NEW AMERICA

EDUCATION POLICY

RACHEL FISHMAN

Community College Online

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About the Author

Rachel Fishman is a senior policy analyst with New America's Education Policy Program, where she researches policies related to higher education including college affordability, public education, data transparency, and access and success of underrepresented students. Fishman holds a master's degree in higher education from Harvard Graduate School of Education and a bachelor's degree from the University of Wisconsin-Madison.

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INTRODUCTION

Deanna grew up in a working class neighborhood in Chicago, Illinois. After losing her mother at a young age, she helped raise her younger brothers and graduated toward the top of her high school class. In 1994, she enrolled at St. Xavier University. But Deanna hit a roadblock during her freshman year: she got pregnant. She dropped out of college and she started working full time to support herself and her daughter instead of returning for her sophomore year.

Deanna is not one to let a bachelor's degree slip through her fingers. In 2007, she enrolled as a part-time student at Harold Washington College, the community college located near her office where she works in the law library of a large law firm. Her aim was to finish an associate degree and transfer to the University of Illinois at Chicago (UIC). But after years away from college, she found herself stuck in remedial math courses. And, as with a lot of transfer students, many of the credits from her year at St. Xavier did not transfer. Instead of picking up right where she left off, it appeared as if she had not gone to college at all.

Over time, Deanna's family grew. She was unable to quit working to support her three children and enroll in college full time. So she has been plugging away, taking courses here and there over the past seven years. Currently, Deanna has approximately 50 credits that count towards a credential, meaning if she takes one course per semester from this point on she will not graduate with her "two-year" degree until the end of 2015 or sometime in 2016. If she goes on to get her bachelor's degree, it will take her many more years to complete what we used to call a "four-year" degree.

Deanna's story is not uncommon. Approximately 75 percent of college students are commuting students who juggle family obligations with employment and school.[1] The sad truth for these students is that they are likely not to graduate on time, if at all. Only about eight percent of part-time students in two-year associate degree programs manage to graduate within four years.[2]

Public two-year colleges, like Harold Washington, are often the only or the last chance for a college education for many of America's students. Some students enroll in a couple of classes or a short-term certificate to gain new skills, some enroll to obtain their associate degrees, and some enroll with the intention to transfer to a four-year institution. The open access of community college is one of America's greatest postsecondary strengths, but also one of its greatest challenges. While almost anyone with minimum qualifications can enter a community college and pursue a postsecondary credential, few will actually complete.

> *While community colleges provide access to higher education, they can perpetuate the barriers to success faced by students like Deanna who have lives outside the classroom that often interfere with academics*

With two of her children in elementary and middle school and a newborn granddaughter to help take care of, Deanna can only attend college part-time. Community college is providing her with exactly the chance she needs to obtain the credential she wants. The problem is that it is taking her a long time to complete, putting her short of her goal and in danger of never completing at all. While community colleges provide access to higher education, they can perpetuate the barriers to success faced by students like Deanna who have lives outside the classroom that often interfere with academics. Although Harold Washington offers some online courses and credentials, Deanna still finds that most of the courses she has to take require her to attend in person over the course of a semester. So with every unexpected life event, every broken-down car, sick grandparent, or childcare arrangement falling through, Deanna must

Approximately 75 percent of college students are commuting students who juggle family obligations with employment and school

postpone her studies, sometimes having to start over again the next semester.

What Deanna needs are more high-quality, flexible support services, courses, and credentials. Information technology has the potential to support students through their degree paths and increase the number of courses a student takes per semester, hastening time to degree. Deanna should not have to struggle through a system that was designed around a face-to-face education at a physical location. Instead, Deanna should be able to take at least two courses a semester—two in the fall, two in the spring, and two in the summer—so that she can complete her associate degree in two to four years. This technology-enhanced 2+2+2 model would be much faster than the slow progress she is currently making.

> *Almost all students today are online students in some way--whether it be accessing institutional services online, taking a hybrid or fully-online course, or enrolling in an online credential*

How can technology deliver on the promise of a 2+2+2 model? Imagine if when Deanna re-entered college at Harold Washington after a gap of almost ten years, instead of starting all over again in remedial math, she could have taken a competency-based Emporium Model course that would help her re-learn the skills she needed to be successful. In this model, all lectures are eliminated and Deanna would instead attend a learning resource computer center where she would take the course at her own pace. The courseware would be tailored to her abilities. She could speed through the material she already knows, and spend more time mastering the content she does not. Teachers and tutors would be available in the resource center if she had difficulty with certain concepts.

Once in credit-bearing courses, she could take a semester where she grouped a face-to-face course with a hybrid course or a competency-based course. A hybrid course would allow her to do some of her coursework online and attend fewer in-person sessions. A competency-based course would allow her to move at her own pace through course material online, proving mastery through assessment. When summer arrives and her children are home from school, she could take fully online courses. During her lunch hours at the law firm, she could make sure her financial aid went through, put some library books on hold, and get some tutoring help on an English assignment—all from her personal laptop or tablet device. And once she is ready to transfer, all of her credits from Harold Washington would transfer to UIC and Deanna could decide whether to finish her remaining two years fully online, or blend online, hybrid, and face-to-face courses.

This report looks at innovations at community colleges nationwide that provide this kind of support to students like Deanna. Almost all students today are online students in some way—whether it be accessing institutional services online, taking a hybrid or fully online course, or enrolling in an online credential program. While media attention has focused on massive open online courses (MOOCs) offered by elite four-year research universities, and on the growth of online classes at for-profit colleges, the biggest growth in online education in the past decade has occurred in public two-year colleges.[3] Community College Online puts the spotlight on that growth and examines what it could mean, and what it should mean, for students across the country. It offers the untold story of the technological innovations that public two-year institutions are using to help students succeed, regardless of whether they are pursuing a fully online credential or taking all their classes face-to-face.

First, the report explores the demographics of community college students and how they compare to those in other sectors of higher education. Next, it reviews the common reasons undergraduate students stop their studies or drop out. The report then examines technology-enhanced education in community colleges and presents several case studies showing how the public two-year sector can use technology to improve content delivery, student support, credential attainment, and transfer. It concludes with a list of recommendations on how to remove the barriers that impede the flexibility needed by community college students for institutional, state, and federal policymakers.

TODAY'S TYPICAL STUDENT

The majority of Americans enrolling in higher education today do not match the mainstream image of recent high school graduates leaving home for the first time to settle into dorm life at a residential university campus. In 2012, only 12 percent of college students lived on campus.[4] Most college students today look more like Deanna than an 18-year-old sitting on the quad. In fact, over four in ten college students in this country attend community colleges. In the fall of 2012, the public two-year sector enrolled 6.8 million undergraduates at over 1,000 institutions nationwide, more than any other higher education sector.[5]

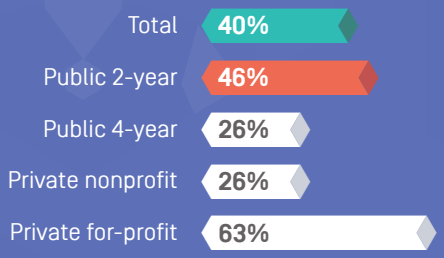
Often overlooked in conversations about college that tend to focus on elite, residential, four-year schools, community colleges occupy a critical space in higher education. Community college students not only make up a greater proportion of the college-going population than typically recognized, but they differ markedly in their demographic composition compared to the public four-year and private nonprofit sectors of higher education. Community college students are more likely to be older, commute to school, and care for dependents. They are also much more likely to attend part time and need remediation. In terms of racial and socio-economic demographics, community college students are more diverse and lower-income than their four-year counterparts (see p.6-7).

Demographics of a Community College Student

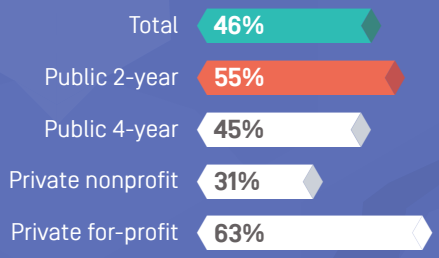
Typical Community College Student

Community college students not only make up a greater proportion of the college-going population than typically recognized, but they differ markedly in their demographic composition compared to the public four-year and private nonprofit sector.[6]

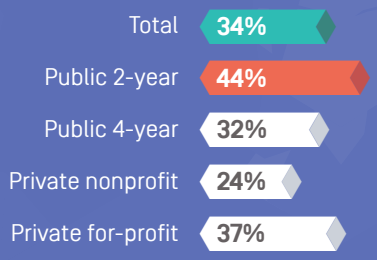
Over Age 24[7]



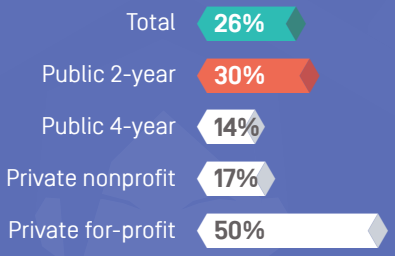
Lives off campus (not with parents)[8]



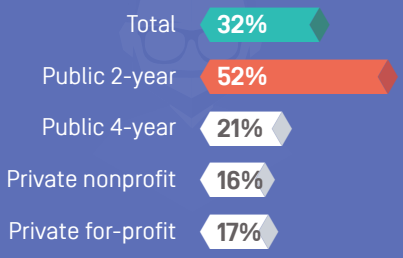
Lives with parents[9]



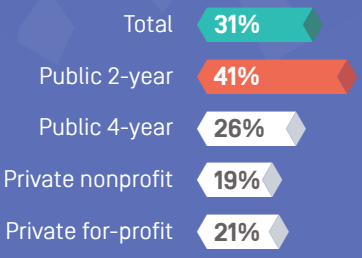
Has a dependent child or children[10]



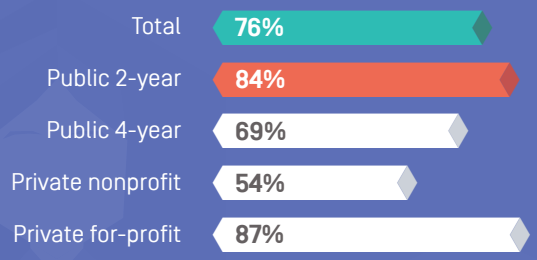
Attends exclusively part time[11]



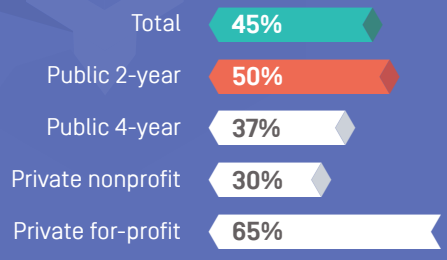
Has ever taken a remedial course[12]



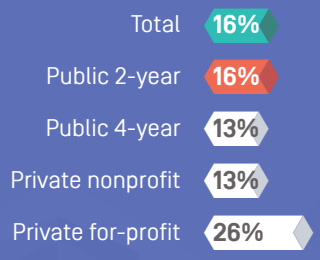
Works more than 20 hours per week[13]



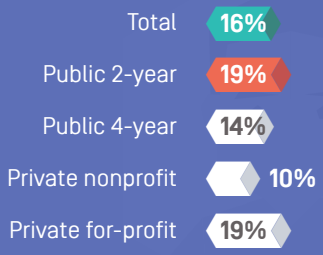
Total income less than $30,000[14]



African-American[15]



Latino[16]



A Note on For-Profits

In many ways, the student demographics in the for-profit sector are similar to the student demographics in the public, two-year sector (see pages 6-7). But for-profit institutions are different from community colleges in significant ways. For example, community colleges educate many more undergraduates: 6.8 million students attended a public two-year school in 2012 compared with 1.5 million in the for-profit sector.[17]

Community colleges also tend to be much more affordable: for 2014–15 the average full time tuition and fees for an in-district student at a public two-year college was $3,347 compared to $15,230 at a for-profit.[18] With this increased price comes increased borrowing. In 2012, only about 17 percent of community college students borrowed federal loans, compared with 71 percent in the for-profit sector.[19] As a result, the average one-year federal loan amount owed by students enrolled at for-profits was nearly $5,000, compared with $781 at public two-year institutions.[20]

THE CHALLENGES OF INCREASING SUCCESS WITH INCREASING ACCESS

While the United States boasts one of the most open, accessible higher education systems in the industrialized world, it also has the highest college dropout rate.[21] Last fall, approximately 66 percent of recent American high school graduates enrollled in college. Yet according to 2014 census data, only 16 percent of young Americans ages 18 to 24 have obtained an associate's degree or more.[22] Even though many students enter college straight from high school, few will graduate within two to four years.

Most postsecondary students attend public higher education institutions, but a significant proportion of these students is not graduating. Sixty-four percent of students who started their studies in 2006 at public, two-year institutions failed to obtain any credential within six years.[23] This trend is particularly acute among part-time students, where approximately 82 percent at public, two-year institutions do not obtain a credential after six years.[24]

For students who do manage to graduate, the average time it takes to obtain a degree has increased in recent decades, especially in the public sector.[25] Of particular concern is that low-income students take longer to graduate.[26] There are multiple reasons students are taking longer to complete their degrees including costs, having to work, being less academically prepared, attending less-resourced and over-enrolled colleges, and losing credits during the transfer process.[27]

By The Numbers

66

The percent of recent American high school graduates enrolling directly in college

16

The percent of Americans with an associate degree or higher by age 24

64

The percent of **all** students at public two-year institutions failing to obtain any credential after six years

82

The percent of **part-time** students at public two-year institutions who fail to obtain any credential after six years

ONLINE EDUCATION AT COMMUNITY COLLEGE

Online education can take many different forms, ranging from small-enrollment classes at local colleges with a campus-based instructor, to Massive Open Online Courses (MOOCs), which can theoretically enroll an unlimited number of students across the globe as long as the student has high-speed Internet access. While some classes are delivered entirely online, where students never meet their peers or instructor in person, other classes take a "hybrid" or "blended" approach, combining off-site remote learning with on-site, face-to-face student and instructor interaction.

Exact data on how many undergraduates are enrolled in online courses and degree programs are difficult to come by. Babson Survey Research Group tracks online enrollment through an annual survey of higher education institutions and has found that approximately 33 percent of students in the fall of 2012 took at least one online course.[28]

Meanwhile, the federal government collects data on distance education, which it defines as "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."[29] This means that distance education can include use of media such as DVDs or CD-ROMs, even though the term has become synonymous with online education.

According to a report by the National Center for Education Statistics that looks at this data, in Fall 2012, 13 percent of all college students were enrolled

Today's College Students

Distance Education

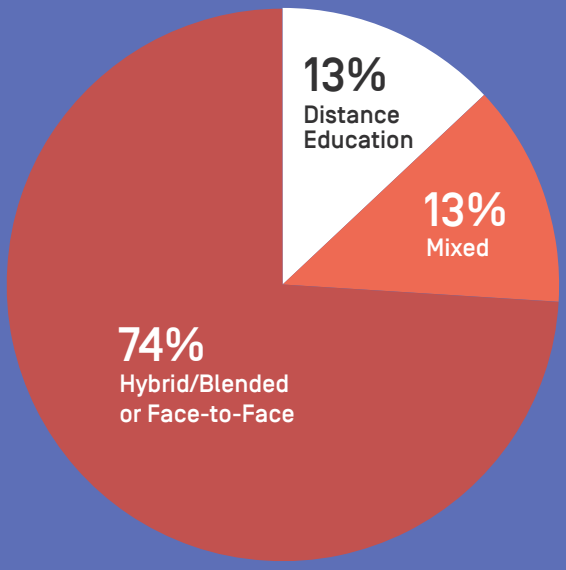
13% of all college students enrolled exclusively in distance education

Mixed

13% enrolled in a mix of face-to-face and distance education

Unknown

Unknown whether the other 74% are in hybrid, blended, or purely face-to-face courses



exclusively in distance education courses.[30] That means that quite a few college students are taking their classes solely at a distance, most likely online. Another 13 percent were enrolled in a mix of face-to-face and distance education courses, most likely adding a distance education course to give them flexibility in completing degree requirements.[31] Because NCES does not collect data on student enrollment in hybrid courses, the biggest unknown is how many of the other 74 percent of students not enrolled in any distance education are actually enrolled in blended courses where a significant proportion of the course work is taken online.

Community college students are more likely than any other students to blend online courses with face-to-face courses.[32] Though few community college students take all of their courses online, recent studies of community colleges in Washington and Virginia show that nearly half of their students take at least one online course at some point in their first four or five years of enrollment.[33] By 2007, 97 percent of public two-year colleges nationwide were offering online, hybrid/blended online, or other distance education courses, compared to 66 percent among all postsecondary institutions.[34] By Fall 2012, 26 percent of public two-year college students enrolled either exclusively online or in some combination of distance education and face-to-face education, compared with 22 percent of students in public four-year institutions and 19 percent at private nonprofit institutions.[35]

Success Rates for Online Courses at Community Colleges: A Study of Virginia's and Washington's Community Colleges

There are very few random-assignment or quasi-experimental studies that have focused on the success of students in online courses versus those that use face-to-face instruction. And most of the studies that have looked at the differences in outcomes between the two modalities have focused on selective institutions, not community colleges where many more students enroll online.

Given the lack of large-scale studies about online education in the public two-year sector, the Community College Research Center published a longitudinal study in 2013 that explored how well students in Virginia's and Washington's community colleges fared in online versus face-to-face courses. The study's authors found that overall, student performance decreased in online courses. On average, if a student took a course online rather than face-to-face, the likelihood he would withdraw from the course increased by six percent. For those students who did complete online courses, the authors found that their final grades were lower by 0.3 GPA points (for example, a change from a B+ to a B).[36]

Even though the course success rates for online students were lower, the authors concluded that online education provides valuable benefits to students in terms of flexibility. They argue that as community colleges move increasingly online, support structures that promote positive student outcomes need to be put in place. This includes the use of an instructional designer who can help train and support faculty members as they shift their courses online. Students in online courses also require more technology-enhanced support than face-to-face students, such as online tutoring, advising, and library services.[37]

The truth is that online education is not easy to get right. All of these factors point to the importance of expanding online student support services to improve the chances of success. Courses must be designed to draw from the best practices that have been proven to deliver high-quality instruction, interaction, and positive outcomes for students. This will help ensure the most vulnerable students do not slip through the cracks. Many of the colleges featured in Community College Online have focused on faculty training and support for students. In turn, they have seen an increase in success rates for their students.

USING TECHNOLOGY TO IMPROVE DELIVERY, STUDENT SUPPORT, STUDENT SUCCESS, AND TRANSFER

The next section of this paper looks at several common barriers to success that community college students face both inside and outside the classroom. It presents case studies of colleges that have harnessed technology to help smooth the pathway to a credential. It finishes by making several recommendations to institutional, state, and federal policymakers to help ensure models like this can become widespread.

Barrier: Remediation

When Deanna attended college at St. Xavier in Chicago right after high school, she started in credit-bearing coursework. But years later, when she transferred to Harold Washington, she took a math assessment that placed her in remedial math. After years away from algebra, understanding the concepts needed to pass the test was harder for Deanna. She had to enroll in two consecutive semesters of remediation to re-learn concepts that had become rusty over time. This set back her progression into credit-bearing coursework.

Deanna is not alone in facing the remediation hurdle. More than 40 percent of undergraduates at community colleges enroll in remedial coursework, according to Department of Education data.[38] Of first-year students who start off in remediation, only about 10 percent will go on to graduate within three years.[39]

Technology-Enhanced Solution: Individualized Learning Through a Computer Learning Lab

Most remedial students are at risk of never obtaining a credential. That is exactly the position students at Jackson State Community College (JSCC) in Tennessee found themselves in before JSCC decided to redesign its remedial math courses.[40]

Before redesign, JSCC had three levels of remedial math courses (Basic Math, Elementary Algebra, and Intermediate Algebra) with an overall pass rate of 42 percent. In most instances students had to successfully complete all three courses before being able to enroll in Allied Health or Nursing programs, among the most in-demand programs at the college. If a student failed a course one semester, she would have to start from the beginning of the course the next term, even though she probably already mastered quite a few of the concepts. This means that if a student started in Basic Math, it would take at least three consecutive semesters before she could enroll in credit-bearing courses.

More than 40 percent of undergraduates at community colleges enroll in remedial coursework, according to Department of Education data. Of first-year students who start off in remediation, only about 10 percent will go on to graduate within three years

As part of the Tennessee Board of Regents' Developmental Studies Redesign, JSCC redesigned all three of these math courses with an eye toward helping students achieve their educational goals. The Jackson

State math department started the redesign process by defining the competencies required in the remedial math courses. They then mapped these competencies into 12 modules—modules one through three covered Basic Math; modules four through seven covered Elementary Algebra; and modules eight through 12 covered Intermediate Algebra.[41] Once the modules were clearly defined, the chair of the math department turned to the chairs of other departments to determine what the prerequisite modules should be for general education math courses, other college-level courses, and programs not requiring college-level math. This way, depending on what a student studied, she would not have to take all 12 modules of math before entering certain credit-bearing courses. In fact, most departments realized they had been requiring more math knowledge than should be required of their programs. Most degree programs required fewer than eight modules for a student to be successful.

Once JSCC had clearly-defined modules and better understood the path from remediation to credit bearing courses, it adopted what is called the "Emporium" model to deliver the course. In the Emporium Model, students are required to attend mandatory computer lab sessions. This is not a typical course with a professor at the front of the room explaining concepts and leading students through exercises. Instead, JSCC uses MyMathLab software created by Pearson, an education publisher and assessment service. MyMathLab is adaptive software that lets students work on their own through modules on a computer. A student may, for example, be able to get through modules one through three, which cover basic math concepts, relatively quickly, but may find certain algebra concepts in module four take a longer time to master. The teachers and tutors are present to help students who have questions and need assistance. A student must have 80 percent mastery to move from one homework assignment to the next and must achieve a 75 percent on the proctored examination for each module to move on to the next module.

JSCC is seeing many benefits from this redesign. In 2008, before the remedial courses were redesigned, 41 percent of students earned passing grades in this coursework. By 2010, after the redesign, 54 percent of students earned a passing grade.[42] In addition, students save money because they can finish in one term, they can easily change their lab time because the learning lab has many sessions throughout the day, and they no longer need to pay for unnecessary coursework. The redesign has reduced the cost per student by over 20 percent by cutting the total number of sections of remedial math offered and the number of sections taught by full-time faculty.

Barrier: Life Events Interrupt Students' Class Attendance

As the primary breadwinner for her family, work and childcare are a priority for Deanna. Since she works a 9-to-5 job, she can schedule her classes around her job. But if childcare falls through, or one of her children is sick and needs to see a doctor, or she has a parent-teacher conference, attending class takes a back seat. These life events are unpredictable, leaving it almost impossible to plan ahead when she will not be able to attend class. The more class she misses in a given semester, the more her grades are likely to suffer, and the odds increase that she will have to withdraw and start all over again the next semester. Students who are scheduled for unpredictable or erratic work shifts face even more challenges.

Technology-Enhanced Solution: Flexible, Online Course, and Program Options

Deanna has taken online courses at Harold Washington and likes their flexibility. She would enjoy taking more courses online if they were available, especially for those classes where she already has a good handle on the material. She would be well positioned to take a hybrid course that combines some in-person sessions with online coursework. Fewer in-person sessions would mean less risk of missing class when things come up at work or home. Additionally, given that Deanna has many skills she has learned on the job, such as basic accounting, she might be able to leverage her knowledge and quickly move through an online competency-based course where she already knows much of the material. She could do this at night after the kids have gone to bed or during lunch at the law firm. These three modalities—hybrid, fully online, and competency-based—are explored more completely below.

Hybrid

Like most community colleges, Frederick Community College (FCC) in Frederick, Maryland experienced enrollment growth during the Great Recession because adults were looking for the skills and credentials needed to succeed in a competitive workforce.[43] But as the

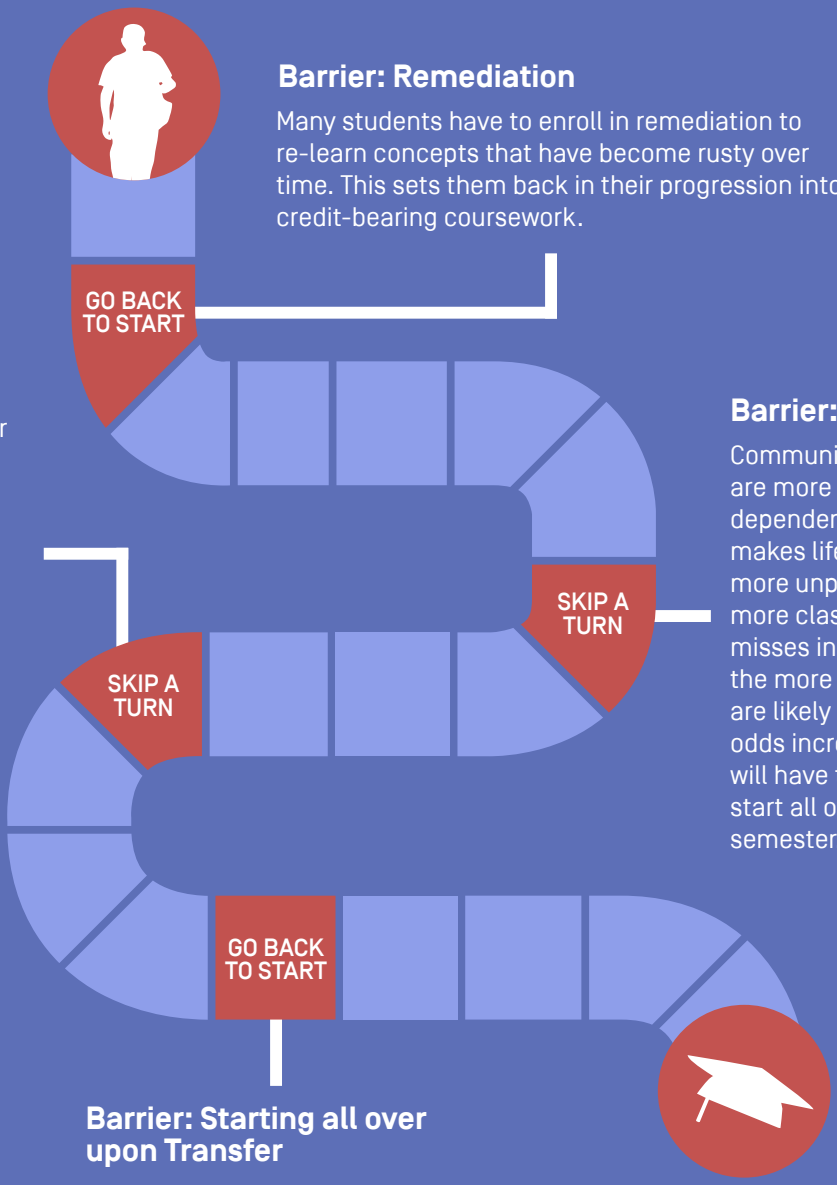
Community College Trajectory

Barrier: Remediation

Many students have to enroll in remediation to re-learn concepts that have become rusty over time. This sets them back in their progression into credit-bearing coursework.

Barrier: Overburdened or Unavailable Advisors

Most community colleges face high student-to-advisor ratios. This makes it harder for students to meet with their advisors, forcing many to choose courses on their own. If they choose classes that do not fulfill requirements, they will pay for classes they don't need and fail to make progress towards their degrees.



Barrier: Life Events

Community college students are more likley to have dependents and work which makes life events for them more unpredictable. The more classes a student misses in a given semester, the more his or her grades are likely to suffer, and the odds increase that he or she will have to withdraw and start all over again the next semester.

Barrier: Starting all over upon Transfer

Approximately one in three students transfer colleges at some point. Many times, some or all of the courses that students take and pay for do not transfer to another institution, forcing them to start their college career over.

economy has slowly recovered, enrollment has flattened, except in FCC's hybrid and online courses. Why? They remain the most flexible options for students who are returning or have returned to the workforce.

Alberto Ramirez is the Director of Learning Technologies at the Center for Distributed Learning at FCC. He is also a faculty member who successfully transitioned his fully online Introduction to Oceanography course to a hybrid model three years ago. He alternates between teaching the course fully online one semester, and using a hybrid approach the next. The oceanography course is popular because it satisfies general education science requirements for non-science majors. The goal of the course is to deepen students' understanding of physical science, chemistry, geology, and biology, to develop critical thinking skills, and to improve science literacy.

In the hybrid version of the course, there are fewer in-person class sessions compared to face-to-face courses. Students work independently at home, going through materials and online resources curated by the professor. They come to class to deepen their understanding of course concepts and prove mastery via oral and written assessments.

Unlike face-to-face courses that rely on lectures, Ramirez's Oceanography class involves no lecture. Instead, he engages the students in problem-solving activities, labs, and active question-and-answer sessions. Every session is guided by an activity sheet that Ramirez designs. This one-page sheet explains what students need to do in that session to succeed, by describing the various competencies they are expected to master. For example, one of the competencies for the course is to improve communication by understanding science terminology. When students come to class, they are expected to discuss the scientific terms they learned outside of class in their own words and show that they understand them.

Depending on the day's topic, Ramirez designs various activities that help deepen students' understanding. For example, for one session he takes students outside and has them navigate with a compass in order to improve their mastery of measuring angles and understanding scientific instruments.

Outside of class Ramirez has students explore the ocean using theBlu, a downloadable desktop application that transports students to a virtual ocean and has them complete a homework assignment, such as finding certain animals, explaining their habitats, and differentiating their morphology.[44]

Since class does not focus on lectures, preparing is intense for Ramirez. He has to regularly update the resources he curates for students. He finds that his discipline has excellent free online resources. The National Oceanic and Atmospheric Administration (NOAA), for example, has an ongoing scientific cruise with videos of what experiments scientists are working on in real time. His course is also periodically reviewed by Quality Matters, a peer review model that ensures quality of course design and delivery (for more about Quality Matters see box on page 17). Ramirez's hard work has paid off: 80 percent of the students who begin the course complete it, and the course has an overall success rate (students with a grade of a C or higher) of 80 to 90 percent.

Fully Online Course and Credential Programs

Rio Salado College in Tempe, Arizona has a long history of providing flexible degree pathways for students. In 1978 the Maricopa County Community College District's (MCCCD) governing board established Rio Salado.[45] The college was meant to be one of seven "colleges without walls" in the nation and became MCCCD's first distance education provider with more than 78 locations throughout the state. By 1996, Rio Salado became one of the first colleges—and the first community college—in the U.S. to move totally online.

When Rio Salado moved fully online, it developed its own Learning Management System (LMS), called RioLearn, to administer and track its online education. Rio Salado chose to develop its own software instead of using pre-packaged, third-party LMS like Moodle, Canvas, or Blackboard because of its unusual course scheduling method. The college has more than 48 start dates a year as opposed to a regular fall, spring, and summer semester schedule.

With multiple start dates, there can be many students in one course, all of whom started the course at a different time and are working through course materials and assignments at a different pace. All the materials, such as embedded video lectures and self-check activities, are worked through independently. In other words, all the students in the course do not have to be at the same place within the course at any given time. This

"asynchronous" model is completely different than the traditional face-to-face course where all students are required to attend lecture sessions and proceed through the course at the same time together. Instead, at Rio Salado, the instructor is notified when a new student enters the course, when a student submits an assignment, when that assignment has been waiting for grading over 48 hours, and when the student's final grade is due. Interaction among students happens through discussion threads set up by the instructors. Students also can connect with one another through using RioLounge, which is powered by Google Plus and allows students to meet each other virtually through online videoconferencing via Google Hangouts.

Rio Salado has 25 faculty chairs who help develop the curriculum and assessments for all courses. This means that every Introduction to English class, for example, follows the same curriculum and all students take the same assessments. Approximately 1,400 adjuncts act as instructors who can personalize each course by incorporating other resources. Along with grading and providing feedback on assignments, the instructors act as mentors, help answer questions, and provide outside resources to students to supplement their "in-class" learning experience. In order to ensure quality, Rio Salado employs an instructional design team, consisting of education technology and design experts. Like many community colleges, Rio Salado also uses the Quality Matters program to ensure good course design principles.

Rio Salado offers over 60 online programs, consisting of certificates and degrees in such areas as accounting and computer technology. But it is also important to note that many of the courses offered by Rio Salado are taken by students enrolled in other colleges and universities in Arizona, who are looking to supplement their studies with an online course. Because Maricopa Community Colleges is a consortium where students can pursue district-wide degrees by taking courses from any school within the consortium, Rio Salado gives students the flexibility to mix in online courses with face-to-face options. Students from Northern Arizona University, University of Arizona, and Arizona State University can also receive transfer credits from a course taken at Rio Salado.

A student at any of these schools, for example, can fulfill his or her science requirement by taking a microbiology or human anatomy course through Rio Salado. The student buys the textbook, logs in, and begins moving through the course materials. For labs, the student uses a virtual microscope. There is even a virtual cadaver for anatomy lessons. Students use lab kits to conduct small lab-based activities from their homes. In a Spanish class, students practice the language by using a microphone and a software program that has the ability to gauge their accents and language skills and gives feedback. In a music history course, students listen to embedded audio clips and respond to various writing prompts.

Rio Salado has been recognized as an innovative institution by numerous organizations. For example, the institution was recognized by the Bill & Melinda Gates Foundation for helping retain students who are the most prone to dropping out of college. In 2012, it was one of three institutions to receive the Council for Higher Education Accreditation Award for Outstanding Institutional Practice in Student Learning Outcomes for its evaluation and improvement process.[46]

Competency-Based

In 2006, Kentucky's Community and Technical College System (KCTCS) conducted a study that found that the state could triple the number of adults with some college but no degree returning to school by offering a flexible modular curriculum. The program would allow working adults to start at any time and progress according to their needs and competencies.[47] The study also found that businesses wanted employees to upgrade their skills without interrupting their work. Based on these findings, KCTCS developed a robust online system called Learn on Demand (LoD).

Learn on Demand students access online programs through a single, streamlined website to begin, continue, and complete their online program, with little or no need to be physically present at any campus location. Courses are developed to be fully online, asynchronous, and modularized. A course normally has five to six modules to complete, includes a pre-test and post-test, and allows students to move faster through the course if they already have an understanding of the materials, or slower if they need help with certain concepts.

KCTCS is currently designing a path where students can be enrolled solely in LoD courses and can start their coursework at almost any time during the year. But many students enrolled in LoD courses are hybrid students; they are taking a blend of LoD courses and "normal

Quality Matters for Quality Assurance

Quality Matters (QM) is a nonprofit that provides faculty resources and training to ensure the quality of online courses for subscribing members. [48, 49] QM started in the fall of 2002 when MarylandOnline, a consortium of 19 public and independent two- and four-year colleges and universities, came together to discuss how to address quality concerns and accreditation issues for online courses.[50] Over the next four years, a faculty-centered course review and improvement system emerged, funded in part by the U.S. Department of Education's Fund for the Improvement of Postsecondary Education (FIPSE).[51]

QM focuses its efforts on improving course design, rather than on the academic content of the class. This helps ensure support from faculty members who are interested in moving their courses online or teaching online but are concerned about maintaining control over course content.[52] QM uses a rubric that includes eight general standards with multiple subparts to evaluate the design of online courses:

Course Overview and Introduction
The overall design of the course is made clear to the learner at the beginning of the course

Learning Objectives (Competencies)
Learning objectives or competencies describe what learners will be able to do upon completion of the course

Assessment and Measurement
Assessments are integral to the learning process and are designed to evaluate learner progress in achieving the stated learning objectives or mastering competencies

Instructional Materials
Instructional materials enable learners to achieve stated learning objectives or competencies

Course Activies and Learner Engagement
Course activities facilitate and support learner interaction and engagement

Course Technology
Course technologies support learners' achievement of course objectives or competencies

Learner Support
The course facilitates access to institutional support services essential to learner success

Accessibility and Usability
The course design reflects a commitment to accessibility and usability for all learners[53]

Once a faculty member has designed a course using the QM Rubric, a QM Peer Review team, consisting of trained and certified faculty members from the same institution along with at least one reviewer external to the institution, scores it. If an online course receives a score of 85 or better, it passes the peer review process.[54]

Many colleges and universities use QM either in whole or in part to help ensure the quality of their online courses and to provide support for the faculty developing them.

term" courses at one of KCTCS' 16 colleges. For hybrid students the path through coursework can be much more complex, as their federal financial aid is term-based and dependent on whether they are enrolled in the fall, spring, or summer. KCTCS has created a work-around that helps to ensure hybrid students can mix and match face-to-face courses with competency-based LoD courses and be eligible for financial aid: students who are taking term-based classes at a KCTCS campus who also want to take a LoD course can sign up for one during the first 11 Mondays of the semester. This way they have at least six weeks to make it through the modules.

Each of the course modules undergoes a formal faculty peer review process that uses a quality rubric to ensure best practices are implemented. Faculty go through a Facilitator Certification Testing (FaCT) course that covers the various tools used in delivering LoD and monitoring students. This FaCT course also covers the levels of interactivity and engagement an instructor will experience working with an asynchronous, online student.

All students have access to a 24/7 Online Student Services Help Desk, where they can ask questions about their programs, from admissions to financial aid to course requirements. Each student is assigned a student success coach as he or she moves through the system. The instructor is the subject matter expert who facilitates discussion, assesses student work, and provides guidance on academic questions. The success coach monitors whether the student has been online and moving through coursework. If students aren't moving through coursework, success coaches reach out to keep them engaged, to better understand why students may not be completing materials, and to provide support as needed.

KCTCS colleges and faculty interested in becoming a part of Learn on Demand submit extensive course proposals through a Request for Proposals process. In return for being chosen to develop and provide LoD courses, faculty and the institutions are given various incentives and professional development opportunities. Instructors who develop the courses, for example, are paid a stipend. KCTCS instructional designers help support faculty members as they develop their courses.

KCTCS Learn on Demand students pay the same tuition as in-state students. This flat-rate tuition is determined by KCTCS and comes to $147 per credit hour, which makes things simple for students to calculate. Online course materials are immediately available to LoD students and are paid for through whatever fee is assessed for them at the same time tuition is calculated. These eRources are listed for each class and usually represent a fraction of what buying an entire traditional textbook would cost.

Barrier: Advisors Overburdened or Unavailable After-Hours to Help Students Who Need Scheduling Flexibility

Most community colleges face high student-to-advisor ratios. Harold Washington, where Deanna attends, is no different. In 2010 its average student-to-advisor ratio was 920 to 1. By 2012, its goal was a ratio of 450 to 1. Despite trying to cut its average ratio in half, students still face long wait times to see an advisor. If Deanna wants to meet with one, she often has to schedule her meeting during her lunch hour. Since she is an hourly employee, any delay in her meeting will cause her to have to stay later to make up missed time or forego wages. For this reason, Deanna is seldom able to meet with her advisor, choosing most of her courses on her own. If she chooses courses that do not correctly fulfill her degree requirements, she may end up spinning her academic wheels and taking and paying for a class that ultimately does not help her make progress towards her degree.

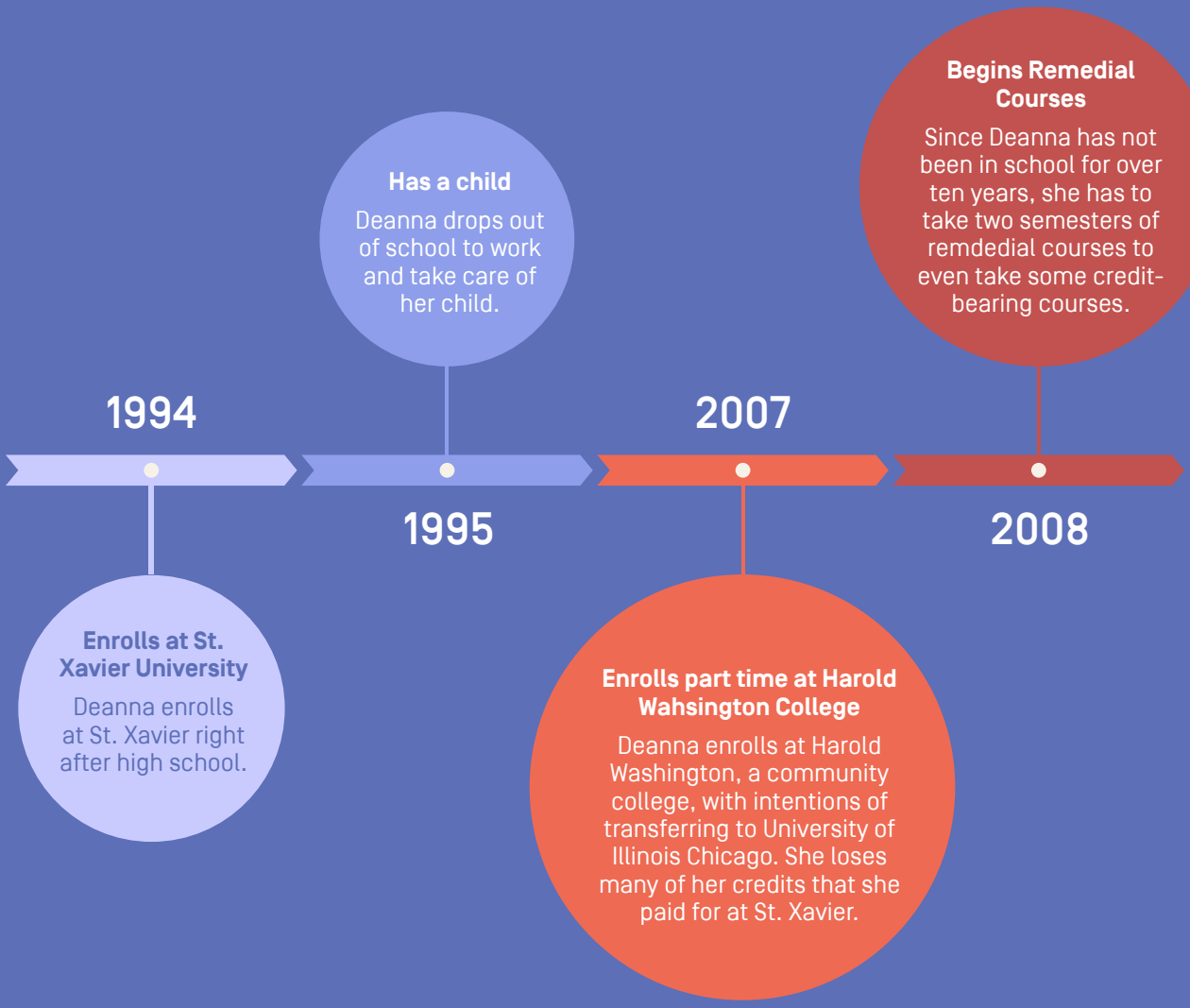
Technology-Enhanced Solution: Integrated Planning and Services

Deanna's difficulty in meeting with an advisor means that she mostly relies on the information she gleans from her school's website. In order to make progress towards her degree, Deanna needs better support. Many innovative online tools are being used by community colleges to help guide students and ensure that they are signing up for the correct courses within their degree programs. These tools also help connect students with resources beyond academics, such as where to find childcare while students attend class. Rio Salado and Kentucky's LoD both have embedded tools and support services that help students succeed.

Sinclair Community College (SCC) is a large, urban institution located right outside of Dayton, Ohio.[55] With the help of federal grant dollars, SCC developed the Student Success Plan (SSP) in the early 2000s. SSP is a software suite designed to support students through to completion.[56] The SSP software is part of

A Community College Trajectory Case Study

Deanna's story highlights how difficult it can be to obtain an associate or bachelor's degree within two to four years.



a broader movement by some institutions towards integrated planning and services (IPAS). According to the EDUCAUSE Center for Analysis and Research, IPAS is defined as "an institutional capability to create shared ownership for educational progress by providing students, faculty, and staff with holistic information and services that contribute to the completion of a degree or other credential."[57]

What does this look like in practice? Sinclair Community College created the Pathways to Completion (PTC) program that uses SSP software to help advise, counsel, and provide web-based support to students. Pathways to Completion identifies first-time-in-college, at-risk students and assigns them a Student Success Coach before they register for courses. Students are supported through case management software, academic advising tools, early alert systems if they start going off track academically, student information integration, and data collection.

One way PTC students stay on track is by using the My Academic Plan (MAP) tool. MAP shows a student a clear path to degree completion by automatically pre-filling a semester-to-semester schedule with suggested classes the student should take. If students follow their MAP, which is designed when they meet with their academic advisor, their courses will follow a correct progression in terms of prerequisites and will fulfill all their degree requirements for completion. Advisors and faculty members can access students' MAPs and see whether they are on or off track and follow-up with the student.

MAP is not prescriptive. If students register for a course

Open Education Resources

The availability of Open Education Resources (OER) expands daily. Indeed, many of the faculty members interviewed for this report curated OER for their students that either supplemented their textbooks and course resources or replaced them.

OER are beneficial to students not only because they can access them for either no or low cost, but also because students are able to access these resources in a timely manner. Many students often forego buying textbooks or have to wait until their financial aid refund check comes through to purchase textbooks. This means they will not be prepared for class solely because they can't afford their textbooks or other course materials. With OER, they can access their course materials on day one, ensuring they will be prepared for class and able to complete assignments.

Five years ago, Scottsdale Community College's Math Department began experimenting with various OER, including incorporating an open textbook in some of its introductory math classes.[58] The faculty of the math department concluded that they should create an entirely open system for some of their math courses that would combine an open workbook, textbook, and homework system. Faculty members came together to write multiple open textbooks including Intermediate Algebra, Basic Arithmetic, Introductory Algebra, and College Algebra. The books were developed and continue to be maintained at almost no cost to students. Faculty enhance the open textbook with a set of materials that include online help, assessments, and various instructor's guides. Classes that use the OER textbooks also use an open online homework/assessment system called MathAS. With access to OER in their introductory math courses, students save hundreds of thousands of dollars total in course materials. Before the change, students paid approximately $100 per textbook. Now the only cost they face is printing it out or buying a bound copy in the bookstore for less than $30.

As an unintended but positive consequence of creating the OER textbooks, the faculty are collaborating in ways they've never done before. Students who have used the OER materials have started asking other departments at SCC why they are still using textbooks, spurring other departments to explore developing open source, low-cost textbooks. And because the materials at SCC are OER, other community colleges across the nation have adopted SCC's materials, at zero or very low cost to their students.

not designated in their MAP, they receive notice that their selection takes them off plan, but they are allowed to enroll in the selected course. If the student is uncertain about what they should take, they can simply accept the default courses designated in their MAP at the time of enrollment, and only need to make scheduling decisions such as course time and location before being enrolled in the courses. A MAP is customizable to a student's attendance pattern and remediation needs, making it highly individualized.

The year-to-year retention rate of active participants in the PTC program is 40 percentage points higher than similar students who are not in the PTC program, and the average year-to-year retention of PTC minority students is over 50 percentage points higher than non PTC students. PTC students are also five time more likely to graduate within 6 years.

While MAPs have been vital to students, Sinclair Community College has also seen many benefits. The program allows the college to better plan course offerings. Using data from the MAPs, administrators can identify who will be affected if a course isn't offered during a semester. They also are in a better position to predict which courses might have high demand in the future. Other colleges wishing to take advantage of this software will be happy to know that it is open source and available through the Apereo Foundation for other institutions to download and use.[59]

Barrier: Starting all over upon transfer

Deanna started at St. Xavier but was unable to continue there once she gave birth to her daughter. Deanna is among the significant proportion of students—approximately one in three—who end up attending more than one college. Some students transfer from a two-year college to a four-year school, some transfer laterally from one four-year school to another, or some even reverse transfer from a four-year institution to a two-year institution. When Deanna was ready to resume pursuing her college degree, she reverse transferred to Harold Washington because it was affordable and conveniently located. After she's done with class, she can jump on the "El" train and be home a short time later to take care of her kids.

Deanna faced a problem when she transferred to Harold Washington, many of the classes she had taken, paid for, and passed at St. Xavier did not transfer. She ended up having to retake several courses she had already taken at St. Xavier. This delayed her time to degree and increased the overall cost of her education, both of which Deanna could ill afford. In the future, she would like to attend UIC. Luckily, City Colleges of Chicago, of which Harold Washington is a member school, has an articulation agreement with UIC. Deanna can access an online portal to determine exactly which of her courses will transfer towards a bachelor's degree. This time around, because of the articulation agreement, many, if not most, of her credits should transfer. Students at other institutions and in other states will not necessarily see all their credits transfer.

Technology-Enhanced Solution: Articulated Transfer Pathways

Community colleges have many missions. As the price of a four-year degree has increased rapidly over the past few decades, attending a community college for the first two years and then transferring to a four-year institution has become a more popular option among bachelor-degree-seeking students. The transfer process can be complex, even for students who do manage to transfer. And not all of the credits they earned at their community college will count at their local university. That "cheap" bachelor's degree can suddenly become less so for students who find themselves re-taking courses to fulfill the degree requirements of their new school. To help improve the transfer process, many community colleges have teamed up with public four-year universities to create articulation agreements that create more seamless pathways between the two institutions.

Acceptance of credits from another institution is not the only challenging aspect of the transfer process. The four-year institution may be located farther away than the local community college, which means longer commutes and greater transportation and childcare costs. In addition, there are other challenging issues, such as scheduling classes. Not everyone is as fortunate as Deanna is to have a four-year institution like UIC located in such close proximity to Harold Washington and her home. That is why technology, specifically online education, plays an important role in continuing one's education beyond community colleges. If students are able to complete the rest of their bachelor's degrees by taking hybrid and fully online courses, they do not have to spend much extra time commuting to a new institution to finish their coursework.

Facilitating State Consortia

In April 2013, New America published *State U Online*, the precursor to this report. *State U Online* recommended that public institutions adopt a system-wide or consortia approach for the delivery of online courses and credentials. Swirling students, who may take a course from one community college, transfer to a four-year school, and then reverse-transfer to another community college, are not well-served by the current structure and are likely to lose credits along the way. A consortia or system-wide model changes this by promoting resource-sharing among institutions and the reduction of barriers that prevent students from moving seamlessly through higher education within their state.

Community colleges have a crucial role to play in these consortia. Since approximately four in ten students attend community colleges, when the schools link up to form local, regional, or state-wide consortia they stand to reach a lot of students. And when community colleges are in the same consortia as public, four-year schools, students who start at two-year colleges find their way to four-year programs more easily.

Many of the community colleges featured in this report are part of a consortium. Take Kentucky's Community and Technical College System (KCTCS), which administers the Learn on Demand program. The KCTCS system includes 16 colleges with more than 70 campuses, making it the largest provider of higher education and workforce training in Kentucky.

Florida has been at the forefront in having state policies that make it easy to transfer college credits.[60] All public colleges and universities within the state use a common course numbering system—English 101 at one campus will count for English 101 at another. This has helped many of the state's universities create articulation agreements that guarantee admission for students who have finished their associate degrees at local community colleges.

The articulation agreement at the University of Central Florida (UCF) is known as DirectConnect to UCF, and is a partnership with Eastern Florida State College, Lake Sumter State College, Seminole State College, and Valencia College. The agreement guarantees admission to UCF with an associate degree from one of the partner colleges.

Valencia College has multiple locations throughout central Florida. Once a student obtains her associate degree from Valencia, she has the option of completing her bachelor's degree in a variety of ways, including taking UCF courses on Valencia's campuses through joint use facilities, taking fully online courses, or taking hybrid courses where she will not have to attend as many in-person sessions at either campus. The result? She may never have to step foot on UCF's main campus to get her bachelor's degree.

Valencia is constantly looking for ways to improve the transfer process with UCF. Most recently, it has teamed up with Civitas, a company that helps higher education institutions understand student data, to come up with solutions that help students persist and graduate. Working with Civitas, Valencia is developing an academic GPS tool that will help students stay on track by mapping all the courses by semester to achieve their long-term educational goals. While the tool is still under development, the GPS is intended to help students follow the path to timely degree completion even if a student starts at Valencia but intends to finish at UCF. Given that Valencia serves over 40,000 and UCF serves over 50,000 undergraduates, a tool like this will be useful to give students individualized guidance and to help them more easily navigate a complex transfer system, and find a clear schedule that gets them to the finish line.

SUGGESTIONS FOR FEDERAL, STATE, AND INSTITUTIONAL POLICYMAKERS

All of these technology-enhanced solutions in course delivery and support services will help students like Deanna succeed. The only problem is that these innovations are happening in pockets, rarely scaled to impact large numbers of community college students. At this juncture, for example, it can be difficult for students to take a mix of competency-based and traditional face-to-face courses due to federal financial aid regulations. How can institutional, state, and federal policymakers promote innovation among America's community colleges to help students like Deanna succeed? The 2+2+2 model, where a student can take at least two courses each fall, spring, and summer semester, is achievable, and there are many levers that can help get us there:

1. Change financial support so it meets the needs of today's students.

The financial aid system is a relic from a time when most students entered higher education directly from high school and attended residential institutions from September until May. That is not the reality for most students anymore, and especially not for community college students, who are more likely to be older, have part-time or full-time jobs, commute to school, or take courses online. As student demographics have changed, the financial aid system has only layered on fixes. Instead of the system changing to meet the needs of today's students, it has added components on to address "nontraditional" learners while still catering to traditional, residential students who are now in the minority. Affordable tuition and access to financial aid is what helps Deanna stay in school. In order to increase the number of flexible course and degree options for students like Deanna who rely on financial aid to access and persist in higher education, the federal government needs to:

a. Provide year-round federal financial aid. Year-round federal financial aid can be a tricky matter. A half-time student who attends college year-round might be eligible for a Pell Grant for the entire year because it will be based on her part-time status. But the student may exhaust lifetime Pell eligibility if she decides to pursue a bachelor's degree because the Pell Grant limit is based on semesters. That same half-time student would be eligible for federal loans, but because financial aid administrators have to show her the full amount of loans for which she is eligible, regardless of attendance status, a student could easily exhaust her total loans after two semesters in an academic year, and have no remaining funds for the third semester. If the student goes on to pursue a bachelor's degree, she might bump up against the lifetime lending limit. Finally, if a low-income student decides to enroll in school full time, she will be unable to receive a Pell Grant year-round, since Pell is based on the anachronistic notion that a student attends college only during the fall and spring semesters and therefore awards half of the grant amount in the fall, and the remaining in the spring, with no award available for the summer term.

The Pell Grant must be available year-round, especially for those students who want to speed through their coursework and attend full-time, year round. Year-round Pell existed for one year, but due to increasing cost concerns, the program was terminated. Year-round Pell needs to be brought back and reformed to ensure students receive the aid they need throughout the year. New America recently released *Myths and Misunderstandings: The Undeserved Legacy of Year-Round Pell Grants* with recommendations for a new, year-round Pell, including the creation of a summer Pell program with a separate mini-year, or summer, award within the financial aid formula.[61]

Additionally, financial aid administrators should have the ability to limit loans based on student attendance status and degree intention. For example, if a student is attending school part-time year-round, an aid administrator should be able to split total loan eligibility over the three semesters, not two, when packaging the

student's aid. The administrator should also be able to limit loans based on attendance status (i.e., half-time versus full-time) to prevent students from exhausting aid eligibility before they achieve their educational goals.

b. Change the law so that federal financial aid can be provided to students who want to take a mix of competency-based and seat-time courses. While federal law enables students to use financial aid for a mix of online and in-person classes, current law prohibits students from using financial aid for a mix of competency-based education (CBE) and seat-time or credit-hour based courses. While some students may do well in wholly seat-time or wholly CBE programs, others may find that a combination of seat-time and CBE courses works best. Some programs have developed workarounds, like Kentucky's Learn on Demand, which allows term-based students to map the competency-based classes they take back to the credit hour. Unlike students enrolled solely in the LoD program, these "hybrid" students have much less flexibility in when they can start a LoD course; it must be on one of the first 11 Mondays of the semester to ensure they will be done with the course by semester's end. Workarounds such as these do not maximize flexibility for students. A real solution must be found to make it easier to combine term-based coursework with competency-based education.

The U.S. Department of Education is allowing a limited number of schools to experiment with offering a mixture of competency-based and term-based courses. Congress should change the law to enable all institutions to provide this type of course flexibility.

c. Allow federal financial aid to be used for competency-based developmental education. Developmental education is known as the Bermuda triangle of higher education for good reason—too many students who enter never exit. Some students may fall just short of being "college ready," but still are required to sit through an entire semester's worth of developmental education. Others may need substantial assistance to reach the college-ready threshold, but lacking a personalized pathway to focus on the specific areas where they are deficient and a lighter touch in areas where they are more proficient, they give up altogether. All of these students could benefit from competency-based developmental education. But current federal regulations preclude using financial aid dollars for CBE developmental education. Given the national developmental education crisis, institutions need all available tools at their disposal to help meet students where they are and guide them where they need to go in their pursuit of a postsecondary credential.

d. Allow adult students to be eligible for state financial aid programs. Many state financial aid programs are only open to students who attend college directly from high school. When state aid programs are structured in this way, countless students are cut off from a funding stream that would help them afford college. Adult students should have access to state financial aid programs. In Arkansas, many students are eligible for state aid programs, regardless of their age. For example, the Higher Education Opportunities Grant (GO! Grant) provides $1,000 grants to full-time and $500 grants to part-time students based on financial need.

e. Provide emergency funding for students. Community college students can quickly find themselves off-track and close to dropping out if an unexpected emergency or financial hardship occurs. Maybe it is a broken-down car and no money for repairs, or childcare falling through and no resources to hire a babysitter, or a family medical emergency that results in a bill too difficult to pay off. These life events prevent many students from continuing with their studies, even when they have been successful in the classroom. For this reason, all community colleges should provide emergency funding for students. Many community colleges are already experimenting with providing these funds. Close to 50 community colleges, for example, participate in the Scholarship America Dreamkeepers program that helps provide financial resources and support services for students experiencing unexpected financial hardship.

f. Help students access the benefits for which they are already eligible. Federal and state governments must work to reduce the burdens that prevent students from accessing the benefits for which they are eligible, such as tax credits and food stamps. For example, once someone fills out a federal and/or state tax return, he or she should be made aware of or, in some cases, automatically receive, certain benefits.

In the meantime, all community colleges should have a benefit access program—like Single Stop USA—to help students claim the various benefits for which they are eligible. Single Stop teams with institutions to hire coordinators who work directly with students to help them find the federal and state benefits they are entitled to, including SNAP and various tax credits like the Earned Income Tax Credit and the American Opportunity Tax Credit.

2. Create a competitive federal funding stream dedicated to community colleges.

There are no federal funding streams dedicated to innovation at community colleges, even though they educate the largest share of students in higher education. In 2009, the American Recovery and Reinvestment Act authorized the Trade Adjustment Assistance Community College and Career Training (TAACCCT) Grant Program. The TAACCCT program included $2 billion over four years to help community colleges expand and improve their ability to deliver education and career re-training programs. The final funding for TAACCCT was awarded in 2014, leaving community colleges to face fierce competition in the future for government grants. To make sure that community colleges get the funding needed to promote innovative methods of course and program delivery and student support services like those featured in this report, the federal government needs to:

a. Make community colleges one of the five absolute priorities for the First in the World (FITW) competitive program. The Department of Education's FITW Program provides grants to higher education institutions to develop and implement evidence-based innovations that improve educational outcomes and make college more affordable for students and families. FITW has five absolute priorities; in order to receive a grant, a higher education institution must address one of the priorities. Although one of the priorities focuses on transfer from community colleges to four-year schools, none of the priorities focuses solely on community colleges. In the first round of grants in 2014, hardly any community colleges were awarded a grant, even though they are the ones most likely to educate underrepresented, underprepared, and low-income students, exactly the students the grant is meant to serve. At least one of the absolute priorities should be dedicated exclusively to community colleges.

b. Create a new competitive grant. In July 2009, President Barack Obama proposed the creation of a new $12 billion grant program known as the American Graduation Initiative (AGI), which was intended to strengthen community colleges and increase the number of associate degrees and certificates by an additional five million by 2020. But for complex procedural and budgetary reasons related to its inclusion in the Health and Education Reconciliation Act, AGI was dropped and replaced with $2 billion for the Department of Labor's TAACCCT program.

With TAACCCT funding gone, it is more important than ever to ensure a dedicated community college grant program that promotes innovation in teaching and learning. AGI needs to be revived so the funds can go further, not just to help with dislocated workers as do TAACCCT funds, but to assist community college students to succeed. Some money should be set aside for planning grants to be distributed through states via sub-grants. This would ensure that states and colleges have buy-in and work together to link planning activities that align with state and institutional goals. The rest of the money should be used for implementation grants given to individual community colleges or the state agencies responsible for them. Continued funding would be contingent on a college's attainment of annual benchmarks to ensure the money is being well spent. States could also supplement implementation grants with their own grants that would help community colleges build capacity and adopt the innovative strategies pursued by the institutions in this report.

3. Give credit where it is due.

According to a study from the National Association for College Admissions Counseling, one in three undergraduate students will transfer at least once during their academic careers.[62] During the transfer process, many students lose credits or have to retake credits. Community colleges play an important role in feeding students to four-year institutions, especially public four-year universities. State systems should have robust articulation agreements and guaranteed admission programs to ensure that students have access to a four-year option and that their credits will transfer. This can be achieved through institutionally-stated articulation agreements between and among state institutions, common course numbering as seen in Florida, and the development of common learning outcomes.

4. Collect better data on online students to understand their outcomes.

The National Center for Education Statistics defines a distance-education course as one 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."[63] This definition of distance education encompasses many models, including online delivery. As online education has grown significantly over the past decade, and as more campus-based students take a mix of online,

hybrid, competency-based, and face-to-face courses, it has become necessary to designate a separate definition for students enrolled solely online. It may also be worthwhile to formally define hybrid courses that blend online work with face-to-face interactions, so we better understand the outcomes of students who take courses that use two instructional modalities. Better measurement of online student participation would help federal and state government track trends in online education as well as help institutions and states to set goals for future participation in online courses and programs.

5. Provide professional development opportunities to faculty.

Faculty at community colleges, no matter if they are adjunct or full-time, must be supported through professional development and course design instruction.

Online teaching is different than face-to-face instruction. Hybrid courses are also different from fully online or face-to-face courses. It is important to avoid just replicating face-to-face instruction in an online environment. To assure high-quality online courses, institutions should offer professional development seminars and course development support. Institutions should have a quality assurance system in place, like Quality Matters, to ensure that online and hybrid courses meet the needs of students. Particular attention should be paid to the development of rigorous assessments that help evaluate students' critical thinking skills and course and program competencies.

6. Provide opportunities for faculty to create and adopt Open Education Resources (OER).

The sheer quantity of OER available today without an accompanying means of gauging the quality of the materials remains a challenge. Institutions and faculty who would like to adopt such materials must first be aware of what currently exists and be able to assess the suitability and quality of materials. College Open Textbooks was formed to serve this very purpose. This organization aggregates a list of open textbooks for community colleges to adopt.[64] Some of these books come with reviews from other faculty members who have used the materials, which can assist instructors in deciding whether a particular resource would be a good fit for their course.

Oftentimes, though, faculty are unaware that resources like College Open Textbooks exists. For this reason, community colleges should either promote existing databases or, depending on their needs as an institution, support the building of an internal database that faculty and department chairs can contribute OER to, tagging it appropriately so that other faculty looking to integrate OER into a course will be able to find trusted resources that were aggregated by their colleagues. Designating a librarian familiar with OER to help curate the resources and make recommendations to faculty would also be helpful for those looking to incorporate OER into their classes.

Institutions should encourage homegrown development of OER by making it a part of their strategic plans and through use of incentives. Faculty who helped develop the open textbooks for Scottsdale Community College, for example, were offered a small stipend. In addition, any resources created by faculty should have a Creative Commons license that allows for reuse and remixing of content so that faculty from other institutions are able to use the content without fear of copyright infringement.

7. Open publicly funded research to the public.

Faculty members at community colleges need timely access to research on the best methods of pedagogy, including for face-to-face, online, and hybrid courses. This research is often published in academic journals that are so pricey that under-resourced community colleges and faculty members rarely have access to them. In addition, faculty members need access to published discipline-specific research to facilitate the creation of high-quality OER. For this reason, published research articles financed through public funding must be made open and freely available.

Community college students need access to an affordable and flexible education. Federal, state, and institutional policymakers must work to facilitate the creation of more pathways to a credential, while ensuring students can access financial aid, low- or no-cost course resources, and flexible student support services. If these recommendations were put into place, it would not take students like Deanna decades to achieve their educational goals. Instead, Deanna would cross the graduation stage with her children cheering from the audience.

Interviews Conducted

Ronda Edwards, Executive Director, Michigan Community College Virtual Learning Collaborative

Iris Palmer, Senior Policy Analyst—Education Division, National Governors Association

William Preston Davis, Director of Instructional Services—ELI, Northern Virginia Community College

Una Daly, Community College Outreach Director, Open Education Consortium

Kurt Ewen, Presidential Fellow, Conference Chair and Program Host—Community College Conference on Learning Assessment, Valencia College

Betty Frost, Associate Professor of Math, Jackson State Community College

Donna Gaudet, Mathematics Department Chair, Scottsdale Community College

Sally Johnstone, Vice President for Academic Advancement, Western Governors University

Charles Key, Director for Adoptions, College Open Textbooks, and Grants, Open Doors Group—College Open Textbooks

Russ Little, Chief Innovation Officer, PAR Framework

Jennifer McGrath, Vice President—Academic Affairs, Rio Salado College

Alberto Ramirez, Director of Learning Technologies, Frederick Community College

William J. Ryan, Executive Director, Learn on Demand

Linda Selkirk, Program Director, CSU OnlinePLUS

Lisa Young, Faculty Director—Center for Teaching and Learning, Scottsdale Community College

Notes

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