality, challenge, and level of difficulty of online courses and traditional courses. Participants were asked to share their perceptions of various aspects of online courses including, why they would or would not take online courses, the quality of the learning experience and content of the courses, and how much work is perceived to be required. The faculty survey was very similar to the student survey concentrating on faculty perceptions of teaching.

Results

Data were entered into SPSS T-test results yielded a significant difference between perceptions of faculty who had taught online courses (M = 3.351, SD = .654) and faculty who never taught an online course (M = 3.701, SD = .597) on whether they thought online classes were better than face-to-face courses [$t(118) = -2.751$, $p < .01$].

There is either less learning in an online environment or it is similar to a traditional, face-to-face venue

The faculty that had experience teaching online, had a more positive outlook on online courses. There was also a significant difference between faculty that had taught online courses (M = 3.241, SD = .577) and faculty that had never taught an online course (M = 2.949, SD = .508) on whether they thought that face-to-face classes were better than online classes [$t(118) = -2.615$, $p = .01$]. The faculty that had not taught online had a more positive outlook of face-to-face courses.

Results among the students in 2012, the students in 2013, and the faculty in 2013 were also examined.

Overall, both students and faculty agree that they perceive there is either less learning in an online environment or it is similar to a traditional, face-to-face venue.

Faculty perceive that the online courses offered are slightly higher quality than students. Students perceive that over time, the courses are getting better with more

"higher quality" and "good quality" courses. None were recognized as "not at all good quality."

Overall, both students and faculty agree that they prefer traditional classroom courses. More students, however, prefer online courses as compared to faculty and in 2013, students and faculty were more apt to have no preference than in 2012.

Discussion

The results of this study support prior research and confirm that faculty that have online teaching experience perceive online education more positively than those without online teaching experience. Alternatively, those that have only taught face-to-face, perceive that traditional classroom pedagogy as superior over online courses. Interestingly, the perceptions of both students and faculty was that students learn less (or the same) in an online environment while faculty perceive a higher quality of the courses taught online than students. Probably the most significant finding of the study is that both students and faculty prefer the traditional classroom over online education.

This is an important factor for higher education leaders to consider while making decisions for the future of distance learning and may be particularly important when considering the finding of Allen & Seaman (2015) that 70.8% of academic officers see online education as critical to the overall strategic plan. The perceptions of faculty and students are based on their own experience with distance learning. Prevailing perceptions will not change without significant effort to increase faculty and student experiences with online learning.

For many years, distance education was expanding and it seemed to offer increased markets and access yet at the same time the perceptions of students and faculty regarding online learning is mixed and it would seem that if given a choice they would prefer the traditional classroom experience. This is not to suggest that there is not a place for online education; clearly it serves an important function and provides many with flexibility and access. Perhaps there is a leveling off point where leaders in education need to weigh the benefits of distance learning with the perceptions of faculty and students and their preference to learn in a traditional classroom.

Both students and faculty prefer the traditional classroom over online education

A National Study Of Differences Between Online And Classroom-Only Community College Students In Time To First Associate Degree Attainment, Transfer, And Dropout

By Peter Shea and Temi Bidjerano

Abstract

Previous research indicates that online learning at the community college level results in higher rates of withdrawal, failure, and dropout compared to classroom-based education (Xu & Smith Jaggars, 2011; Smith Jaggars & Xu, 2010). The primary goal of the current study was to examine national data (US Dept. of Ed. Beginning Postsecondary Student Survey, 2004-09) on three outcomes for community college students with and without online education experiences. The outcomes were attainment of first associate degree, transfer, and dropout. In contrast to previous research, compared to exclusively classroom-based students, initial results suggest significantly more students who had engaged in online education had either attained an associate degree at the end of the observation period or transferred to a different institution. These results are interpreted with regard to their implications for policy and practice.

College completion is a goal that has attained significant attention in recent years. Recognizing that a college credential is increasingly a prerequisite to individual economic advancement and collectively, to national prosperity, the efforts of numerous foundations and both federal and state-level initiatives have resulted in a wide-ranging college completion agenda in the US (Russell, 2011). The immediate roots of these efforts can be found in data indicating that in the coming decade a majority of jobs will require a post-secondary credential. Relative to other developed nations, the US lags in degree attainment, especially among younger citizens (Sparks, 2011). Formerly occupying the number two

position, the U.S. now ranks 12th among 37 OECD countries in the percentage of 25-34 year-olds with higher education credentials (OECD, 2013). Compounding the problem, reports from the National Center for Education Statistics indicate that the number of degrees conferred is not forecast to grow significantly (NCES, 2011).

The relatively new degree completion agenda has eclipsed previous and longstanding efforts aimed more specifically to increase access to higher education. While increasing access has been a multifaceted undertaking, with a history that goes back at least to the GI Bill and the development of the community college system (Vaughan, 2006), much recent effort has focused on the uses of technology, especially online education as a means to make higher education more accessible.

More than 6.7 million college students enrolled in a traditional, credit-bearing online courses in 2012 (Allen & Seaman, 2013), a figure that represents more than one in three of every college student in the United States. Online and distance education have long been seen as a vehicle for democratization (Larreamendy-Joerns & Leinhardt, 2006) and increased access and have been adopted very broadly among institutions with an access mission; chief among these are community colleges. Of all students enrolled in online courses in the US, the majority of these were enrolled at the community college level (Parsad & Lewis, 2008; Radford, 2011). However, the expansion of traditional online education among community college populations has generated concern among some specifically regarding poor outcomes of online community college students relative to classroom students. Central to this analysis is the possibility that online learning has impeded rather than enhanced degree completion rates, especially among students in associate degree programs.

The prominent line of research on this topic has examined large samples of online learners in two different state systems (Smith Jaggars & Xu, 2010; Xu & Smith Jaggars, 2011) and arrived at several disappointing results. Reviewing data on approximately 24,000 students in 23 institutions in the Virginia Community College system, Smith Jaggars and Xu (2010) concluded that learners had were more likely to fail or withdraw from online courses than from face-to-face courses. The authors also found that students who took online coursework in early semesters were somewhat less likely to return to school in following semesters, and students who took a higher proportion of credits online were slightly less likely to attain a college credential or transfer to a four-year institution.

Xu & Smith Jaggars (2011) also studied the Washington State Community College Systems and came to similar conclusions. Analyzing data from more than 51,000 students in 34 community and technical colleges, Xu & Smith Jaggars concluded that although students with better educational preparation were more likely to enroll in online courses, these students were also significantly more likely to fail or withdraw from these courses than students who took traditional face-to-face classes. Students in the Washington State Community College system who took more online courses were also slightly less likely to complete a degree

or transfer to a four-year college than those who took fewer online courses.

Additionally, online learning appears to accentuate achievement gaps. For example, recent studies found that while all learners at the community college level experience worse outcomes in fully online courses, certain sub-groups show a sharper decline including males, students with lower prior GPAs, and African American students (Jaggars, Edgecombe, & Stacey, 2013; Xu & Jaggars, 2013).

Taken together, these studies do not support a cost-effective strategy of promoting degree completion in community college through traditional online education. If the results from these studies are generalizable to a national population, the findings have numerous and significant financial implications. For example, the higher rate of failure and withdrawal from online courses extends the time needed to complete a college credential making online learning less efficient and thus costlier for degree attainment. This is of concern given that previous studies have concluded that spending on community college students has had a particularly poor return with regard to degree completion. For example, the Delta project (Kirshtein & Wellman, 2012) concluded that "nearly half of instructional spending in community colleges goes to students (and credits) that do not attach to a degree or certificate". Given the high costs associated with lower and slower completion rates, it is reasonable to infer that online learning may produce more college students but fewer students with college credentials. Adding to these challenges is the corresponding likelihood that online education results in a slower time to degree. This would indicate that online education is both less efficient and effective in achieving widely valued goals of producing more college graduates in the US. Previous research (Shea & Bidjerano, 2014) presented an analysis that disputes findings that online education results in lower degree completion rates. The present study examines whether students who studied in online education early in their college careers also required additional time to complete a college credential, were less likely to transfer, or dropped out at higher rates.

To accomplish this goal, the current study examines national, rather than State-level community college student data. While it appears that conclusions drawn from the students in Virginia and Washington don't hold great promise with regard to online learning, it may be that national data yield different results. We therefore utilize data from the US Department of Education's Beginning Post-Secondary Survey (04/09) to determine if national trends are at variance with results from analysis of large-scale State level data.

To understand whether national, rather than State-level data yields different results, the primary goal of the current study was to examine three related educational outcomes for community college students with and without traditional online education experiences during their year of first entry in postsecondary education. For the purpose of this study, we define online students as those students who had taken at least one online course and classroom-only students as those students who had never taken an online course. The outcomes of interest were attainment of first associate degree, transfer,

and dropout. While other studies have provided precise estimates of degree completion, dropout, and transfer rates for the overall population of community college students (e.g., National Center for Education Statistics, 2010), few studies (e.g., Scott & Kennedy, 2005) have investigated time processes for these three critical outcomes. In addition, no studies involving direct comparisons between online and classroom-only students in terms of time-to-graduation, time-to-transfer, and time-to-dropout have been reported in the literature.

The purpose of the study was primarily descriptive. The goal was to describe the timing of the three events and to compare the time trajectories of the subpopulations of community college students with and without exposure to online education coursework during their first year of study. The study examined also whether the time-to-event processes within subpopulations vary as a function of demographic characteristics.

METHOD

Participants

The study uses data from Beginning Postsecondary Students (BPS 04/09) study conducted by the National Center for Education Statistics. The original BPS 04/09 sample includes records of approximately 16,100 students representing about 4,000,000 individuals who have entered postsecondary institutions in the 2003/04 academic year. The analytical sample for this study consisted of approximately 4,400 community college students. The primary focus in this study was on time-to-degree, dropout rates, and transfer relative to the community college institution of first entry; therefore, the sample was delimited to community college students whose records in 2003/04 as well as student survey data identified an associate degree as a program of study. Community college students on paths of a certificate degree or a bachelor's degree and students not pursuing a degree were excluded. In addition, of the subpopulation of eligible students, a small subset of students without an earned high school diploma was excluded.

Data Analysis

To analyze the time patterns for the subpopulations of students, we used competing risks discrete survival analysis (known also as event-history analysis in the literature). Competing risks survival analysis is the best methodological approach for analytic situations in which there are multiple possible outcomes under study, precise estimates of timing of outcomes of interest are sought to account for individuals whose participation is discontinued for reasons unrelated to the outcomes of interest (censoring), and cumulative measures of outcomes of interests are to be determined (Muthén & Masyn, 2004; Scott & Kennedy, 2005; Singer & Willett, 2003). In the survival methodology, the outcomes under investigation are referred to as events and the goal is to determine the probability (risk or hazard) of an event occurring in a given time interval. In the context of competing risk discrete survival analysis, participants at risk in a time period are the individuals in a given time

period who have not experienced any of the competing events in prior periods and have not been censored (i.e., have not discontinued participation in the study). In other words, the risk set does not include those who have already experienced the event(s) or data on whom are missing (i.e., the individuals have been censored). Hazard probabilities are estimated for each time period and each study event. When a single event is analyzed, the hazard probability of an event for a time interval represents the probability of an event occurring for the participants at risk (the participants have not experienced the event in a prior period or have not experienced any of the alternative events under investigation). For our purposes, survival probability is the proportion of individuals in the risk dataset who at the end of a time segment remain unaffected by any of the competing events (transfer, graduation, or dropout) or have not been removed from the study because of missing data (Muthén & Masyn, 2004; Singer & Willett, 2003). Survival probability is often of interest in single events analysis but considered irrelevant in multiple events situations (Scott & Kennedy, 2005). When there are multiple events under investigation, a cumulative hazard probability for each event can be estimated to allow inferences about the proportion of the initial population that has experienced each event by a given time period (Scott & Kennedy, 2005). While the method refers to hazards, and is often applied in safety and risk management contexts, in this analysis we are estimating the likelihood of degree completion using this approach.

The competing events of interest in this discrete competing risk analysis were: (1) attainment of first associate degree in the primary institution of first entry, (2) dropout from the institution of first entry, and (3) downward, lateral, or upward transfer. Because community college students are a highly transient population and often show variable enrollment patterns (e.g., part time enrollment, official withdrawal followed by re-enrollment, and stopouts for an extended period of time without dropout), the most recent indicators of degree attainment, transfer, and student dropout status (recorded in June of 2009) were used to determine the actual timing of the events.

The survival methodology requires a clear definition of unit of time. The timing of the three events was recorded in intervals of one academic year, defined as the time span from the month of July in a given calendar year to the month of June in the following calendar year. This resulted in 6 time periods/ time intervals (Year 1: July 03–June 04; Year 2: July 04–June 05; Year 3: July 05–June 06; Year 4: July 06–June 07; Year 5: July 07–June 08, and year 6: July, 08–June, 09). Academic year was chosen as a unit of analysis because previous research has indicated that events such as degree completion, dropout, and transfer typically occur in the spring semester of each academic year (Scott & Kennedy, 2005); therefore, inclusion of intervals with shorter duration was deemed unlikely to offer additional insight into the time-to-events processes.

Results

The estimated hazard probability profiles by type (at least one online course vs. no online courses) are shown. The hazard probability profiles illustrate the difference in the proportions of degree attainment, dropout, and transfer within each year for the students who have remained unaffected by these events in prior years. The profiles for the two subpopulations exhibit similar patterns for years 1, 2 and 4. For both online and classroom-only students, the risk for transfer and dropping out outweigh the chances of degree attainment in the first two years. In year 3, the chances of attaining an associate degree and dropping out equalize for the online students but remain relatively low compared to the risk of dropping out. In the same year, the proportion of classroom-only students graduating is substantially lower than the proportions of transfers and dropouts.

For both types of students, chances for transfer declines in years 5 and 6 compared to chances of dropping out or attaining a degree. The hazard probability profiles, however, suggest a notable difference in the last two years in the dropout and degree attainment proportions. While the risk for dropping out is higher for classroom-only students, it becomes lower for online students relative to the chances for degree attainment.

These profiles allow a better representation of how the processes unfold over time (Scott & Kennedy, 2005). For each time period the graphs show the proportion of the original population that has experienced each event by that time period. The risk for all three outcomes increases steadily from year 1 to year 3 and then levels off for both subpopulations. There is a little change in the proportion of students (out of the original subpopulation of students) who graduate, transfer or dropout. By year 3, 9.203%, 37.71%, and 25.68% of the initial pool of online students have attained an associate degree, transferred, or dropped out respectively. The comparative percentages for the classroom-only students are 6.66%, 33.12%, and 27%. Compared to the subpopulation of classroom-only students, a greater proportion of the original population of online students have attained an associate degree at the end of the observation period [online: 17.23%, classroom-only: 13.27%) and transferred [online: 40.83%, classroom-only: 37.24%]. Also, the cumulative dropout proportions at year 6 are higher for the classroom-only students [online: 36.73%, classroom-only: 31.73%]. Log rank tests assessing differences in the cumulative probability curves suggest a more accelerated rate of degree attainment, $x2\ (df=1) = 6.14$, $p = .013$ but not for transfer $x2\ (df=1) = 2.68$, $p = .102$ and dropout [$x2\ (df=1) = .199$, $p = .656$].

In a follow-up analysis we examined if online and classroom-only students differ on any of the demographic characteristics to determine if further subgroup analysis is warranted. Results indicated that there were no subpopulation differences in terms of age of first enrollment [Wald $F\ (1,200) = 2.183$, $p = .141$], socio-economic status as measured by adjusted family income in 2003/04 [Wald $F\ (1,200) = 0.00$, $p = .992$], race [Wald $F\ (4,197) = 1.886$, $p = .114$], and number of risk factors [Wald $F\ (1,200) = .747$, $p = .388$]. Female students, however, were more likely to be in online

courses, Wald F (1,200) = 6.625, p = .011. The effect of gender on time-to-events was therefore further considered in conjunction with type (online courses vs. classroom-only). To this end, each subpopulation was stratified based on gender, and the cumulative hazard probabilities were estimated for each gender – online combination.

Female students tend to attain an associate degree earlier, regardless of type of coursework, x2 (df=1) = 16.2, p <.001. Although the process is less accelerated for male students in general, classroom-only students appear to be at a particular disadvantage as their time to degree is longer than this for any other subpopulation [vs. male online, x2 (df=1) = 4.85, p = .028; vs. female classroom-only, x2 (df=1) = 13.8, p <.001; vs. female online, x2 (df=1) = 16.5, p <.001].

Discussion

Contrary to negative results reported previously (Xu & Smith Jaggars, 2011; Smith-Jaggars & Xu, 2010), this study provides evidence that the time-to-degree process is more accelerated for students who participated in online study. Gender also explains variability in time-to-degree; female students are more likely to attain an associate degree in their first community college institution. As seen in previous studies (NCES, 2010), the transfer rates for students taking online courses are higher than attainment and dropout rates; this trend, however, does not appear to be alarming for a significant proportion of the transfer students (classroom-only: 22.86%; online: 27.14%) continue their education and receive a subsequent bachelor's degree. The higher rates of transfer and subsequent degree completion are also congruent with recent findings in the California Community College System (Johnson & Cuellar Mejilla, 2014).

Of importance also is the finding that participation in online coursework does not contribute significantly to more pronounced dropout trends beyond what is considered typical for community college students. These national level findings do not confirm previous investigations indicating higher levels of dropout among students taking online coursework but does align with more recent research by James, Swan and Daston (2016) indicating no significant differences in retention. Contrary to the conclusion that students who took higher proportions of online courses were slightly less likely to attain a degree or transfer to a four-year college than those who took fewer online courses (Jaggars, 2012) we found that online course-taking is associated with higher and faster degree completion and no significant differences in dropout or transfer.

The study was limited to three competing events (first associate degree, dropout and transfer) among an array of other possible events such as completion of a degree other than associate, and/or return after several years of withdrawal from the institution of first entry. Design features (the study's length of six years and the insufficient sample size of online students) prevents a more detailed and informative analysis of alternative pathways of college success. In addition, the study did not consider some important closely related factors such as temporal withdrawal (stopout) and length of enrollment spells. The goal of this study was to model the real time-to-event processes at the institution of first enrollment; hence the inclusion of all students,

regardless of actual stopout status or length of enrollment is justifiable. In addition, it should be noted that this study is primarily descriptive; future research should attempt to pinpoint the impact of factors such as employment histories, year-to-year fluctuation in employment, and changes in financial aid status and their time-varying effects on each of the three outcome variables. All of these factors may bear important consequences for degree attainment, transfer, or dropout and may contribute to a better understanding of the underlying risk mechanisms for each of these related outcomes.

These results extend research indicating small yet beneficial effects of online (Zhao et al., 2005; Means et al., 2009). Reviews of research in this area have found few significant differences in outcomes with more recent work suggesting modest benefits for online learners when specific conditions are met. These include course designs that ensure higher levels of interaction, embedded support for meta-cognitive strategies, and asynchronous formats (Zhao et al. 2005; Means et al., 2009). Additional work is needed to understand whether students who took online courses met these conditions or whether those who did enjoyed additional benefits not evident in this data.

Results indicating differences by gender are particularly interesting. This national data suggests that women are taking more online courses than men and graduating faster. The results also indicate that men who did not take any online courses fare worst in the attainment of a college credential, i.e. men taking some online courses graduate faster than men who do not. Women graduate faster in either condition but graduate most quickly when they took at least some online courses. These results deserve careful consideration and continued study.

While we do not believe online learning in any form is a panacea for the myriad challenges confronting higher education, these results provide a small degree of promise indicating that many years of effort and investment in online educational infrastructure were not wasted. These findings suggest that continued investment in and experimentation with online education may confer ongoing incremental benefits in assisting US college students to attain the many advantages associated with earning a college credential. We believe there is justification to briefly celebrate these modest achievements. Our conclusion that community college learners who take advantage of online course offerings appear to have a significantly higher six-year degree completion rate, and no significant differences in dropout compared with students who do not participate in online education is a small but meaningful accomplishment in an era recently characterized by hype, zeal, and overpromise in online education.

Effectiveness Of Fully Online Courses For College Students: Response To A Department Of Education Meta-Analysis

By Shanna Smith Jaggars & Thomas Bailey

Summary

Proponents of postsecondary online education were recently buoyed by a meta-analysis sponsored by the U.S. Department of Education suggesting that, in many cases, student learning outcomes in online courses are superior to those in traditional face-to-face courses. This finding does not hold, however, for the studies included in the meta-analysis that pertain to fully online, semester-length college courses; among these studies, there is no trend in favor of the online course mode. What is more, these studies consider courses that were taken by relatively well-prepared university students, so their results may not generalize to traditionally underserved populations. Therefore, while advocates argue that online learning is a promising means to increase access to college and to improve student progression through higher education programs, the Department of Education report does not present evidence that fully online delivery produces superior learning outcomes for typical college courses, particularly among low-income and academically underprepared students. Indeed some evidence beyond the meta-analysis suggests that, without additional supports, online learning may even undercut progression among low-income and academically underprepared students.

Introduction and Background

Over the past decade, online learning has become an increasingly popular option among postsecondary students. Yet the higher education community still regards fully online courses with some ambivalence, perhaps due to the mixed results of a large (if not necessarily rigorous) body of research literature. On the one hand, research suggests

that students who complete online courses learn as much as those in face-to-face instruction, earn equivalent grades, and are equally satisfied (e.g., see Jahng, Krug, & Zhang, 2007; Phipps & Merisotis, 1999; Sitzmann, Kraiger, Stewart, & Wisher, 2006; Zhao, Lei, Yan, Lai, & Tan, 2005). On the other hand, online students are less likely to complete their courses (Beatty-Guenter, 2003; Carr, 2000; Chambers, 2002; Moore, Bartkovich, Fetzner, & Ison, 2003).

Skeptics of online learning raise concerns about the quality of online coursework. Some note that rather than developing approaches to teaching that would take advantage of the capabilities of computer-mediated distance education, instructors in many cases simply transfer their in-class pedagogy to an online format (see Cox, 2005). Others suggest that student-teacher and student-student interactions are often limited (Bambara, Harbour, Davies, & Athey, 2009). These practices may contribute to low online course completion rates. Institutions harbor particular concern about online course performance among underprepared or traditionally underserved students, who are already at risk for course withdrawal and failure.

Advocates of online learning, in contrast, argue that technology-enhanced education can lead to superior learning outcomes, and that higher online dropout rates are due not to the medium per se but rather to the characteristics of students who choose online courses (see, e.g., Howell, Laws, & Lindsay, 2004). Advocates are also particularly optimistic about the potential of fully online coursework to promote greater access to college by reducing the cost and time of commuting and, in the case of asynchronous approaches, by allowing students to study on a schedule that is optimal for them. Indeed, this goal of improved access is one of the top drivers of institutional decision-making regarding increases in distance education offerings (Parsad & Lewis, 2008).

Recently, proponents of postsecondary online education were buoyed by a meta-analysis commissioned by the U.S. Department of Education (2009) which concluded that, among the studies considered, student learning outcomes in hybrid-online and fully online courses were equal to or better than those in traditional face-to-face courses. This conclusion included the caveat, however, that the positive effect for online learning outcomes was much stronger when contrasting hybrid-online to face-to-face courses than when contrasting fully online to face-to-face courses. In addition, the positive effect was much stronger when the hybrid-online course incorporated additional materials or time on task which was not included in the face-to-face course. Ignoring these subtler implications, popular media discussions of the findings (e.g., Lohr, 2009; Lamb, 2009; Stern, 2009) focused on the report's seemingly clear-cut generalization that "on average, students in online learning conditions performed better than those receiving face-to-face instruction" (U.S. Department of Education, Office of Planning, Evaluation, and Policy Development, 2009, p. ix).

This interpretation has also extended into the discourse of the higher education community. For example, higher-education experts participating in an online panel for The New York Times cited the meta-analysis as showing that students in

online courses typically have better outcomes than those in face-to-face courses ("College degrees without going to class," 2010). In this paper, we argue that such an interpretation is not warranted when considering fully online courses in the typical postsecondary setting. We also discuss implications of the studies for student access and progression among traditionally underserved populations.

Scope and Relevance of the Meta-Analysis

In contrast to previous reviews and meta-analyses that included studies of widely varying quality, the Department of Education report attempts to update and improve our understanding of online learning effectiveness by focusing on only rigorous research: random-assignment or quasi-experimental studies that compare learning outcomes between online and face-to-face courses. The meta-analysis includes both fully online and hybrid courses in its definition of "online courses." However, for institutions that aim to increase student access, fully online course offerings are a much more relevant concern, given that most hybrid courses require students to spend a substantial proportion of time on campus. For example, of the 23 hybrid courses that were examined in studies included in the meta-analysis, 20 required the students to physically attend class for the same amount of time that students in a face-to-face course would attend; the online portions of these courses were either in on-campus computer labs or were completed in addition to regular classroom time. Scaling up such hybrid course offerings is unlikely to improve access for students who have work, family, or transportation barriers to attending a physical classroom at specified times.

In keeping with the notion of improved student access as a strongly emphasized rationale for online learning, we first narrowed our focus to the 28 studies included in the Department of Education meta-analysis that compared fully online courses to face-to-face courses. Unfortunately, the majority of these studies are not relevant to the context of online college coursework for one of two reasons discussed more fully below: (1) conditions are unrepresentative of typical college courses, or (2) target populations are dissimilar to college students.

First, over half of the 28 studies on fully online learning concerned not a semester-length course but rather a short educational intervention on a discrete and specific topic, with an intervention time as short as 15 minutes. Moreover, some researchers who conducted the studies noted that they chose topics for the intervention that were particularly well-suited to the online context, such as how to use an Internet search engine. These studies, in general, may demonstrate that students can learn information on a specific topic from a computer as readily as they can a human, but the studies cannot address the more challenging issues inherent in maintaining student attention, learning, motivation, and important issue. As a result, these studies are minimally helpful to college administrators who are contemplating the potential costs and benefits of expanding semester-length online course offerings.

Given that many college students do not complete their online courses, student retention across the semester is a particularly persistence over a course of several months.

Second, the studies were conducted across widely varying target populations, including primary school students and professionals outside of the college setting. When considering only those studies conducted with undergraduate or graduate students in semester-long online courses, the set of 28 studies is reduced to 7. Below, we discuss these seven studies in more detail.

Comparison of Student Learning Outcomes in the Seven Relevant Studies

In each of the seven studies of fully online semester-length college courses included in the meta-analysis, the courses were asynchronous such that students could log on and view lectures or other course materials at any time, although some required periods of synchronous chat. In all studies, the lectures, materials, learning modules, quizzes, and tests presented in the online and face-to-face classrooms were reasonably equivalent.

- Caldwell (2006) examined an introductory computer science class (focused on the programming language C++) at a historically Black state university. Students enrolled in the class were randomly assigned to one of three course modes: face- to-face (face-to-face lecture and labs, no web materials), web-assisted (lecture and course materials online, face-to-face lab), and online (all materials and lab assignments online), with 20 students in each group. The online group's only communication with the instructor was via email, and the only communication with other students was through voluntary means such as chat or discussion boards. Across the course of the semester, no students from any group withdrew from the course. Six outcome measures were examined, including two multiple- choice midterm exams, three programming assignments, and a "proficiency" final exam. There were no significant differences between the groups on any of these outcomes.

- Cavus and Ibrahim (2007) focused on a Java programming course at a private international university. Students enrolled in the course were randomly assigned to one of three course modes (face-to-face, online with standard collaboration tools, online with advanced collaboration tools), with 18 students in each mode. Both online courses included web-based course notes and quizzes, as well as voluntary chat and discussion forums. Students using the "standard" collaboration tool worked jointly with other students on programming code, then ran the programs on their own PCs. In addition, the "advanced" tool allowed students to run their programming projects online and to automatically share their outputs with other students and the instructor. Each online course met synchronously for two hours a week using the relevant collaborative tool, and online students also had the option of using the

tools more often (although the extent to which they did so was not stated). Face-to-face students had no access to either online tool, and it is unclear whether other collaborative methods were built into the face-to-face course; it is also unclear whether the face-to-face students were taught in a lecture or a computer laboratory setting. Student withdrawal rates were not mentioned. The advanced-collaboration online course significantly outperformed both the standard-collaboration online and face-to-face courses on the midterm and final exam; there was no significant difference between the standard-collaboration online course and the face-to-face course in terms of those learning outcomes.

- Davis, Odell, Abbitt, and Amos (1999) considered an introductory educational technology course for pre-service teachers at a state university. Course content included using common software packages, manipulating digital images, developing websites and multimedia instruction modules, and evaluating educational software. Students enrolling in the course were randomly assigned to either an online (learning modules/tutorials online, with all communications voluntary through chat, email, or phone), face-to-face (traditional lecture), or integrated mode (face-to-face lecture in conjunction with the web-based modules), with 16 to 18 students in each mode. Student withdrawal rates were not mentioned. Learning outcomes were evaluated using pre- and post-tests designed to assess students' overall understanding and skill level with educational technology. There was no significant difference among the three groups in terms 2 course on telecommunications at a state university; 49 students were recruited to participate, with half remaining in the lecture hall and half taking the course online (lectures and notes online, with all communications voluntary through chat or bulletin board). Withdrawal rates were not mentioned. Learning outcomes were measured with three multiple-choice exams, which were summed together to create a total test score for each student. Results showed no significant difference childhood education course for undergraduates admitted to a teacher licensure program at a public university. Students enrolling in the course were invited to participate in the study; those who assented were randomly assigned to either an online or face-to-face section, with 18 students in each group. Online students were required to attend two hour-long synchronous chat sessions each week; they were also required to participate in small-group online activities. Student withdrawal rates were not mentioned. Across the semester, students in the online and face-to-face classes had the same test scores, but the online group was less likely to turn in assignments, leading to significantly lower overall grades for the online group (an average grade of B) in comparison with the face-to-face group (an average grade of A-minus).

- Peterson and Bond (2004) targeted postgraduate students seeking a certificate in secondary education at a public university who took either a course on the teaching of secondary reading or a course on the secondary curriculum. For each course, students chose to enroll in either a face-to-face or online section, with approximately 20 students in each of the four sections. Both types of classes included discussion; online courses accomplished this through an asynchronous discussion board. Student withdrawal rates were not discussed. Performance was assessed based on the quality of a course project. As the study did not randomize students, the researchers attempted to control for potential preexisting differences between groups by administering a pre-assessment of students' general understanding of the principles underlying the project. However, the pre-assessment was taken "well into the first half of the semester." Online students scored statistically significantly higher on the pre-assessment; after controlling for this difference, the two groups scored equivalently on the final project. Given the tardiness of the pretest assessment, it is difficult to interpret this result. Did more- prepared students select into the online course, which was reflected in the pretest scores? Or did the early weeks of the course prepare online students significantly better in terms of underlying project principles? Even without controlling for their pretest advantage, however, the online group still scored similarly to the face-to- face group on the post-test, indicating that the online students did not retain their

- Schoenfeld-Tacher, McConnell, and Graham (2001) examined students in an upper-division tissue biology course at a state university. Students chose to enroll in either an online or face-to-face version of the course; subsequently, 11 students from the online course and 33 from the face-to-face course agreed to participate in the study. It was not clear whether these volunteers represented a majority of each classroom, a small subset of each classroom, or (given the unequal N) a majority of the face-to-face enrollees and a small subset of the online enrollees. The face- to-face course included traditional lecture and laboratory sessions; the online course included web-based versions of these materials as well as instructor-led synchronous discussions and voluntary learner-led online review sessions.

Student withdrawal rates were not discussed. Learning outcomes were assessed using multiple-choice pre- and post-tests. In an attempt to remove potential selection effects due to the non-randomized design, student pre-test scores were treated as a control in the comparison of the group post-tests. Curiously, however, the pre- and post-test scores were not related (with $n2 = 0.000$). Pre-test scores were also extremely low, with group averages of 10–15 on a scale that seemed to range to 100 (given that post-test group averages were in the 70-80 range with standard deviations above 10). Accordingly, it seems likely that the multiple- choice pre-test

scores represented student random guessing and thus did not capture pre-existing differences between the groups in any substantive way. After controlling for the pre-test, online students showed significantly higher adjusted post-test scores; however, given the ineffectiveness of the pre-test, this result may merely reflect differences between students who chose to enroll in the online versus face-to-face course.

Lack of consistent differences in outcomes between online and face-to-face.

Across the seven studies, three showed no statistically significant differences in learning outcomes between the two types of courses (Caldwell, 2006; Davis et al., 1999; LaRose et al., 1998). Another study showed no quantitative differences but noted that qualitatively students felt they were better prepared by the face-to-face course (Peterson & Bond, 2004). It could be argued that the studies showing no statistically significant effects did so only due to small sample sizes; however, effect sizes in these studies were also quite small, and descriptively the direction of effects was mixed. For example, in Caldwell (2006) face-to-face students performed slightly better on three learning outcomes, while the fifth study (Cavus & Ibrahim, 2007) provided two distinct results. First, as with the first four studies, students in the "standard" online course and the traditional face-to-face course had similar learning outcomes. Second, the incorporation of collaborative code- editing and output-review into the standard online course (thus composing the "advanced" course) resulted in outcomes superior to both the standard online course and the face-to-face course. Given the lack of information concerning the face-to-face course structure, it is difficult to interpret the meaning of this finding. If face-to-face students were given little or no opportunity for collaboration, then similarly superior results would likely be achieved by incorporating these features into the face-to-face course structure (e.g., via computer-based laboratory sessions). On the other hand, if the face-to-face course already incorporated similar collaborative methods, then perhaps the superiority of the online version of the tool lay in its 24/7 accessibility. The latter interpretation would provide a stronger argument for the potential strengths of online coursework, although it should be noted that such online tools could be equally readily incorporated into web- enabled face-to-face courses, hybrid courses, or fully online courses.

The sixth study showed that students in online courses were less likely to turn in their assignments and therefore earned lower grades (Mentzer et al., 2007). The final study found positive results for online students (Schoenfeld-Tacher et al., 2001); however, this study had the most dubious research strategy among all seven studies—it combined initial self-selection into course mode with volunteerism (at unknown and potentially unequal rates) into the study, and it included only a single and uninformative covariate—

Overall, then, the online courses showed no strong advantage or disadvantage in terms of learning outcomes among the samples of students under study. As a side note, in the meta-analysis summary table (U.S. Department of Education, Office of Planning, Evaluation, and Policy Development, 2009, Exhibit 4a), the reader finds that the effect sizes for

six of these studies were reported as positive while one was reported as negative. Our re-examination of the studies suggests, however, that three should be classified as negative (Davis et al., 1999; Peterson & Bond, 2004; Mentzer et al., 2007), one as mixed (Caldwell, 2006), two as positive (Cavus & Ibrahim, 2007; Schoenfeld-Tacher et al., 2001), and one as unclassifiable based on information provided in the published article (LaRose et al., 1998). The strongest positive result (Schoenfeld-Tacher et al., 2001) was based on the lowest quality research design, and the other positive result (Cavus & Ibrahim, 2007) was due to the inclusion of a collaborative pedagogical tool which seemed to be unavailable to the face-to-face class.

Course selectivity. More than half of the studies targeted courses that explicitly taught technology or electronic communication concepts, perhaps because these topics were thought to be particularly well suited for online teaching and learning. As one author noted, the instructors felt it would be appropriate to create an online version of the course because "we would be using technology (the Internet) to teach how to use technology" (Davis et al., 1999). All online courses were small, typically containing 18 to 20 students. As a basis for comparison, only one third of online college courses contain 20 students or fewer (National Education Association, 2000). As a result, the findings from these studies may not generalize to large online classes or to classes addressing non-technology-oriented topics.

Student selectivity. All seven studies were conducted at mid-sized or large universities, with five rated as "selective" or "highly selective" by U.S. News and World Report, and all seemed to involve relatively well-prepared students. Four targeted students who were advanced in their course of study (Davis et al., 1999; Mentzer et al., 2007; Peterson & Bond, 2004; Schoenfeld-Tacher et al., 2001). Another (Caldwell, 2006) included primarily freshmen at a less selective institution, but prerequisites for the course included a high school computer science course and at least a C in a college-level algebra course, which represents a fairly high standard for entering college students, particularly for those at less selective and nonselective colleges. In three studies (LaRose et al., 1998; Mentzer et al., 2007; Schoenfeld-Tacher et al., 2001), students volunteered to participate. While participation rates were not explicitly specified, the rate was approximately one- third in Mentzer (who noted that 36 students volunteered from a pool of "100+") and approximately 21% in LaRose et al. (who reported the lecture-hall size as 230 for the previous semester but did not report the size for the semester under study). None of the studies specified how student volunteers differed from students who did not participate, but it is likely that the volunteers were more prepared or more motivated than students who chose not to participate. For example, another study of lecture-hall students who were recruited to participate in a study of online learning (and were then randomly assigned to either the online or face-to-face group) showed that volunteers had significantly stronger subject knowledge at the beginning of the course than did students who chose not to participate in the study (Miller, Cohen, & Beffa-Negrini, 2001).

As an indicator of course and student selectivity, it is instructive to note that in Caldwell (2006) no students withdrew from any of the three studied courses, while in the remaining studies student withdrawal was not mentioned. This omission is striking, given that most instructors experience at least some rate of course withdrawal subsequent to the census date, regardless of whether the course is online or face-to-face. For example, one program at a highly selective university had an average course withdrawal rate of 12% (Cohoon, 2007), while a moderately selective university had course withdrawal rates of 26% (Cornwell, Lee, & Mustard, 2003). Studies of community colleges typically report course withdrawal rates in the 20–30% range, with higher withdrawal rates for online courses (Beatty-Guenter, 2003; Carr, 2000; Chambers, 2002; Moore, Bartkovich, Fetzner, & Ison, 2003). For example, a recent survey of community college administrators indicated that course retention was 65% for distance-education courses compared to 72% for face-to-face courses (Instructional Technology Council, 2009). For studies included in the meta-analysis that omitted mention of the course withdrawal rate, we are faced with two possibilities: (1) the students were highly selective at the outset, being so prepared or motivated that none withdrew; or (2) an unknown proportion of students withdrew, and only those who remained were compared in terms of their learning outcomes. In either case, the study results are applicable only to higher-performing and more-motivated students.

Even worse, if a higher proportion of lower-performing students withdraw from an online course than from a face-to-face course, then the students remaining in the online learning group will appear to have superior learning outcomes merely due to this unequal attrition. For example, in a study of a developmental writing course in a community college, students in the online version of the course were substantially more likely to withdraw over the course of the semester than were students in the face-to-face version (after controlling for initial reading and writing placement scores, gender, minority status, full- time student status, late vs. early registration for the semester, and age). It may not be surprising, then, that students who stayed in the online course were more likely to earn a good grade than were face-to-face students who stayed (Carpenter, Brown, & Hickman, 2004).

Summary across the seven studies. Perhaps one of the most interesting insights that emerged for us from reading the Department of Education meta-analysis is the small number of reasonably rigorous studies in this area despite the rapid growth of online education and the enthusiasm and high hopes associated with it. Although the meta- analysis was heralded as evidence of the superiority of online courses in higher education, we find that the analysis does not refute the common wisdom stated at the outset of this essay—that in comparison to face-to-face courses, the typical online college course has higher student withdrawal rates but equal learning outcomes among those who complete the course. Moreover, the evidence in regard to equality of learning outcomes seems applicable only to relatively well-prepared students. With

these results in mind, we discuss the implications of online learning for access and progression, particularly among low-income and academically underprepared students.

Implications for Low-Income and Underprepared Student Access and Success

The studies' focus on well-prepared or advanced students may not be surprising given that success in online courses is thought to require high levels of motivation, self-efficacy, persistence, communication skills, and computer literacy (Liu, Gomez, Khan, & Yen, 2007). However, this observation raises a key concern. A primary assumption underpinning the increase in online course offerings is that they increase educational access (Allen & Seaman, 2008; Beatty-Guenter, 2002; Cox, 2005; Epper & Garn, 2003; Kuenzi, Skinner, & Smole, 2005; Parsad & Lewis, 2008; Rogers, 2001), presumably for those who are traditionally underserved, such as low-income, rural or inner-city, first- generation, or academically underprepared students. These students may struggle with a variety of challenges that limit their ability to attend classes on campus: child care and other family responsibilities, full-time employment, prohibitive transportation costs, or a time-consuming commute. Thus it seems reasonable that the convenience and flexibility of fully online learning will particularly benefit them. Thus far, however, there is little evidence that online learning has increased college access or academic success for low- income and underprepared students.

Access. We know of no studies that have examined whether the postsecondary enrollment of low-income and underprepared students has accelerated as a result of the past decade's explosion in online learning. It seems clear, though, that this population will be underrepresented among the group of students who are enticed by the online modality to enroll in college. Low-income students may face significant barriers to both enrollment in and successful completion of online courses, such as lack of high-speed Internet access at home. In 2007, only 43% of households with incomes less than $40,000, 48% of adults who had at most a high school degree, and 52% of African Americans had high-speed Internet access at home (Rainie, Estabrook, & Witt, 2007). For many low-income students, then, there may be other options that would improve college access and progression more than would an increase in online course offerings. When asked to choose from a list the option that would most help them return to school, only 7% of college dropouts said that putting classes online would help the most—far below the proportion who selected cutting the cost of college by a quarter (25%), providing more loans (14%), allowing part-time students to qualify for financial aid (13%), or providing day care (12%) (Johnson & Rochkind, 2009).

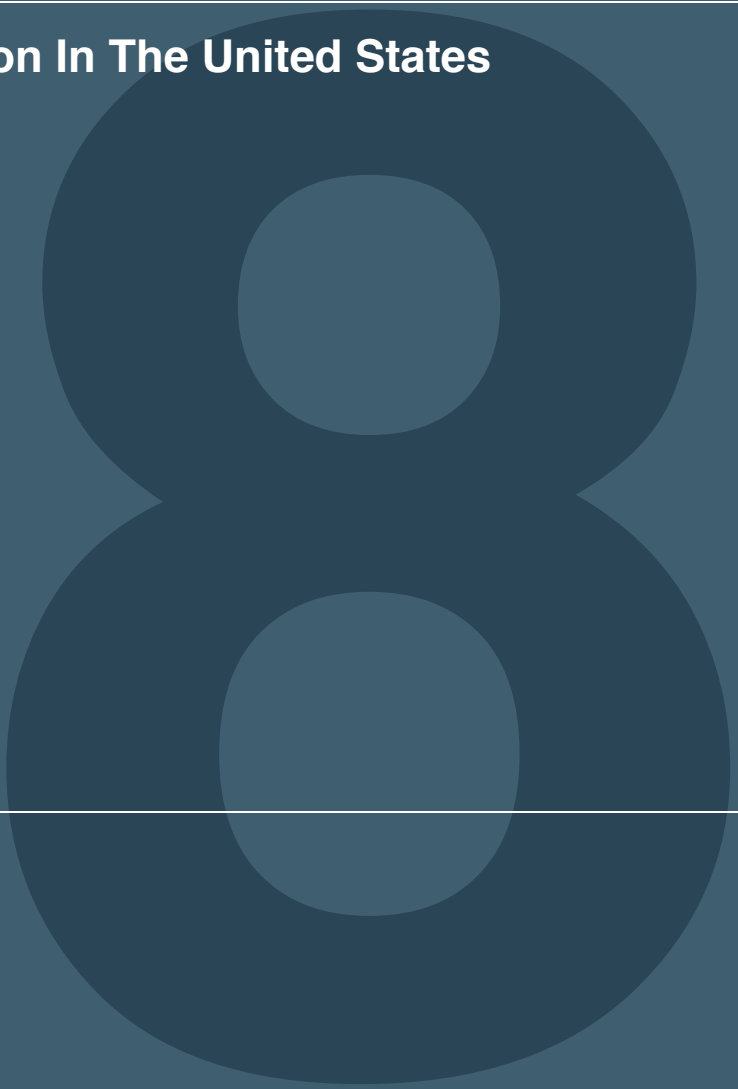
Success. In addition to potential financial and technology barriers to online coursework, low-income and academically underprepared college entrants may also struggle with social and psychological skills, such as self-direction, self-discipline, and help-seeking, which most institutions feel are required for success in distance education (Liu et al., 2007). Of the seven studies included in the Department of Education meta-analysis that focused on postsecondary students in fully online semester-length courses, only one examined the impacts of the course method on lower-performing students: Peterson and Bond (2004) performed a descriptive analysis suggesting that the lower one-third of students performed substantially better in the face-to-face setting than in the online setting. A larger scan of the research literature on online learning effectiveness uncovered only a few additional studies focusing specifically on low-income or academically underprepared students.

Similar to the studies included in the meta-analysis, relatively well-prepared university students were randomized into online or face-to-face sections of a microeconomics course. The study found no significant difference between the two groups overall but noted that among students who had low prior GPAs, those in the online condition scored significantly lower on in-class exams than did those in the face-to-face sections (Figlio, Rush, & Lin, 2010). Second, studies using institutional data suggest that underprepared community college students are more likely to withdraw from online than face-to-face courses, even after including a variety of controls. As noted above, Carpenter et al. (2004) controlled for an array of demographic factors and found that community college developmental writing students were statistically significantly more likely to withdraw from an online course. Similarly, a study of developmental mathematics in community colleges found that course withdrawal rates were two to three times higher in online sections than in face-to-face sections of each course (Blackner, 2000), a gap which remained significant after controlling for math anxiety, locus of control, and learning style. Another study of developmental mathematics students in community college found that completion rates were higher for face-to-face (80%) than online (61%) courses, a difference which remained consistent and was statistically significant after controlling for age, ethnicity, marital status, gender, and social-interaction learning style (Zavarella, 2008). In the Zavarella study, approximately half of the students who withdrew provided the reason for their withdrawal. Although sample sizes were small, 70% of online students withdrew because of technical problems, computer-based learning issues, or other factors related to the online nature of the course. These findings imply that low-income and underprepared students' academic success and progression may be reduced by participation in online courses. Overall, though, we have been struck by the dearth of relevant research in this important area.

First, one additional experimental study was released after the conclusions. Most institutions place a strong value on increasing access for underserved students. And much of the postsecondary reform agenda promulgated by major foundations, as well as by the current administration, is focused explicitly on improving the probability of success for students after they first enroll. Does online learning meet these goals? For well-prepared and motivated students, perhaps it does; the Department of Education meta-analysis demonstrates that online coursework does no harm to this population, and online education clearly offers these students the benefit of convenience and flexibility in the location and scheduling of their studies. For low-income and underprepared students, however, an expansion of online education may not substantially improve access and may undercut academic success and progression through school.

This does not mean that online education should not be expanded, but it does mean that a program designed to improve low-income and underprepared student access via online learning will need to attend to several important problems. First, in order for expanded online learning to translate to increased access for low-income students, the cost to students must be reduced, both in terms of tuition and at-home technological infrastructure. President Obama's 2009 proposal to expand education through freely available online courses appeared to be a step in the right direction, but this provision was eliminated when the Health Care and Education Reconciliation Act was passed. Free high-quality online courses would be particularly helpful if paired with the low-cost provision of high-speed Internet access and laptops to low-income students (for example, see Fairlie & London, 2009). In order for increased online course offerings to translate to improved academic success and postsecondary progression for low-income and academically underprepared students, we need to develop and evaluate programs and practices explicitly designed to improve such students' retention in online courses. Without a more critical examination of the pedagogical factors, student supports, and institutional structures that reinforce online students' academic commitment and motivation, it is unlikely that an increase in online offerings will result in a substantial increase in educational attainment among low-income and underprepared students.

Tracking Online Education In The United States



By Elaine Allen & Jeff Seaman with Russell Poulin & Terri Taylor Straut

Executive Summary

Online Report Card - Tracking Online Education in the United States is the thirteenth annual report on the state of online learning in U.S. higher education. The survey is designed, administered and analyzed by the Babson Survey Research Group, with additional data from the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS). This study is aimed at answering fundamental questions about the nature and extent of online education.

How Many Students are Learning Online (at a Distance)?

Background: This report series measures the trend of distance education enrollments continually increasing at rates far in excess of those of overall higher education.

The evidence: Distance education enrollments continue to grow, even in the face of declining overall higher education enrollments.

- The observed growth rate from 2013 to 2014 of the number of students taking atleast one distance course was 3.9%, up from the 3.7% rate for the previous year.
- For the second year in a row the rate of growth in distance enrollments was very uneven; Private not-for-profit institutions grew by 11.3% while private for profit institutions saw their distance enrollments drop by 2.8%.

- The total of 5.8 million fall 2014 distance education students is composed of 2.85 million taking all of their courses at a distance and 2.97 million taking some, but not all, courses at a distance.
- Public institutions command the largest portion of distance education students, with 72.7% of undergraduate and 38.7% of graduate-level distance students.
- The number of students not taking any distance education courses continues to drop, down 434,236 from 2012 to 2013 and a further 390,815 from 2013 to 2014.

Is Online Learning Strategic?

Background: Previous reports in this series noted the proportion of institutions that believe that online education is a critical component of their long-term strategy has shown small but steady increases for a decade, followed by a retreat in 2013, and a bounce back in 2014.

The evidence: The proportion of academic leaders who report that online learning is critical to their institution's long-term strategy has shown the largestever one-year decline.

- The proportion of chief academic leaders that say online learning is critical to their long-term strategy fell from 70.8% in 2014 to 63.3% this year.
- Institutions with distance offerings remain steadfast in their belief that it is critical for their long term strategy (77.2% agreeing in 2014 and 77.1% in 2015)
- Institutions with no distance offerings account for all of the year-to-year change (33.8% thought it was critical in 2014, only 19.5% thought it was critical 2015)

Are Online Learning Outcomes Comparable to Face-to-Face Instruction?

Background: After years of a consistently growing majority of chief academic officers rating the learning outcomes for online education "as good as or better" than those for face-to-face instruction, there was a small reversal in 2013 followed by a rebound in 2014.

The evidence: The 2015 results show no change in the percentage of academic leaders who view the learning outcomes for online instruction as the same or superior to face-to-face instruction.

The percent of academic leaders rating the learning outcomes in online education as the same or superior to those in face-to-face instruction was 71.4% in 2015. This represents a drop from the 2014 figure of 77.0%, but still much higher than the 57.2% rate in 2003.

- The proportion that believe the learning outcomes for online education are inferior to those of face-to-face instruction is now at 28.6%.

- As expected, leaders at schools with large distance education enrollments (10,000 or more) are the most positive; 41.7% rate online as "superior" or "somewhat superior" to face-to-face instruction.

- Academic leaders remain far more positive about the learning outcomes for blended instruction than they are for online education.

Faculty Acceptance of Online Education

Background: For the past twelve years no more than one-third of chief academic officers reported that their faculty accepted the value and legitimacy of online education.

The evidence: While the number of distance programs and courses online continue to grow, the perception of chief academic officers of the acceptance of this learning modality by faculty has not improved.

- Only 29.1% of chief academic officers believe their faculty accept the value and legitimacy of online education. This rate is lower than the rate recorded in 2004.

- Chief academic officers at institutions with large distance enrollments have the most positive view of their faculty's acceptance; 60.1% of those at institutions with 10,000 or more distance enrollments report faculty acceptance.

- In contrast, only 11.6% of the leaders of institutions with no distance offerings believe their faculty accept the value and legitimacy of online education.

Massive Open Online Courses (MOOCs)

Background: Reports from the last three years noted that only a small number of institutions either had or were planning a Massive Open Online Course (MOOC).

The evidence: The results for 2015 are very similar to previous years — a small segment of higher education institutions are experimenting with or planning MOOCs. Most institutions have decided against a MOOC, or remain undecided.

- The percent of higher education institutions that currently have a MOOC increased from 2.6% in 2012 to 5.0% in 2013, to 8.0% in 2014, and now stands at 11.3%.

- Many institutions (27.8%) report they are still undecided about MOOCs, while the single largest group (58.7%) say they have no plans for a MOOC.

Definitions: Online Learning And Moocs

This report focuses on online courses and programs offered as a normal part of an institution's programs, as well as Massive Open Online Courses (MOOCs) typically offered for free to those outside of the institution's student body.

An online course is defined as one in which at least 80% of the course content is delivered online. Face-to-face instruction includes courses in which zero to 29% of the content is delivered online; this category includes both traditional and web facilitated courses. The remaining alternative, blended (or hybrid) instruction, has between 30% and 80% of course content delivered online.

The definition of an online course has remained consistent for the thirteen years these national reports have been conducted. These definitions were presented to the respondents at the beginning of the survey and repeated in the body of individual questions where appropriate. Portions of the report use enrollment information from the National Center for Education Statistics' Integrated Postsecondary Education Data System, which uses a different definition for "distance education."

While there is considerable diversity among course delivery methods used by individual instructors, the following is presented to illustrate the prototypical course classifications used in this study.

IPEDS defines a distance education course as "A course in which the instructional content is delivered exclusively via distance education. Requirements for coming to campus for orientation, testing, or academic support services do not exclude a course from being classified as distance education."2 Full details of all IPEDS definitions are included in the Methodology section of this report. While sharing many characteristics with online and distance courses, MOOCs are somewhat different. Oxford Dictionaries Online defines a MOOC as: "A course of study made available over the Internet without charge to a very large number of people."3 MOOCs typically differ from "regular" online courses in that:

- Those participating are not registered students at the school.
- They are designed for unlimited participation and open access via the web – no tuition is charged.
- There is typically no credit given for completion of the MOOC.

Schools may offer online learning and MOOCs in a variety of ways. The survey asked respondents to characterize their face-to-face, blended, and online learning by the level of the course (undergraduate, graduate, non-credit, etc.). Similarly, respondents were asked to characterize their face-to-face, blended, and online program offerings by level. They were also asked about any MOOC offerings.

DISTANCE ENROLLMENTS

Overall Higher Education Enrollment

Based on federal data from fall 2014 (the most recent year available), the vast majority of all U.S. higher education students attend public institutions. Public institutions represented nearly three quarters of all fall 2014 enrollments (72%), private non-profits represented 20%, and for-profit institutions enrolled only 8% of all students.

Enrollment of Students Taking Exclusively Distance Education Courses

There were in excess of 2.8 million students taking all of their higher education instructions at a distance in fall of 2014. This represents one-in-seven (14%) of all higher education

students. Almost half (1,382,872, or 48%) of those students learning exclusively at a distance did so at a public institution. For-profit institutions accounted for slightly less than one-third (843,579, or 30%) of exclusively distance enrollments. “Exclusively” distance education students are a growing segment of the overall student population. For last year's analysis of fall 2013 enrollments, they comprised 12.5% (one-in-eight) of all higher education students

Enrollment of Students Taking Some of Their Courses at a Distance

There were more students taking some, but not all, of their courses at a distance than the number who took exclusively distance courses (2,970,034, versus 2,858,792). This corresponds to one-in-seven (14%) of all higher education students taking "Some But Not All" of their courses at a distance. Public institutions represented the vast majority (85%) of “Some But Not All” distance education enrollments in 2014. Private non-profits represent 11% of these enrollments, while the for-profit institutions represent just 4% of distance education enrollments in this category.

Enrollment of Students Taking At Least One Course at a Distance

With more than one in four students (28%) taking some of their courses at a distance, these courses seem to have become a common part of the course delivery modality for many students. More than two-thirds (67%) of students enrolled in "At Least One" distance course do so at a public institution.

There is variation in the proportion of students taking “At Least One” course at a distance by sector:

- 27% of public institution students took at least one distance course.
- 23% of private non-profit students took at least one distance course.
- 60% of private for-profit students took at least one distance course.

Judging by the enrollments, private colleges may view distance courses as primarily a tool to service distance students. Public colleges, on the other hand, appear to incorporate distance courses for both on-campus and distance students.

Changes in Distance Enrollments

Distance education enrollments continue to grow at a healthy rate, showing a 7% increase overall between fall 2012 and fall 2014. The growth in distance enrollments among public and private non-profit institutions during this time of overall enrollment decline is noteworthy. Many institutions are continuing to add distance education programs and grow existing ones even while campus-based enrollments are declining.

The 2012 to 2014 growth represents 403,420 additional distance students over this two-year time period. But comparing 2014 distance enrollments to data from 2012 reveals great disparities by sector:

- The not-for-profit sector experienced tremendous growth (26%, or 196,054 students).
- The for-profit sector experienced a significant decrease (-10%, or -101,045 students).
- Public institutions experienced a 9% growth (308,411 students).

The for-profit sector almost fell to last place among sectors enrolling the most distance education students. This is a remarkable outcome, considering the for-profit sector led the private, non-profit sector by more than one-quarter million (297,521) enrollments in 2012. In 2014, that difference fell to only 422 enrollments

The growth in the number of distance education students is all the more impressive given that overall enrollments in higher education have been shrinking during this same time period. Overall enrollments decreased by 248,091 students from 2012 to 2013, and then by a further 173,540 from 2013 to 2014. The combination of shrinking overall enrollments and growing distance enrollments means that the number of students not taking any distance education course has decreased even faster, losing 434,236 students from 2012 to 2013 and 390,815 from 2013 to 2014. This translates into 825,051 fewer students not taking any distance courses in 2014 than two years earlier in 2012.

Location of Distance Education Students

The majority (53%) of students taking exclusively distance education courses reside in the same state as the institution that they are attending. The next largest group (41%) resides in the U.S., but in a different state than the institution they are attending. U.S. colleges and universities continue to serve very few international distance education students, less than 2% in any sector.

Institutions are expected to have obtained a state's authorization (or other approval, if needed) prior to enrolling students in that state. The first step in the state authorization process is for an institution to know where its students are located. The sector analysis shows wide differences in student location by type of institution:

- Public institutions report that 84% of their exclusively distance students are from inside the institution's state.
- Private for-profit institutions report that 75% of their exclusively distance students are from outside of the state.
- Private non-profit institutions report that over half (56%) of their exclusively distance enrollments are from out-of-state.

It is not surprising that public institutions focus on students within their own state, especially when public institutions sometimes charge differential tuition for nonresident students. It is surprising that the private for-profit sector has so many students in the "State Unknown" and "Location Unknown/Not Reported" categories. The for-profit institutions are more closely regulated by the states. The institutions from this sector that we have observed have long been in compliance with state authorization rules, even before the state authorization issue was highlighted in the federal regulations of 2010. A few institutions with large enrollments account for most of the enrollments with location unknown.

Level of Distance Education Students

There are nearly five times as many undergraduate enrollments (4,862,519) as graduate enrollments (966,307) among students taking at least one distance education course. Public institutions represent nearly three out of four (73%) distance education enrollments at the undergraduate level. Private, non-profit institutions represent 12% of undergraduate distance enrollments, while private for-profits institutions represent 15%.

It is sometimes difficult to assemble all of the general education courses required to offer a fully distance undergraduate program. Even with those barriers, colleges enrolled more than two million students exclusively at a distance. This category represents more than 10% of all higher education students enrolled in Fall 2014. Universities often start with graduate programs when implementing distance education, as their shorter duration makes them more cost-effective to develop and deliver than undergraduate programs.

Public institutions continue to lead in overall distance education enrollments, despite the efforts of the other sectors to increase their distance enrollments. Public institutions command the majority of “Some But Not All” enrollments at both the undergraduate level (87%) and at the graduate level (56%). Private nonprofits represent the second largest enrollment group at both levels, 9% of undergraduate enrollment, and 39% of graduate enrollments in “Some But Not All” distance education. Private for-profits represent the smallest enrollment group, 5% of undergraduate enrollments and 4% of graduate enrollments in the “Some But Not All” category of distance education courses.

Public institutions represent the largest proportion of graduate enrollment at a distance (39%). Private non-profit institutions represent 36% of graduate enrollments online, while private for-profit institutions represent 25% of graduate enrollments online.

Concentration of Distance Enrollments

Students enrolled in distance education are highly concentrated in a relatively small number of institutions. There were 4,806 active degree-granting institutions open to the public in fall of 2014 in the IPEDS data files. The 5,828,826 fall 2014 students enrolled in distance education courses were spread across 3,324 (69.2%) of these institutions. However, almost half of these students are concentrated in

just five percent of the institutions: the 247 institutions with 5,000 or more distance enrollments represent only 5.1% of all institutions, but 49.1% of the student enrollments. The 80 institutions with 10,000 or more distance enrollments represent only 1.7% of all institutions, but command 29.8% of all distance enrollments.

Looking at this in another way, the top 1% of all institutions represents 29.8% of distance enrollments, and the top 10% of institutions represent 64.5%. Having close to two-thirds of all distance enrollments in only 10% of all higher education institutions is a very high degree of concentration.

There are several important implications of this high degree of distance enrollment concentration. One of the most important is that decisions of a relatively small number of academic leaders have a very large impact on the overall distance education universe. The opinions of key leaders among the top 481 institutions (the top 10%) on how they market and evolve their distance programs will impact the large majority of distance students. It is therefore important to understand how the views and opinions of these select leaders are the same and/or different from those at other institutions offering distance education.

From the student perspective, the concentration of large numbers of students in a small number of schools means that most distance students are enrolled in large institutions with large numbers of fellow distance classmates. Results over the years have shown that adding and growing distance education programs requires considerable resources – resources that smaller institutions are typically lacking.

ATTITUDES AND PRACTICE

Is Online Learning Strategic?

The long-term pattern in the proportion of institutions that agreed with the statement "Online education is critical to the long-term strategy of my institution"has seen small year-to-year increases in the proportion believing that it was critical for their long-term strategy, a steady decline among those who were neutral, and a consistent group of holdouts that disagreed. This pattern was upset in 2013, where the results contained both the largest-ever decrease in the proportion that agreed that online education is critical for their strategy, and the first-ever increase in the rate of those saying that they are neutral on the topic. Results for 2014, however, reflected a return to the historic pattern.

Results for 2015 mirror those for 2013, with the largest-ever drop in the proportion of institutions reporting that online education is critical to their longterm strategy: from 70.8% in 2014, to 63.3% in 2015. The proportion that disagreed with this statement increased from 8.6% in 2014 to 13.7% in 2015.

Does this largest-ever drop in the percentage of institutions saying that online education is critical for their long-term strategy mean that institutions are turning away from

online education and will be closing down online courses and programs? Who are the institutions that have changed their opinion over the past year – and what impact will this change of heart have on the future on online education?

Comparing the pattern of responses about the strategic importance of online education over the past two years shows that virtually all the change is occurring among the very smallest institutions. In 2014, 70.2% of these small institutions reported that online education was a critical part of their long-term strategy. By 2015 this had dropped by a third to only 46.0%.

Why are these small schools turning away from online education? Analysis of the drop between 2012 and 2013 showed that institutions that did not yet have online or distance offerings accounted for all of the decrease. Examining the 2014 to 2015 drop reveals the exact same pattern: those institutions with online offerings are just as positive about it as ever, but those who have no offerings are no longer saying that it will be part of their future plans.

The change of opinion among the small institutions that no longer have aspirations to add online courses and/or programs will have no impact on the distance education universe. While 52.3% of all higher education institutions have overall enrollments of 1,500 or fewer total students, this sector accounts for only 6.3% of all enrollments. Those small institutions without any online offerings are among the smallest, and enroll only 2.1% of all students. If all of these institutions decided tomorrow to begin an aggressive push to add online courses, the total number of distance students would change by only about one percentage point.

This is not a new issue; a common theme over the course of these reports has been that the smallest institutions have consistently reported an inability to add distance programs because of resource limitations. The most recent results seem to indicate that rather than year after year of reporting aspirations to add online courses, many of them have decided it is no longer in their future.

Public institutions, which began offering online courses and programs sooner than either private nonprofit or private for-profit institutions, have consistently maintained that these types of programs were critical to their long-term strategy. The proportion of private nonprofit institutions that held this view has increased over time and then dropped this past year, but has always been below the level of public institutions.

Private for-profit institutions continue to show the greatest volatility. After several years with a level similar to private nonprofits, their level of agreement that online education is critical for their long-term strategy increased faster for a few years, dropped back in 2012 and 2013, and then bounced back in 2014. The 2014 results now appear to be a bit of false optimism, as 2015 responses show a huge decrease in the proportion of private for-profit institutions reporting that online education is critical for their long-term strategy.

A large majority of all institutions with distance education students report that online education is critical to their

long-term strategy. The proportion ranges from 76.3% at institutions with less that 2,500 distance students enrolled, to 90.3% among institutions with greater than 10,000 distance students. A much smaller number of schools with no current distance enrollment (19.5%) report aspirations for adding this type of program.

Not all institutions that report that online education is critical to their long-term strategy have actually incorporated this belief into their formal strategic plan. This gap was first evident in a series of studies the Babson Survey Research Group conducted for the APLU-Sloan National Commission on Online Learning. These examined Association of Public and Land-grant Universities (APLU) presidents and chancellors, Tribal College and University (TCU) presidents, and the presidents and chancellors of National Association for Educational Opportunity (NAFEO) member-institutions.

This series of annual studies of online education have shown that this gap is an important issue across all of higher education. There has been little change over the past several years; the most recent responses for 2015 confirm that the gap continues to exist, with only 41.3% of institutions reporting inclusion in their formal strategic plan.

The picture is very different, however, when we turn our attention to the institutions with the largest numbers of distance student enrollments. Among this small number of institutions (less than 2% of all higher education institutions) that command the lion's share of the distance enrollments (29.8%), all report significant inclusion in their formal strategic plan. Less than one-half of schools with lower levels of distance enrollments say that it is included in their plan, while 17.4% of those with no current distance enrollments say that they are planning for them.

Faculty Acceptance of Online Education

Even after a decade of substantial growth in the number of schools with distance offerings and the number of students taking these courses, the level of skepticism among faculty has remained very high. Only a small portion of all academic leaders report that their faculty "accept the value and legitimacy of online education." The trend over the past several years has been one of little change from year to year. A continuing failure of online education has been the inability to convince its most important audience – higher education faculty members – of its worth.

There is a strong relationship between the reported level of acceptance among faculty members and the number of distance education students at that institution, with faculty at institutions with larger numbers of distance students being more accepting. However, even among those institutions most deeply invested in distance education with over 10,000 such students enrolled, only 60.1% of their academic leaders can report that their faculty accept it. These percentages drop even further for schools with fewer students (48.5% among schools with between 5,000 and 10,000 distance enrollments, and only 34.6% of those with less than 5,000). The rate is even lower among institutions with no distance students, where only 11.6% report that their faculty accept the value and legitimacy of online education.

Given that distance education enrollments have continued to grow even in the face of a continued lack of faculty acceptance, one must ask how important faculty attitudes are to institutional leaders. When asked if these faculty attitudes presented a significant obstacle, one third of the institutional leaders agree that they did. Most leaders remain neutral, with only 17 percent reporting that faculty attitudes did not pose a significant obstacle.

As might be expected, chief academic officers at the institutions with the largest distance enrollments had the least amount of concern with the potential impact of faculty attitudes. It is not clear if this is due to their faculty being more accepting (as we noted above) or because they have evolved better ways of recruiting the segments of their faculty that do embrace online learning.

Are Learning Outcomes in Online Offerings Comparable to Face-to-Face?

It is always hard the judge the quality of something where there is no universally agreed upon metric. Such is the case for education – where there is no single measure of education quality – either for face-to-face or for distance education. This report series has examined the issue by asking academic leaders to rate the relative quality of the learning outcomes for online courses with those of comparable face-to face courses.

As we have noted in previous reports, it is important to understand that chief academic officers are reporting their personal perceptions about the relative quality of online and face-to-face instruction. They may base their opinions on detailed metrics for courses at their own institutions or on far less rigorous factors, such as conversations with peers or what they have read in the press. These perceptions remain important, as these academic leaders are making critical decisions for their institutions.

The proportion of academic leaders that rated online education as good as or better than face-to-face instruction was 57.2% in 2003. The relative view of online quality has improved over time, with a pattern of slow but steady improvement in the relative view of online learning outcomes from 2003 until 2012, where 77.0% of the respondents rated online as good or better. Results since then, however, have shown been less positive, with the results for 2015 showing only 71.4% rating online as good or better.

Academic leaders at institutions with online offerings have consistently held a more favorable opinion of the learning outcomes for online education than those at institutions with no offerings. The consistent finding over the thirteen years of these reports is also evident when we examine the differences between institutions with varying levels of engagement in distance education. Those few institutions with the largest distance enrollments (10,000 or more distance students in fall 2014) have the most positive view of the relative quality of online education, with 41.7% reporting it as superior to face-to-face instruction. A further 42.3% report the relative quality as the same, with only 16.0% saying they considered online to be inferior.

Academic leaders at institutions with smaller distance enrollments (5,000 to 9,999) are also mostly positive, with 27.7% saying it is superior and only 14.1% saying it is inferior. Chief academic officers at institutions with smaller distance enrollments (less than 5,000) are less positive, with a greater proportion reporting inferior (23.2%) than superior (15.8%). But even this group had a majority (61.0%) rating the two as the same.

The results from the academic leaders at schools with no distance education enrollments are far more negative, with a majority (51.2%) reporting the relative quality of online as inferior. This is the only group where less than a majority rate online as good as or better than face-to-face instruction.

Blended Learning

Chief academic officers may continue to have reservations about the relative quality of online learning, but they are a far more favorable about courses that combine elements of online instruction with those of traditional face-to-face teaching. Academic leaders consistently rate the promise of blended or hybrid courses as superior to that of fully online courses. There has been little change in this belief over time, with 42.3% of academic leaders now supporting this statement, up only slightly from 39.2% in 2003.

Even more impressive is that these same leaders rate the learning outcomes for blended instruction as superior to traditional face-to-face instruction. While the majority of academic leaders rate the outcomes of online and blended learning as the "Same" as face-to-face learning (ranging from 54.7% in 2012 to 56.6% in 2015), more consider blended learning outcomes to be superior to face-to-face instruction (35.6% this year) than inferior (13.9%).

Geographic Reach

One of the advantages of distance education is that it removes distance as a barrier. An online student on the other side of the globe can have the same level of access and ability to participate as one in the next room. However, when chief academic officers were asked for whom they designed their distance offerings, three-quarters (74.9%) responded that students in their normal service area were a primary audience they had in mind. Nearly as many mentioned their currently enrolled student base (68.5%) as a primary target audience.

While the main focus might be on current and potential students from the areas that the institution traditionally serves, expanding the institution's geographic reach is not being ignored. Over one-half (58.2%) of the academic leaders reported that students outside their normal service area were a primary audience considered in online course design. A smaller group (23.7%) listed international students as a specific target audience for their online courses and programs.

How well are institutions doing in expanding their geographic reach? The distance education enrollment data in the Integrated Postsecondary Education Data System includes the location of those students who are taking exclusively distance courses. As might be expected from the high rates at which chief academic officers mentioned designing courses for their current student base and for students in their normal

service area, the majority of online students are located close (in the same state) to the institution they are attending.

The distribution of student locations is very different among the different types of institutions. Public institutions, not unexpectedly, serve a local population, with 83.6% of their exclusively distance students located in the same state as the institution. The rates are much lower for private not-for-profit (37.1%) and even lower among private for-profit institutions (15.1%).

Open Educational Resources

Working with The William and Flora Hewlett Foundation, the Babson Survey Research Group added Open Educational Resources (OER) as an area of study beginning with our 2009 survey. Results for 2009 and 2011 found most surveyed academic leaders believed that OER would add value for their campus. In 2011, nearly two-thirds of all chief academic officers agreed that open educational resources have the potential to reduce costs for their institution. There was also wide agreement among academic leaders that open educational resources will save time in the development of new courses.

Many leaders claiming to be aware of OER may have been confusing it with other concepts. In 2011 nearly all of these leaders reported that they were at least somewhat aware of open educational resources (OER). However, in examining open-ended responses it was clear that there was wide variability in what respondents considered to be open educational resources. The conclusion was that while most academic leaders were somewhat aware of OER, the level of understanding of the details was seriously lacking.

The availability of open licensing and the ability to reuse and remix content is central to concept of open educational resources, with a Creative Commons license being one of the most common. Almost all faculty surveyed in 2014 reported that they are aware of copyright licensing of classroom content and public domain licensing, but fell short on awareness of Creative Commons licensing. Less than two-thirds of faculty reported that they are at least somewhat aware of Creative Commons licensing.

The level of awareness of this licensing mechanism is far higher among academic leaders than among faculty, with nearly all claiming some level of awareness. The most recent results mirror those of this same group for the previous year, with over 95% percent reporting that they are aware of both copyright and public domain licensing. Awareness drops somewhat for Creative Commons, but even here nearly 80% claim some level of awareness.

When these same academic leaders were asked about a specific type of open resource – open textbooks – their reported rates of awareness were also quite high. A majority reported that they were either “Aware” (28%) or “Very aware” (31%), with and additional 18% sating that they were “somewhat aware.”

Massive Open Online Courses (MOOCS)

The number of institutions that report that they either have or are planning a Massive Open Online Course (MOOC) has remained relatively steady. In 2012 12.0% of institutions fell in this category (2.6% offering a MOOC, and 9.4% with plans to offer them). In 2013, the number increased to 14.3% (5.0% offering a MOOC and 9.3% planning). Results for 2014 saw this drop a bit to 13.6% (8.0% offering a MOOC and 5.6% planning). This year's results follow this same pattern; 11.3% reporting that they have a MOOC, and an additional 2.3% are planning one, for the same 13.6% total as last year.

While the proportion of institutions that have or are planning MOOCs has remained stable, the remaining higher education institutions seem to be deciding against adding a MOOC. This may be because of their belief that MOOCs are not sustainable. We previously asked all institutions — those with MOOCS and those without — if they thought that MOOCs were a sustainable method for offering online courses. The number of institutions saying that they believed MOOCs to be sustainable fell from 28.3% in 2012 to only 16.3% in 2014.

Only a small portion of higher education institutions are engaged with MOOCs, and adoption levels seem to be plateauing. The total number of institutions reporting a current or planned MOOC remained stable in 2015. While the fraction of institutions engaged in MOOCs may be relatively small, these does not mean that the number of students impacted is also small. With many MOOCs having enrollments in the thousands, or even higher, the number of students touched by a MOOC can easily match that of those taking distance education courses.

SURVEY METHODOLOGY

The sample for this analysis is comprised of all active, degree-granting institutions of higher education in the United States that are open to the public.

The data for this report uses information from the National Center for Educational Statistics' IPEDS database5 and survey data collected by the Babson Survey Research Group. The most current IPEDS database was released in December 2015, but covers results for fall 2014. The Babson Survey Research Group was collected in December 2015 and refers to fall 2015. Data for prior years used for comparisons also includes data collected by the College Board6. The College Board included questions for this report series as part of its extensive data collection effort for its Annual Survey of Colleges.

All sample schools were sent an invitation email and reminders, inviting their participation and assuring them that no individual responses would be released. All survey respondents were promised they would be notified when the report was released, and would receive a copy.

Institutional descriptive data for the current year come from the National Center for Educational Statistics' IPEDS database7. Responses for prior years also include descriptive information from the College Board Annual Survey of Colleges. After the data was compiled and merged with the IPEDS database, responders and nonresponders were compared to create weights, if necessary, to ensure that the

survey results reflected the characteristics of the entire population of schools. The responses are compared for 35 categories based on the 2010 Carnegie Classification of Institutions of Higher Education. These weights provide a small adjustment to the results, allowing for inferences to be made about the entire population of active, degree-granting institutions of higher education in the United States.

In December 2015, the U.S. Department of Education's National Center for Educational Statistics (NCES) released the third year of Integrated Postsecondary Education Data System (IPEDS) Fall Enrollment data that includes distance education enrollments. IPEDS is a national census of postsecondary institutions in the U.S., which represents the most comprehensive data available. Through the IPEDS Data Center, individuals can download data files for one or more institutions with information from any of the IPEDS components or download complete data files, produce reports, or create group statistics.

The focus of this report is the distance education data that has been collected by IPEDS for the fall 2012, fall 2013, and fall 2014 terms. IPEDS reporting includes a number of other variables that describe the size, sector, and focus of each institution of higher education. This data allows us to compare institutions using a consistent set of definitions provided by the IPEDS survey.

Transitioning to IPEDS Data

Moving from enrollment data collected by the Babson Survey Research Group (BSRG) to using data from the Integrated Postsecondary Education Data System (IPEDS) has a direct impact on three measures contained in previous years of these reports.

Offerings: IPEDS and BSRG results are both valid, and differ to the extent that the BSRG definition is more inclusive than the IPEDS definition.

The BSRG measure of "online offerings" was defined as broadly as possible – any offering of any length to any audience at any time. IPEDS takes a much narrower view. For example, IPEDS counts undergraduate offerings for "a student enrolled in a 4- or 5-year bachelor's degree program, an associate's degree program, or a vocational or technical program below the baccalaureate."8 Non-credit courses, continuing education courses, courses for alumni, and courses for students not registered for a degree program do not qualify for the IPEDS definition.

Enrollment numbers: The BSRG annual estimate of the number of students taking at least one online course was based on extrapolating self-reported online enrollment numbers from individual institutions to a national-level total. The data collection and estimation process remained consistent over time.

A detailed examination in last year's report concluded that the estimation technique was not been a cause of significant bias in the BSRG national estimates. However, bias in the reported enrollments in the BSRG survey did represent a potentially significant issue. Both BSRG and IPEDS count the number of unique students. This requires excellent

data and good reporting systems to ensure that students enrolled in more than one qualifying course are counted only once. For whatever reason, it appears that many BSRG respondents did not correctly remove students enrolled in more than one qualifying course, and therefore provided numbers that were too high.

Changes over time: The factors producing an upward bias in the BSRG estimates come from institutions reporting inflated estimates where tracking systems are lacking and reporting overall enrollments instead of unique headcounts. Critically, these factors do not appear to have varied over time, therefore the pattern of responses (rates of growth, etc.) are much more robust than the actual point estimates of the number of students at any one point in time.

IPEDS Definitions

According to IPEDS, Distance Education is:

"Education that uses one or more technologies to deliver instruction to students who are separated from the instructor and to support regular and substantive interaction between the students and the instructor synchronously or asynchronously.

Technologies used for instruction may include the following: Internet; one-way and two-way transmissions through open broadcasts, closed circuit, cable, microwave, broadband lines, fiber optics, satellite or wireless communication devices; audio conferencing; and video cassette, DVDs, and CD-ROMs, if the cassette, DVDs, and CD-ROMs are used in a course in conjunction with the technologies listed above."

IPEDS collects Distance Education enrollments in two categories (the first two listed below) and this Report adds a third:

- "Exclusively" Distance Education: All of the student's enrollments for the term were through Distance Education courses.
- "Some But Not All" Distance Education: The student enrolled in a mix of course modalities, including some Distance Education courses.
- "At Least One" Distance Education Course: A new data field created as the sum of the above two categories. This category matches the historical data reported by previous years of this report series. Prior to IPEDS reporting of Distance Education data starting with data from the fall of 2012, the BSRG survey was the de facto data available. Therefore, historic comparisons require this compiled category. e-Literate author and blogger Phil Hill is responsible for early analysis of the fall 2012 IPEDS data and collaboration with BSRG to ensure that the two data sets can be compared appropriately.

Crunch Time For Calbright

By Madeline St. Amour

Some observers are raising red flags after the unexpected departure of the president and CEO of California's new online-only community college. But others chalk it up to the normal growing pains associated with a start-up and say it's too soon to judge whether the college will be successful.

Calbright College, an initiative started by Jerry Brown, California's former governor, opened its programs to students in October. It's aimed at adult learners who don't have degrees and are underemployed. Calbright is completely online, statewide and competency-based. It doesn't offer degrees but instead features certificates based on skills that could lead to middle-income jobs. Its first leader, Heather Hiles, announced this week that she will step down in March after a year on the job. A statement from Hiles said she plans to return to previous ventures now that Calbright is operational.

The news has raised some eyebrows and reignited the discussion of whether the college can be successful.

"Our legislative mandate remains that we have to serve these students, and that's what brings everyone to work every day," said Taylor Huckaby, a spokesman for Calbright. "We'll roll with the punches."

'I Don't Think We Can Wait'

So far, 464 students are enrolled in what Calbright calls its "beta cohort," which includes three programs. In each track, students enroll in college skills courses first before moving on to a "core curriculum" designed for the specific program.

While some see the college as a doomed venture, others say it's too soon to pass judgment

Huckaby said they are “comfortable” with the number of enrolled students because Calbright is still hiring faculty and establishing partnerships with businesses.

The college was pushed to open before getting these pieces in place because of legislative deadlines, Huckaby said. The state required it to start programs by the fourth quarter of 2019.

Right now is “very much a research and development phase,” Huckaby said. After the beta phase, he said, the college will work under its intended model. Programs would start with an employer agreement. The college would create a curriculum based on the workforce demands for that employer, which would then offer a set number of jobs and apprenticeships to the students who graduate.

The college has had more than 100 meetings with potential employers since last summer, Huckaby said, but it’s not ready to announce any partnerships.

Before the programs even opened, critics have argued that the new college is unnecessary.

“We have existing colleges that do all these same programs” said Evan Hawkins, executive director of the Faculty Association of California Community Colleges.

Hawkins also finds the college’s inherent model “flawed.” Calbright plans to work with employers to train people in relevant skills. It would charge employers to train employees, reducing its reliance on taxpayer money, which Hawkins said is “incredibly problematic” for a public institution.

“From the very beginning, you have the idea of a start-up as opposed to a college,” he said.

Hawkins and the faculty union believe the state’s community colleges should be fully funded, as they are now the lowest funded of all institution types in the state. With more state support, the colleges could focus on similar programs he believes would be more effective locally than statewide.

“I think faculty are pretty frustrated,” he said. “This is one thing that all faculty are in agreement on -- that this is really a waste of resources.”

Sally Johnstone disagrees.

“What everyone’s saying -- that’s what they want to happen,” said Johnstone, president of the National Center for Higher Education Management Systems and one of the consultants who helped design the Calbright model.

Despite losing Hiles, she said, the college has strong leaders on the ground who are “keeping things rolling.” She believes Calbright is likely to succeed.

Johnstone said designers considered several models for the project, including asking existing colleges to use this model, but ultimately decided something new was needed.

“The colleges have not radically rethought what it is that the workplace needs and how could they work with employers in ways that are meaningful for adult learners,” she said, adding that it doesn’t make sense to wait "around to try and get the colleges that now exist to change a whole bunch of what they’re doing within structures and systems that are not conducive to change."

She added that the "governor didn’t want to wait, because I don’t think we can wait."

Johnstone also said Calbright is a “threatening model” for traditional academic institutions.

“If it succeeds, it may well challenge the basic tenets of how you do things,” she said, adding that those in higher education now may have their “hearts in the right places,” but they’re operating within a structure that might not be as relevant as it was in the past.

“And that’s scary,” she said.

Still, without substantive changes, Johnstone said, higher education won't be able to serve the population of people that Calbright is trying to help.

So far, 22 students have enrolled in the core curriculum portion, which the college’s three deans are teaching as it works toward hiring faculty members

Start-Ups Take Time

As for how the college is doing so far, “it is a start-up,” Johnstone said. She compared it to Western Governors University, a nonprofit, private online university founded in 1997 that now enrolls nearly 120,000 students and has 170,000 alumni.

“People in higher education in the western states thought it was the worst idea in the world,” Johnstone said of WGU. “So I’m not surprised to be hearing what I’m hearing about Calbright right now.”

When looking at a history of WGU, some of the similarities are clear. It worked with employers, many in technology, to get funding; few students signed up in the beginning; it took a few years to find a leader who was more permanent; and much of the early news media coverage described it as a doomed venture.

As an outsider looking at Calbright, Scott Pulsipher, WGU's president, said it's too early to judge the college's success.

In WGU's case, it took five years to reach 1,000 students.

"That early phase of any new endeavor like this, that's not some quick turnaround," Pulsipher said.

With any start-up, Pulsipher said, there are two questions to answer: Is the product needed and valuable, and is the entity able to execute the product?

Calbright is offering something different in the form of nondegree credentials that focus on workforce needs and provide more flexibility to students.

Adults without degrees tend not to try online higher education as often as do those who hold degrees

Now, he said, the college must prove the demand and that it can scale the idea, which will take time.

And, while WGU serves thousands of Californians and has articulation agreements with the state's community colleges, Pulsipher doesn't see Calbright as competition.

"There are far more individuals that need to be served than there is capacity to serve them," he said. "It's bad to see this as a zero-sum game."

An 'Early Experiment'

Some experts have doubts about whether the idea itself can work.

"I'm not sure that only nondegree credentials on their own could sustain a business model for most institutions," said Sean Gallagher, executive director of the Center for the Future of Higher Education and Talent Strategy at Northeastern University. "You'd have to be operating at a very large scale."

Because the state of California is large, it does provide that opportunity. But Gallagher said Calbright may struggle to convince enough students to buy in to the idea.

Calbright's intended targets are less likely to enroll in online programs, Gallagher said. Adults without degrees tend not to try online higher education as often as do those who hold degrees.

"The comfort with online learning and the means and time to pursue it has been historically greater at higher levels of the job market," he said. "That means there's a special challenge, at times, in enrolling students at this level of a program and in certain fields in the online education market."

Calbright also must grapple with establishing a new brand, which will take time.

But there are advantages to starting anew.

"My sense is that there are aspects of the structure of higher education in California that have, at times, made it difficult to scale online," Gallagher said.

All of these issues make Calbright an "early experiment" in this field, Gallagher said, though he expects to see more ventures like it.

David Schejbal, vice president and chief of digital learning at Marquette University, also has doubts about the model, particularly its focus on nondegree credentials.

"Degrees are still the coin of the realm," Schejbal said. "The reality is that we don't have any kind of common medium the way we do with credit hours and degrees" that allows for easy credit transfer or understanding from employers.

While he thinks these new kinds of models are needed for the nation as a whole, getting the public and employers to latch on to the idea is difficult.

To change these perceptions, he said federal Title IV regulations that regulate financial aid funds need to change, too.

Because of the broader shifts needed to make real change, Schejbal said, new ventures should follow the current structure. The experiment won't change the broader culture, he said. And without that change, the ventures are likely to fail.

"We, as a nation, are not good at education strategy," he said. "It would be great if we got this one right. The future of the country depends on more educated citizens."

Cheating In Online Classes Is Now Big Business

10

By Derek Newton

When I was in high school, I cheated pretty regularly. And I mean all the time. I remember writing chemistry formulas on small bits of paper that I then sealed to the bottom of my dress shoes with transparent tape. When I crossed my legs, the information I needed was literally in my lap.

That was before education went online. Cheating, it seems, has gone with it.

Today, entrepreneurs and freelancers openly advertise services designed to help students cheat their online educations

These digital cheaters for hire will even assume students' identities and take entire online classes in their place.

I reached out to one of these companies—the aptly named No Need to Study —asking, for the sake of journalism, if it could take an online English Literature class at Columbia University for me. I got an email response from someone on

its customer relations staff who told me that, not only could the company get a ringer to take my online class, it could also guarantee I'd earn a B or better. I was told the fee for such an arrangement was $1,225.15.

That extra fifteen cents made it seem official.

When I asked for more information to be absolutely sure I understood the company's services, the reply was crystal clear: "We offer the services of a pool of experienced academic tutors to take classes and complete course work for our clients."

The growth in courses available on the web has led to a growth in paid services that will impersonate students and do their work for them

No Need to Study even has handy reference videos that ostensibly show satisfied clients sharing how easy it was to pay someone else to take their online classes. My favorite is a video from a client named Muhammad who explains that he hired the company to complete his math lab courses for him. He'd taken these classes before, he notes, but "the quizzes were just way too difficult" so he searched for a solution. "They got it done, and they did really, really well," he continues. "They absolutely killed my final math and app classes with a 90 percent, and I can definitely tell you I never got a 90 percent before on anything."

There's no way to directly link the growth of online-education options to an increase in online cheating. But more online classes means more online students, which means more potential customers for cheating providers. According to the 2014 Online Learning Survey, roughly a third of all higher-education enrollments in the U.S. are now online—with almost 7 million students taking at least one online class. Other statistics put the number a bit lower, at a fourth of the overall student populations. Either way, that's millions of potential customers for ambitious providers of cheating services.

Online education is already poised to be a $100 billion global industry. But it could be even bigger if online degrees earn more clout, especially with employers. If online degrees and certifications achieve the same stature as traditional, on-campus ones, an online education marketplace could transform higher education and change the very meaning of going to college. That's exactly what some online education

The No Need To Study website is clear about it: "Society has allowed it to become an accepted fact that those who can pay will always have an edge over those who can't

advocates want. Kevin Carey, a well-known online-education supporter, wrote about the quest for online education credibility in March in a *New York Times* op-ed titled, "Here's What Will Truly Change Higher Education: Online Degrees That Are Seen as Official."

If a goal of online education proponents is to convince the public and employers that an online education is as official and prestigious as a traditional one earned in brick-and-mortar and Ivy classrooms, it's hard to imagine anything more damaging than identity-fraud schemes in which students literally pay for grades but do no work whatsoever. At least with a traditional degree, the assumption is the recipient actually went to class personally.

Even so, the growth in online degree credibility is already happening as more and more colleges move classes and degree programs online. Arizona State University offers a complete bachelor's degree in a variety of majors—entirely online. Others schools, such as SUNY Empire State, do too. At the University of Florida, students can take their underclass core classes—which account for about half their undergraduate degree requirements—virtually. And the University of Central Florida has been posting many of the lectures for its popular courses to the web so students can "attend" classes virtually, a reality that prompted one UCF student to tweet, "Thanks, UCF, for having lecture-capture courses so I don't have to go to class ever." These degrees are, in theory, credible, even if they were "earned" online.

I asked UCF if providing ways for students to never physically attend classes made academic fraud and impression more likely. Thomas Cavanagh, the associate vice president in distributed learning, told me in an email that "we work extensively with online faculty to design activities and assessments that mitigate cheating to the greatest extent possible which, combined with a large number of technological strategies, helps to significantly reduce the risk and opportunity to engage in unethical behavior."

Yet "mitigating" cheating with "technological strategies" may not be enough. Just four days before UCF's Cavanaugh responded to my question, a Craigslist ad in Orlando, where UCF is located, effectively offered to cheat for students online. The ad read, "Between your busy work schedule and personal life, you may not get time for your online classes.

We will provide you an excellent support for all your online classes needs such as discussion boards, tests, quizzes, and assessments. We are a team of highly qualified professionals who are experienced in writing all types of assignments. We offer 100% plagiarism free papers that assure top grades."

With the availability of online cheating services and more online degree options, it's conceivable that someone could pay an extra $1,000 a class—about $40,000 for an entire 120-credit bachelor's degree—to simply hire someone to earn the degree for them. Considering the already high cost of tuition and the boost in earning potential a degree affords, an extra $40,000 to never even go to class, even online, may be the deal of a lifetime for someone with means. An easy No Need to Study path through college for those who can literally pay extra should also fuel lingering questions of class and race bias in higher education. Elite education opportunities already skew to those most able to afford to them. But the ability to get a degree by opening a checkbook instead of a textbook does, at a minimum, complicate efforts to flatten the education-access pyramid.

This surrogate option for those with financial capacity isn't lost on the cheating providers either.

The No Need To Study website is clear about it: "Society has allowed it to become an accepted fact that those who can pay will always have an edge over those who can't. And as such No Need To Study is merely fundamental market economics in action. Plus, we are pretty efficiently prices so almost anyone can afford our service [sic]."

Moreover, the costs of impersonation in online education aren't limited to reputation. According to 2013 Congressional testimony of the Education Department's inspector general, Kathleen S. Tighe, taxpayers lost $187 million between 2009 and 2012 to fraudsters impersonating others in order to scam financial aid from colleges offering online classes. "Management of distance education programs presents a challenge for the Department and school officials because of limited or no physical contact to verify the student's identity or attendance," Tighe told Congress. "Because all aspects of distance education take place through the Internet, students are not required to present themselves in person at any point."

So far, the schools have been slow to clamp down on online identity fraud—both academic and financial. A cynic could argue that a lack of enthusiasm to stop online identity fraud in education may be related to financial benefit. Online classes, degrees, and certifications are less costly to provide than traditional methods; a 2012 report by the Thomas B. Fordham institute estimated that colleges save more than 40 percent when they move classes online. Indeed, the cost savings are a key selling point of those encouraging a move from having students show up to simply asking them to log in.

"What online classes do is cut out the prohibitive expense of education," says a post on No Need to Study's blog. "It's expensive to build a school and find qualified teachers… It's far less expensive to develop an online course, and it can have the exact same effect."

But lower production costs are just half the economic equation. There are also far more potential customers/students online than on campus. And because taking classes online can be less expensive and more convenient than on campus options, student interest is high. While higher-education enrollment has hit a plateau or even dipped in the past five years, participation in online college education continues to increase, up by more than 570,000 last year.

Lower production costs and more customers, even at a reduced price points for tuition, can create massive profit. Take Walmart. This one-two punch of lower delivery costs and higher student interest could be a powerful motivation to keep online education growing, in spite of problems like the ease and costs of online cheating. In at least this way, it seems both the schools and the cheating providers have a similar economic incentive—they may both profit by having more online students.

But the financial benefits spurring its growth aren't the only impediments to stopping the online cheating. Experts say there's no way to stop the cheating providers directly. "You can sell anything online if you have a basic knowledge of search engine optimization," Adam Fridman, founder of the Chicago digital marketing firm Mabbly, told me. Mabbly specializes in helping people get their businesses listed high up in search results. "There's no one checking what you're selling, who you're selling to or who your customers are. That's an amazing competitive opportunity but it unfortunately leaves the door open for some less legitimate uses." In addition, few people want the responsibility of deciding which "tutoring" services are legitimate aids to learning and which are outright cheats.

But the fight isn't hopeless. There are steps colleges and online education companies can take to cut down on online impersonation. Infusing online courses with more direct engagement between teacher and student—using video technology, for example—can help. "One way to reduce identity spoofing in online education is to embrace tools like video chat which is both unspoofable and creates a documentary record," said Steve Gottlieb, founder of the online video engagement system, Shindig. "The more schools and their technology partners can integrate face-to-face engagements online, the more online cheating will become impossible."

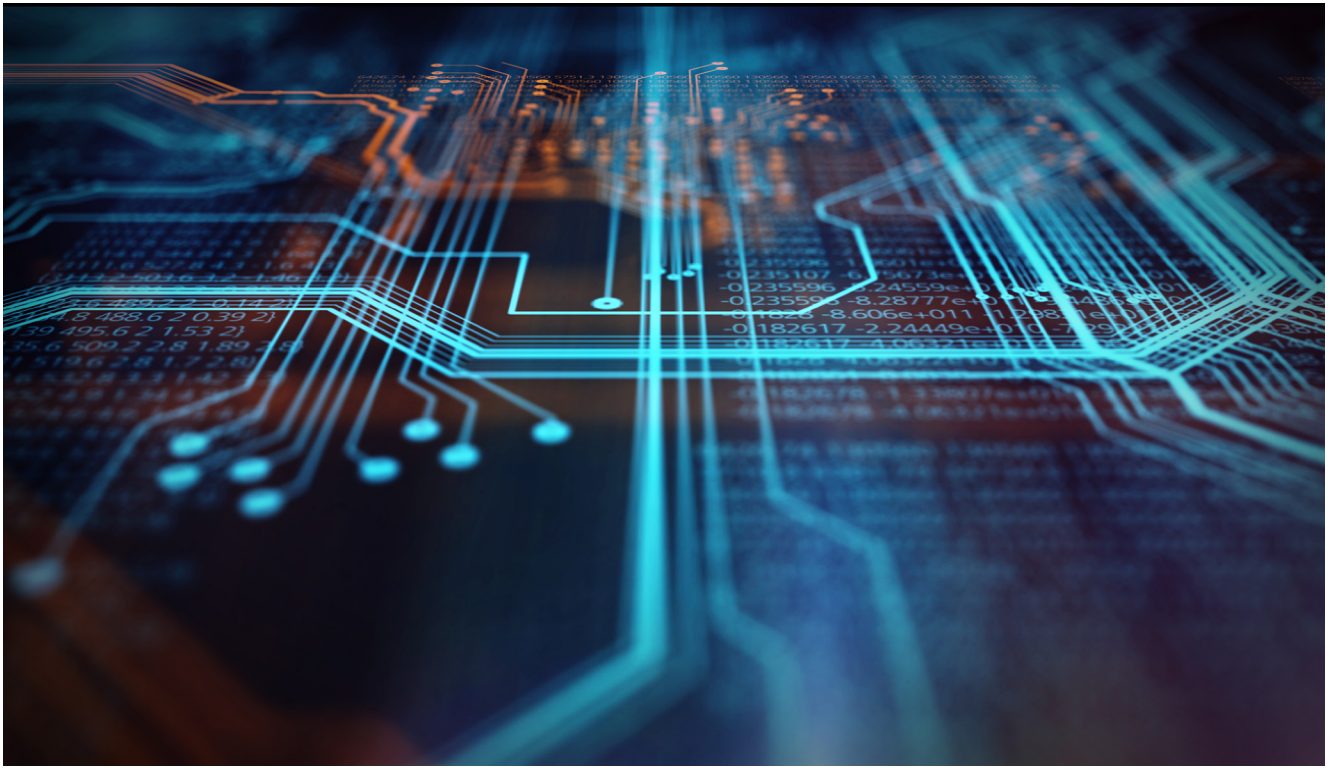
When I asked NYU, a large, competitive university presumably vulnerable to student fraud, about the ability of students to cheat in online classes, the school cited video. "Many of our online courses—which are primarily at the graduate student level—use oversight services to confirm that examinations are taken by enrolled students. [They include] services that require students to take tests in front of a web camera—a procedure that visually confirms the student's identity," James Devitt, a university spokesman, told me.

True, tools like online video could essentially eliminate the identity fraud—but it seems like such a safeguard would only work for smaller classes like those graduate-level courses NYU offers. That's because video requires some

live engagement on the institution's part; someone needs to ensure the camera is capturing the students or engaging them through live video instruction. The rub is that, while safer, those smaller classes and human engagements will drive up costs and undercut the primary benefits of existing online education systems—their canned, on-demand features that allow more reach and efficiency.

What would be even better than video at cutting down on identity cheats is deploying old-school tactics such as meeting students face to face to make sure they are who they say they are—a level of security that isn't lost on Devitt. "Of the many thousands of courses that NYU offers, only a small percentage are online, and many of these are 'blended' classes that combine online learning with in-person and face-to-face interaction with faculty and fellow classmates," Devitt said. "Someone hired to take such a course would surely be discovered as he or she would simply not look like the enrolled student."

It's ironic that "face-to-face interaction with faculty and fellow classmates," as Devitt put it, is the best way to curtail the academic and financial identity fraud that's happening in online education. But this "blended" approach—more offline and less online—may be exactly what online education needs in order to guard, or improve, its reputation. If online college programs are ever going to compete with traditional ones, the advocates and providers should at least acknowledge the threat of online cheating and take steps to stop it—even if that means increasing costs and slowing the growth of online options.



Moocs Fail In Their Mission To Disrupt Higher Education

11

By Brendan O'Malley

The vast majority of learners on massive open online courses or MOOCs never return after their first year and low completion rates have not improved in more than six years.

In addition, the growth of MOOC participation has been concentrated almost entirely in the world's most affluent countries, according to a study reported in Science magazine, published by the *American Association for the Advancement of Science*.

The authors of the study, Justin Reich and José A Ruipérez-Valiente, say the promise of a disruptive transformation of post-secondary education heralded in 2012 – when it was first announced that video lectures from the world's best professors could be broadcast to every corner of the world via MOOCs – has not been realized.

The hope of extending access in areas barely reached by traditional tertiary provision, with students being able to demonstrate their attainment online by using computer graded assessments, has not been fulfilled.

"After promising a reordering of higher education, we see the field instead coalescing around a different much older business model: helping universities outsource their online masters degrees for professionals," the authors say.

They examined data on MOOCs on edX taught by its founding partners, Harvard University and Massachusetts Institute of Technology, from 2012 to 2018.

Second-year retention rates fell every year, dropping from 38% in 2013-14 to 7% in 2016-17

The data includes nearly 12.7 million course registrations from more than 5.6 million learners.

The most used revenue model was to offer places on courses and online learning materials free but charge for certificates of completion. But the study found challenges with this approach.

Bubble of interest deflated

The researchers found that the initial bubble of interest in MOOCs has been deflated by the drop-out rate. More than half of those who register (52%) never enter the courseware. Similarly, there is a sharp drop-off after the first year of a course, with only 12% of the largest cohort, the 1.1 million learners in 2015-16, taking a course in the following year.

Second-year retention rates fell every year, dropping from 38% in 2013-14 to 7% in 2016-17.

Researchers also found that the MOOCs drew more than 80% of their learners from highly or very highly developed countries.

"Rather than creating new pathways at the margins of global higher education, MOOCs are primarily a complementary asset for learners within existing systems," the researchers say.

They add that the low completion rate of MOOCs has "barely budged despite six years of investment in course development and learning research".

This calls into question the 'blue ocean' business strategy of casting the net wide with free access in order to catch a smaller number of learners willing to go on and pay for certification.

It also calls into question the ability of MOOCs to extend higher education participation into areas of the world that traditional provision doesn't reach and predicts in future a greater concentration on those with the ability to pay.

EdX in October became the last of the big providers to partner with universities to create fully online professional masters programmes and in December followed Coursera and Udacity in beginning to build paywalls around their content.

This means they will now have to compete with 'traditional' online providers – traditional compared to MOOCs in the sense that they have been around for the past two decades not just six years – such as Pearson, Embanet, 2U and Wiley

Education Services, which provide services to universities that outsource their online programmes to them, commonly in return for a share of tuition fees.

Intensification of competition

The result will be an intensification of competition to provide online professional masters programmes.

A recent example of this came with Coursera's announcement on 17 January that it is rolling out 100 new courses, 30 new specializations and two public health-focused masters degrees geared to helping to "address the acute shortage of skilled workers in the health industry and meet the demands of a digital health economy".

The courses are aimed at providing learners with "the skills they need to enter high demand jobs".

Coursera's marketing spiel for the courses says that along with 170 partner universities it aims to provide access to "flexible and affordable education options" that can help usher in the next generation of healthcare workers in high-demand fields like health informatics, healthcare management and public health.

At the high end, though, the masters course with Imperial College London will cost students from outside the United Kingdom £19,440 (US$25,200) and students from the UK or European Union £11,300 (US$14,600) in total tuition fee costs. This is described as a "breakthrough price point for a top degree".

They conclude that the history of MOOCs offers a "cautionary tale for education policy-makers" facing innovations in education technology

At the lower end, to access the new specializations students will pay a subscription of US$39 to US$79 a month.

Daphne Koller, co-founder of Coursera, told *University World News* that her company was not one of those who claimed to be heralding the disruption of higher education. After emerging as a separate entity in 2012 they soon realized the largest group of learners on their platform were people "who wanted us to up-level their skillset for their career". So they began a gradual transition to offering courses to meet that demand.

New education technologies are rarely disruptive but instead are domesticated by existing cultures and systems

'Cautionary tale'

Reich and Ruipérez-Valiente point out that there is a basic problem if MOOC providers are competing to undercut traditional providers in this market and attract the less traditional consumers – potential students from less well-off families, especially from families with no history of attending higher education – since research shows they typically perform worse in online courses and most need human support in the form of tutors and peer learning groups.

They conclude that the history of MOOCs offers a "cautionary tale for education policy-makers" facing innovations in education technology. "New education technologies are rarely disruptive but instead are domesticated by existing cultures and systems," they say in Science.

COMMENTS

MOOCs didn't have a mission to disrupt higher education. That was simply one of the absurd predictions for them made by overexcited commentators during the years of MOOC hype. With no barrier for entry, low completion rates are not a failure, because it means students can simply show up to see whether the format might work for them, or learn one or two things that interest them, and leave happy without having done the whole thing, or even having much of anything. It's their goals that matter, not the providers'. As for not having reached enough students in lower income countries, I too wish this were happening more quickly, but it's worth asking whether more patience is required when considering that sort of major change.

Steve Foerster on the *University World News* Facebook page

Moocs Struggle To Lift Rock-Bottom Completion Rates

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By Seb Murray

Much of the early enthusiasm for massive open online courses, or Moocs, focused on how they could disrupt and democratize education — opening elite universities' courses to the masses. They have long faced one stumbling block, however: barely anyone who starts a Mooc completes it.

A recent study by academics at the Massachusetts Institute of Technology found that online courses had an astronomical dropout rate of about 96 per cent on average over five years. The research, which studied people who both registered and viewed a course by MIT and Harvard on their joint online learning platform, edX, also found that this figure had not improved between 2013-14 and 2017-18.

Given such alarming completion rates, have Moocs flopped?

Anne Trumbore, senior director of Wharton Online, part of the University of Pennsylvania, says completion rates are the wrong measure of success. She says many people register or start online courses because they are curious and never intend to stick it out.

Nina Huntemann, senior director of academics and research at edX, says a better indicator of success is whether students who actually begin a course engage with it to a high degree.

She also argues that students can acquire knowledge and skills without formally finishing a course. "We don't see completion rates being a goal," she says. "People poke around to find parts of courses that help them, not necessarily every module."

Engagement is 30 per cent higher when students have been nudged

EdX tracks how frequently students watch videos and submit assignments. It uses the data to "nudge" them into finishing modules by sending updates and reminders to complete tasks.

Engagement is 30 per cent higher when students have been nudged, according to Ms Huntemann. "If they struggle on a course section it might be because the material is not worded clearly enough, or videos are too long," she says. "Our university partners use that data to produce course iterations."

Another strategy is adding interactivity to online courses. Spain's IE Business School helps students learn about setting a pricing strategy using simulation. Students set the rates of an airline and receive feedback on the impact their decisions have on the bottom line.

Martin Rodríguez Jugo is a director at IE Publishing, an organization that develops and distributes IE Business School's learning material. He says the 12-15 per cent completion rates for IE Moocs is due to this interactivity. "Learning is improved when students apply the theoretical concepts to practical scenarios," he says.

FutureLearn an online course provider owned by the Open University, has focused on peer learning to support completion rates. Students discuss what they have learnt and share knowledge on the company's social network.

That addresses a common challenge with online learning: the connection with other participants and instructors. "We want to make online learning less of a solitary experience," says Simon Nelson, FutureLearn's chief executive, noting that the platform's completion rates among students who start courses is about 20 per cent.

Another trend is charging for courses that include tutoring or a certificate of completion. Rice University's Jones Graduate School of Business and 2U, an education technology company, are developing a portfolio of short, online courses for business executives.

The first course, on real estate development and investment, will be launched in June 2019 and will cost $2,800. Because the course is not free, Michael Koenig, the school's associate dean for innovation initiatives, expects completion rates to be around nine in 10. "When people put skin in the game, they are more dedicated."

Critics say paid-for courses reduce access to education and are at odds with the philanthropic and egalitarian ethos of the first Moocs.

Online courses can also lead on to a full degree

Mr Koenig's response is that high-quality courses require investment in terms of money and faculty time. "We are trying to figure out how to provide education that is sustainable for the learner and the university," he says.

Rice's expected completion rates also reflect how people are using online learning to advance their careers — graduates will receive a Rice Business Executive Education certificate, which they can put on their CV.

Research suggests this can help students who are looking to get ahead in their careers. Nearly three-quarters of 600 employers polled by FutureLearn said evidence of online courses would help them make a decision about whether to promote an employee.

Online courses can also lead on to a full degree. Emily Parana, 41, a university teacher, enrolled in a cyber security "MicroMasters" on edX. The online access gave Ms Parana a way to study something that she would not have enjoyed otherwise: there were no suitable on-campus courses within a reasonable distance of her Pennsylvania home.

There was a second benefit for Ms Parana. Her online course helped her gain admission to a digital masters degree in computing security by providing academic credit towards it.

Moocs may be becoming less massive and less open. But their potential for students remains big.

So Why Did Moocs Fail To Live Up To The Hype?

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By William Leonard

The 21st century's second decade gave us the massive open online courses or MOOCs. They were hyped to the tertiary education community as a breakthrough technology that would transform teaching and learning. A few elite institutions would offer the best of their courses, taught by top instructors at little or no charge. Worldwide, tertiary education would be immeasurably improved. Both students and institutions would surely benefit.

MOOCs would employ a low-cost business plan, allowing broad student access to free or low-cost high-quality education, countering the impact of ever-increasing tuition fees.

On-demand delivery would accommodate conflicting family and work responsibilities. Traditional student age and returning adult students would have equal access. Student travel and related on-the-ground expenses would be significantly reduced, if not eliminated.

I believe that the original format and business plan were flawed.

Institutions would benefit from online offerings requiring little, if any, new brick and mortar projects to accommodate the flood of additional students. The technology would promote more efficient use of existing faculty resources.

Flawed business model

What has transpired? MOOCs have grown in number but have yet to fulfill their promises. The original high-profile sponsors have attracted both peers and lesser-known institutions, mainly among developed nations.

I believe that the original format and business plan were flawed. The early elite providers merely presented videos of lecture hall courses taught by their superstars. Production standards varied widely. Harvard University's course, 'Justice', was well produced. Many others were little more than recordings of talking heads.

Current providers have abandoned the sage-on-the-stage videos. They require more offline individual work and small group interaction. The business plan that allows free auditing with a modest charge for successful completion verification has yet to yield surpluses.

Two online publications, *ICEF Monitor* and *Inside Higher Ed*, presented assessments of the MOOCs' impact on tertiary education in January. *ICEF Monitor* offers a guardedly upbeat assessment, noting that in total MOOC enrollments have exceeded 100 million in 2018. Tertiary education institutions across the globe are offering online bachelor, masters and doctoral degree programmes.

"Continuing a pattern we first observed in 2017, most major providers are now putting a great emphasis on revenue," it states. This change in the business plan appears to be a response to a dismal course completion and retention experience across the technology's global reach.

The *Inside Higher Ed* piece makes three complementary points. One, since their birth, MOOC completion rates have consistently remained distressingly low. Only 6% of MOOC students completed their course(s) in 2014-15. By 2017-18 the course completion rate dropped to 3.13%.

Two, the percentage of first-time MOOC users who subsequently enrolled on a MOOC the following year has fallen every year since 2012-13, from a high of 38% that year to 7% in 2016-17.

Three, the vast majority of students initially enrolling on their first MOOC reside in developed countries. The promise that MOOCs' high quality and low-cost delivery would rapidly enhance tertiary education opportunities in developing countries has yet to be realized.

Retention issues

There are three substrata factors that may partially explain the MOOCs' disappointing performance to date.

One, while students may have the requisite intellectual skills, many do not have the learning style or disposition to complete the course once registered. As many as half do not enter the course post-registration.

Another factor is discipline. As an online instructor, I encountered many students who appeared to require the external discipline to be in Hall X, Room Z between 8.30 and 10.00am on Mondays and Wednesdays. The screening practices that have been employed – brief surveys at best – have clearly been ineffective.

Completion and retention data clearly undermine the hype that MOOCs are for all students. Constantly having to replace the vast majority of matriculants is not financially sustainable.

Online teaching and face to face are not the same thing

Two, while instructors may have a flair for classroom planning, presentation and assessment, the online environment is markedly different. The long-standing assumption that successful doctoral research studies certify one for classroom teaching readiness has a comparable online assumption. If you can teach in the classroom, surely you can organize, present and assess an online course. Wrong!

The syllabi and subsequent activities must conform to the platform constraints. The spatial, temporal and visual stimuli are vastly different for both instructor and students.

Three, even within a single country, time zone differences make synchronous discussions and team presentations difficult at best. It does not take much of a spread of zones to disrupt individual work and personal schedules. Proficiency in the language of instruction and cultural nuances also enter the mix of challenges facing both the instructor and students as the time zones spread.

The MOOC's reality closely aligns with major 20th-century instructional innovations such as computer-assisted instruction, programmed instruction and educational television. Their silver bullet promises fell short with experience. The MOOC's future will depend on improved instructor preparation and pre-registration screening, coupled with a business plan designed to at least break even.

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