

Redesigning Community Colleges for Student Success

Overview of the Guided Pathways Approach

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OVERVIEW

In most community colleges, students are left to navigate a complex and often confusing array of programs, courses and support services mostly on their own. Many students do not see a clear path to their end goals, become frustrated, and drop out. A growing number of colleges and universities are redesigning academic programs and support services to create more clearly structured and educationally coherent program pathways to student end goals, with built-in progress monitoring, feedback and support at each step along the way. These institutions are starting with the end in mind, working with education providers at the next level and with employers to ensure that program learning outcomes are clearly aligned with the requirements for success in further education and careers. And they are rethinking their new student intake systems to help students choose and successfully enter a program of study as quickly as possible. They are doing this in ways that help guide students' choices, but without limiting their options. These efforts are being implemented on a large scale—in some cases benefitting thousands of students. They are beginning to produce results in terms of increased student completion and learning. This overview describes the barriers to student success created by the way most community colleges are currently organized. It describes the key design features of the guided pathways model, describes the process for implementing it and outlines reasons why college leaders should consider doing so despite the costs involved.

DESIGNED FOR ACCESS, NOT SUCCESS

Responding to the need to dramatically increase higher education access in the 1960s and 1970s, community colleges were designed to maximize enrollment at a low cost—and to do this with students many of whom are not well-prepared to succeed in college. They give students a broad menu of courses, programs and delivery modes to choose from. They make it easy for students to enroll when it is convenient, allowing them to take only a couple courses at a time and to stop out and re-enroll at their convenience. They have also greatly expanded remedial offerings—over 60 percent of new college students take at least one remedial course. Colleges use standardized tests to place students in these courses, which are often taught by part-time instructors, so they are relatively inexpensive to offer. In recent years, community colleges have greatly expanded on-line offerings, again with a view to making it easy for students to access and (at least in theory) reduce the cost.

However, the same features that have enabled these institutions to provide broad access to college make them poorly designed to facilitate completion of high-quality college programs—programs that foster deep student learning and prepare students for success in further education and employment. Specifically, the focus on low-cost enrollment has encouraged colleges to offer an array of often disconnected courses, programs and support services that students are expected to navigate mostly on their own. Students are confused by a plethora of poorly-explained program and transfer choices, and available programs often do not provide a clear path to success in further education and employment.

Too many choices, too little guidance.¹ Although most community colleges offer a prodigious array of courses and programs, they typically provide little guidance to help new students choose a program of study and develop a plan for completing it. This is the case despite the fact that many students arrive without clear goals for college and careers. Many if not most students, and especially those from disadvantaged backgrounds, may not have a clear idea even of the opportunities that are available to them. While career services and advising are provided to students who seek them out, studies suggest that those who need such services the most are the least likely to take advantage of them.

Paths to end goals unclear.² In addition, the paths into and through community college programs of study are often unclear and not well-aligned with student end goals. This problem is particularly acute in associate of arts programs intended to prepare students to transfer to four-year institutions. Students who want to obtain a bachelor's degree (or who do not have a clear program goal) are typically defaulted into "general education" coursework. However, even in states with policies guaranteeing transfer of general education credits, there is often no guarantee that these credits will be accepted toward junior standing in a particular major, as major requirements are often set by individual departments within transfer destination institutions. Thus students may have to take additional courses to satisfy bachelor's program requirements. To ensure that they can transfer their credits seamlessly, students need a clear idea early on in their community college studies not only of what four-year institution they intend to transfer to, but of what program they plan to transfer into. Too often the information provided by community colleges on transfer requirements is often complicated, hard to find, and unreliable.

Barriers to career advancement.³ The paths through community college occupational programs tend to be much clearer than those through transfer programs. This is especially true in fields such as nursing, automotive technology and protective services that are regulated by licensure or industry skills standards. However, many students may not be aware of the many occupational programs offered by community colleges. In many colleges, the majority of students in occupational programs are older. This is in part a result of the fact that college advisors often steer younger students and those without clear goals to academic transfer programs. Still, to earn an associate degree and prepare for transfer, even students in occupational programs have to take general education courses in most cases. This is likely one key reason why the majority of students who earn an occupational certificate do not go on to earn an associate or bachelor's degree.

Developmental dead-end. Even before they can proceed with college-level courses, the majority of degree-seeking students in both academic and occupational programs are referred to developmental education. However, research suggests that, as it is typically designed, developmental education serves more to divert students into a remedial track than to build skills for college and help them choose and prepare to successfully enter a college-level program of study in a particular field.⁴ The most promising approaches to reforming developmental education involve mainstreaming students in college-level courses with support or providing alternative pathways, especially in math.⁵ But improving the success of students in passing college-level math and English is not sufficient to improve completion rates. These efforts need to be tied to efforts to strengthen the pathways into and through college-level programs.

Students' progress not monitored.⁶ While community colleges departments closely monitor enrollment in their courses, they often do not know which students are pursuing programs of study in their fields and thus do not track students in their programs to ensure that they make steady progress toward achieving their goals for program completion and transfer. As a result, many students end up self-advising. A common exception is nursing and other selective enrollment programs, which closely monitor the progress of students who are accepted into them. But for nursing and other selective programs there are usually many more students who are trying to be admitted than who will be accepted. Colleges generally do not keep track of these "pre-select" students, even though many continue to take courses and harbor dreams of entering a selective program even when they do not have the grades in the prerequisite courses to be accepted into a the limited number of slots available.

Lost in the maze. With so many choices and without a clear roadmap or anyone monitoring their progress, it is not surprising that many community college students indicate that they are confused and often frustrated in trying to find their way through college.⁷ The lack of clear pathways and guidance can lead students to make costly mistakes.⁸ Indeed, there is evidence from research on course-taking patterns that many community college students are pursuing suboptimal pathways.⁹ When asked, students indicate that being in a program with a well-defined pathway would improve their chances of persisting, completing, and transferring.¹⁰

Curricular incoherence hurts learning. Studies on the psychology of learning show the importance of setting clear learning goals and providing students with a clear sense of how they are progressing toward those goals. Research on the elements of effective teaching in higher education also suggests that providing students with a "big picture" of the key topics within a specific course, and how they fit together, helps to improve learning. Studies in K-12 education find that schools that are able to achieve greater gains in student learning, particularly with students from disadvantaged backgrounds, are characterized by higher levels of "instructional program coherence." If students are to achieve meaningful learning outcomes for their programs of study, then they need to develop knowledge and skills systematically and cumulatively over time, not in a haphazard fashion. By allowing students to cobble together a set of often disconnected courses to meet degree requirements, it is difficult to see how college programs could help students learn effectively and build skills across the.

BUILDING GUIDED PATHWAYS TO STUDENT SUCCESS

Instead of letting students find their own paths through college, a growing number of colleges and universities nationally are taking a different approach. They are creating “guided pathways” for students. They are doing this by redesigning their offerings to simplify students’ decisions, creating more highly structured programs with default schedules and built-in feedback and supports that help students make better choices that will lead them toward their end goals, but without limiting their options.¹¹

Design Features

The key features of the guided pathways model are summarized as follows.

Degree maps. Academic programs are clearly mapped out by faculty to create educationally coherent pathways with clearly defined learning outcomes that are aligned with requirements for further education and, in occupational programs, for career advancement.

Exploratory or “meta-majors.” The goal of the new student in-take process is to help students choose and successfully enter a program of study. Students are helped to clarify their goals for college and careers and to create an academic plan based on program maps created by the faculty. Students who do not have a specific major in mind are required to choose an “exploratory major” or “meta-major” in a broad field of interest (such as business, allied health, education and social services, STEM, social and behavioral science, and English, arts and humanities), with a default curriculum that gives them a taste of the given field. Students are required to choose a specific major in the larger field of interest within a prescribed number of terms, or switch to another field.

Predictable schedules. Students are placed pre-sequenced, whole-program course schedules that will lead to on-time completion. Students can customize their plans, but they must see an advisor or faculty member to do so. Knowing how far along students are in their programs makes it easier for colleges to schedule classes and assign instructors well in advance. This predictability also makes it easier for colleges to block schedule courses for students in the same program, which some students say would make it easier for them to schedule their work and family obligations around school.¹²

Contextualized instruction in foundation skills. In the guided pathways model, developmental education is redesigned as a critical part of the “on-ramp” to a college-level program of study, with the goal of helping students successfully complete the critical introductory college-level courses in their initial field of interest. For many if not most students, developmental education consists of co-requisite coursework designed to scaffold students’ success in critical college-level courses. For students who need an extended pre-requisite approach, developmental instruction maintains high college-level expectations while providing more intensive support, and is contextualized to students’ program of interest.

Progress tracking, feedback and support. Students’ progress relative to their academic plan is tracked, and frequent feedback is provided to them and to their advisors and instructors. Advising is reorganized to ensure that students are making progress based on academic and non-academic milestones, such as doing an internship or service learning project, applying for transfer, or updating a resume. Close cooperation between professional advisors and faculty ensures a smooth transition from initial general advising to advising in a program. “Early-alert” systems signal when students are struggling, and they set in motion appropriate support mechanisms. Advising and other necessary supports are designed as defaults that students are expected to use unless they opt out.

Bridges to college programs. The program maps that are central to the guided pathways approach can be used to give high school students (and their teachers and counselors) a clearer sense of the programs a college offers and where those programs are designed to lead in terms of further education and employment. Ideally, colleges should work with high schools to prepare students to enter programs of study. One way to do this, for example, is to require that students in dual high school – college enrollment programs take courses that are part of programs of study—not just whatever courses they want to take. Similar efforts can be made to bridge students in adult basic skills and non-credit workforce programs into college-level programs that lead to credentials and careers in high-demand fields.

Design Principles and Policies

The following are some principles for redesigning programs and support services following the guided pathways model:

- a) Give each student a clear roadmap to success
- b) Ensure maps lead to further education and employment
- c) Simplify choices for students, using defaults that give students a recommended program schedule that they can customize as they see fit.
- d) Help structure the first year experience to help entering students who undecided about a major to choose a field of study
- e) Monitor student progress, providing frequent feedback and support as needed
- f) Engage faculty and staff across silos to map pathways and design integrated supports

Larry Abele, provost emeritus at Florida State University, who led pioneering efforts at Florida State to develop guided pathways, recommends that colleges implement the following policies as part of guided pathways:¹

- Academic policies
 - Require early declaration of major or meta-major.
 - Require every student without a major to attend a “choosing a major” workshop and select major by 30 hours
 - Establish milestones for each term

¹ From an undated PowerPoint by Larry Abele.

- Customize general education requirements for meta-majors
- Advising policies
 - Focus intake on helping students choose a meta-major or major
 - Monitor student registration and grades for critical/milestone courses
 - Every student “off-map” must be mandated to meet with an advisor in person
 - Students must change majors if they are “off-map” two consecutive terms
- Communication policies
 - Earning a credential is a one- or two- (or four-) year process
 - Maps must be part of every communication with students, parents advisors and faculty
 - Maps must be easy to find on the website and easy to understand
 - Maps must be integrated into every aspect of the academic experience

PROCESS FOR REDESIGNING COLLEGES ON THE GUIDED PATHWAYS MODEL

Getting Started

Start with the end in mind: map student pathways to end goals. The first step in creating guided pathways is to engage the faculty, with input from advisors, in mapping out programs. Program maps should:

- Describe in detail the further education and employment outcomes the program is designed to prepare students for—if further education is needed to enter career-path employment in a given field, indicate that as well.
- Include clear learning outcomes that are aligned with the requirements for success in the next level of education (such as transfer with junior standing in particular majors) and career advancement.
- Incorporate general education learning outcomes as applicable.
- Specify default sequence of courses to ensure that students are building skills across the curriculum.
- Specify “critical courses” that are highly correlated with success in a particular field and that students must pass to be allowed to proceed in that major.
- Require students who have not decided on a specific major to choose an exploratory major.
- Include academic and non-academic milestones by term for the entire program that students are expected to achieve to ensure timely program completion.

Simplifying and clarifying program pathways requires complementary changes to other college practices, particularly in how the college approaches instruction, students support services, and the new student intake process. Bringing about these complementary changes requires broad-based engagement of faculty and staff, as well as a rethinking of hiring and professional development. The

program pathway maps provide a framework for redesigning these other key college functions to support student learning and success.

Engaging faculty and staff in the process

Collaboration is important to any major organizational reform, but it is critical to efforts to implement guided pathways. To map out program pathways, faculty need to work with transfer institutions and employers in order to define meaningful learning outcomes. And they must also collaborate within and across departments to systematically build those outcomes across a clearly defined sequence of courses. To help guide students into program pathways and to keep them on track, faculty and student services staff need to work together to monitor and support students as they enter and make progress.

Thus, for guided pathways reforms to be successful, college leaders must create time and support for faculty and staff to collaborate. Currently, professional development at community colleges is often viewed either as information sharing geared to a wide audience on campus—such as at the typical faculty development day—or as an activity designed to build the skills and knowledge of individual faculty members. Colleges might consider redirecting at least some resources currently spent on conventional forms of professional development toward collaborative efforts, such as providing training, facilitation, and other support as needed by teams of faculty and staff working together to create guided pathways. Doing so would reframe professional development as a strategic activity that supports the collective involvement of faculty and staff in organizational improvement rather than as an activity that mainly supports the professional growth of faculty and staff as individuals.

To build an infrastructure that will support ongoing efforts to implement and improve guided pathways, colleges need to rethink not only their approach to professional development, but also their committee structures, institutional research activities, program review processes, budgeting practices, and policies for employee hiring, performance review, and incentives. All such practices should be reviewed to ensure that efforts to increase the rate at which students “get with a program ... and finish it” become an integral part of the way community colleges do business.

Timeline for Implementation

Based on our experience with colleges involved with the Gates-funded Completion by Design initiative and our research on colleges and universities that have undertaken reforms on the guided pathways model, we estimate that the process takes at least five years. The steps involved are outlined in Figure 1. By this timetable, improvements in early indicators of student progression (such as the percentage of students taking and passing at least 15 college-level credits in year 1) would not be evident until the end of year 3 (and the data would not be available until year 4). Thus, the expected returns to guided pathways reforms in terms of improved student retention will take several years to be realized.

Figure 1. Hypothetical Timeline for Institution-Wide Guided Pathway Implementation

Year 1	Engagement / High-level Planning	<ul style="list-style-type: none"> • Make case for change • Broadly engage faculty and staff in scrutinizing current practice, planning scale redesign • Constantly communicate vision and goals
Year 2	In-depth Planning / Initial Implementation	<ul style="list-style-type: none"> • Map pathways for largest programs • Plan redesign of intake system, including dev ed, into program “on-ramp” • Plan reorg of advising to support timely program progress and completion • Plan upgrade of SIS to support student progress monitoring and e-advising • Continue broad communications & engagement • Train advisors and faculty for year 3 implementation
Year 3	Initial Scale Implementation	<ul style="list-style-type: none"> • Begin scale implementation of: <ul style="list-style-type: none"> - Redesigned pathways for largest programs - Reorganized intake system - Program advising system - Student e-advising system • Provide training to support initial implementation • Formatively evaluate initial implementation • Continue broad communications & engagement
Year 4	Improved Scale Implementation	<ul style="list-style-type: none"> • Refine and expand scale implementation • Continue training to support implementation • Continue formative evaluation • Continue broad communications & engagement
Year 5	Scale Implementation	<ul style="list-style-type: none"> • Institutionalize structures & processes for formative evaluation and improvement

THE ECONOMICS OF IMPLEMENTING GUIDED PATHWAYS

Cost and Revenue Implications

Using a method developed to measure the costs incurred by students as they progress over time, CCRC found that, to the extent that guided pathways reforms improves student retention, they will likely improve college efficiency by reducing the cost per completion. At the same time, they will also likely increase costs. This is because as more students persist, the college has to provide them with more instruction and support services. These improvements will also increase revenue, but probably not enough to cover the increase in expenditures. One likely reason for this is that students who persist are

more likely than those who drop out early to take more expensive upper-level courses, which often involve more experienced full-time faculty (as opposed to the low-cost adjuncts, who commonly teach most remedial and many introductory courses). Upper-level courses in technical fields especially are more likely than liberal arts and sciences courses to require small class sizes, high-paid faculty, and expensive equipment.

Although the estimated shortfall in revenue is not large, CCRC's research did not account for the up-front investment required to implement reforms needed to strengthen student pathways. These include costs for faculty and staff training, upgraded computer systems for improved student-progress tracking, and the coordination needed to support the systemic changes in organizational practice and culture that are entailed in such reforms. Colleges and universities that have implemented guided pathways have also hired more advisors to help students on the front-end choose a program path and to help faculty and academic departments with students who fall off-map. We do not yet have a full accounting of such costs, but they are likely to be substantial.

To cover the extra costs of implementing guided pathways, colleges will likely have to reallocate existing resources. They should take a hard look at programs with weak employment and transfer outcomes, particularly if such programs are relatively expensive to maintain. Moreover, colleges should question the value of programs and services that are not closely tied to the college's academic programs. Also, a growing number of colleges are exploring ways to more directly connect their developmental instruction and learning support programs to their college-level programs in order to help students take and pass college-level gatekeeper courses in their desired program area.

Why Make the Investment?

Given the costs of implementing guided pathways, why would college leaders want to make the necessary investment to bring about what are admittedly major changes in college practice.

Response to enrollment pressures. One motivation is that community colleges in many parts of the country are facing stagnating or declining enrollments as a result of a several factors. The boom in enrollment following the Great Recession has ended now that the job market is improving. The infusion of funding for training and education in some states following the recession has also tapered off. Community colleges may also see large drops in enrollment as efforts to accelerate students into college-level coursework result in declines in developmental courses. And finally increasing restrictions on financial aid, particularly the limits on the number of terms students are eligible for Pell grants (reduced from 18 to 12) and stricter rules around Satisfactory Academic Progress (SAP), are putting pressure on colleges to help students move through more quickly and to intervene more quickly to help students who are struggling academically to prevent them from dropping out.

Performance funding. Performance funding in many states, and the threat of it in others, is at least focusing attention on the desire of policy makers to see colleges improve outcomes. At the same time, cuts in state funding have led to increases in tuition and Federal funding for financial aid, which also

surged after the recession has now levelled off, even there are more students competing for it. The more students pay out of their own pockets for a college education, the more they will demand outcomes. Thus, in many states, tuition has become the most effective form of performance funding.¹³

Key to recruitment and retention is placement. Colleges will no longer be able to rely exclusively on their low cost and high accessibility to recruit students. Increasingly, to attract and retain students, colleges will have to offer programs that enable students to earn credentials of value in a timely fashion. The guided pathways approach is intended to help colleges do just that.

RESOURCES

A. Articles and Books

Bailey, T.R., Jaggars, S.S., & Jenkins, D. (2015 forthcoming). *Redesigning College for Student Success*. Harvard University Press.

Belfield, C., Crosta, P. & Jenkins, D. (2013). Can Community Colleges Afford to Improve Completion? Measuring the Costs and Efficiency Effects of College Reforms. (CCRC Working Paper No. 55). New York: Community College Research Center, Teachers College, Columbia University (April). Accepted for publication in *Educational Evaluation and Policy Analysis*.

Community College Research Center. (2014). *What We Know About Nonacademic Student Supports*. (CCRC Practitioner Packet). Community Colleges Research Center, Teachers College, Columbia University. <http://ccrc.tc.columbia.edu/publications/what-we-know-student-supports.html>

Crosta, P.M. (2014, in press). Intensity and attachment: How the chaotic enrollment patterns of community college students affect educational outcomes. *Community College Review*.

Deil-Amen, R., & Rosenbaum, J.E. (2003). The Social Prerequisites of Success: Can College Structure Reduce the Need for Social Know-How? *Annals of the American Academy of Political and Social Science*, Vol. 586, Community Colleges: New Environments, New Directions (Mar., 2003), pp. 120-143.

Jaggars, S.S., & Fletcher, J. (2014). Redesigning the Student Intake and Information Provision Processes at a Large Comprehensive Community College. (CCRC Working Paper 72.) Community Colleges Research Center, Teachers College, Columbia University. http://ccrc.tc.columbia.edu/publications/redesigning-student-intake-information-provision-processes.html?utm_source=ASEE+conf&utm_campaign=UA-2832117-7&utm_medium=email

This case study describes how a large, suburban community college planned and implemented a relatively low-cost redesign of its student intake and information provision processes in an attempt to reduce confusion and increase student success.

Jenkins, D. & Cho, S-W. (2014). Get With the Program...And Finish It: Building Guided Pathways to Accelerate Student Learning And Success. In B.C. Phillips, & J.E. Horowitz, eds., *New Directions for Community Colleges*. (Special Issue: The College Completion Agenda: Practical Approaches for Reaching the Big Goal.) San Francisco, CA: Jossey-Bass. 2013(164): 27-35.

Jenkins, D., Kadlec, A., & Votruba, J. (2014, July). The Business Case for Regional Public Universities to Strengthen Community College Transfer Pathways (with Guidance on Leading the Process). Maximizing Resources for Student Success. HCM Strategists.

Kadlec, A., Immerwahr, J., & Gupta, J. (2014). *Guided Pathways to Student Success Perspectives from Indiana College Students and Advisors*. New York: Public Agenda (March)
http://www.publicagenda.org/files/GuidedPathwaystoStudentSuccess_PublicAgenda_2013.pdf

Report based on focus groups with students and advisors in Indiana 2- and 4-year institutions designed to elicit their views on three key guided pathways practices: 1) degree maps and guaranteed courses, proactive advising and informed choice, and block schedules and structured cohorts.

Karp, M. M. (2013). *Entering a program: Helping students make academic and career decisions* (CCRC Working Paper No. 59, Assessment of Evidence Series). New York, NY: Columbia University, Teachers College, Community College Research Center. Public Agenda. (2012). *Student voices on the higher education pathway: Preliminary insights and stakeholder engagement considerations*. San Francisco, CA: WestEd.

Public Agenda. (2012). *Student voices on the higher education pathway*. Public Agenda and WestEd.
http://www.publicagenda.org/files/student_voices.pdf.

Rosenbaum, J.E., Deil-Amen, R., Person, A.E (2006). *After Admission: From College Access to College Success*. Russell Sage Foundation, New York.

Scrivener, S., and Weiss., M.J. (2013). *More Graduates: Two-Year Results from an Evaluation of Accelerated Study in Associate Programs (ASAP) for Developmental Education Students*. MDRC.
<http://www.mdrc.org/publication/more-graduates>.

Scott-Clayton, J. (2011). *The shapeless river: Does a lack of structure inhibit students' progress at community colleges?* (CCRC Working Paper No. 25, Assessment of Evidence Series). New York, NY: Columbia University, Teachers College, Community College Research Center.

Wyner, J. S. (2014). *What excellent community colleges do: Preparing all students for success*. Cambridge, MA: Harvard Education Press. (See Chapter 2 on pathways.)

B. Guides

Changing Course: A Guide to Increasing Student Completion in Community Colleges. By Thad Nodine, Andrea Venezia, and Kathy Bracco for Completion by Design.
http://knowledgecenter.completionbydesign.org/sites/default/files/changing_course_V1_fb_10032011.pdf

Pathways Analysis Toolkit by Sue Clery, Elif Bor, Davis Jenkins, and Sung-Woo Cho for Completion by Design. <http://completionbydesign.org/our-approach/step-3-diagnose-the-issues/pathway-analyses-toolkit>.

On-line toolkit designed for use by community college institutional researchers and other data-oriented personnel have a better understanding of how their students progress through the institution, where they struggle, and how their forward progress can be improved. The toolkit describes the process and model analyses that Completion by Design colleges use to analyze students' pathways, and design and evaluate their reforms. The toolkit includes interactive templates, data definitions, and programming guidelines so colleges can conduct these model analyses with their own data. Sample analyses and case studies are provided throughout to illustrate the uses of these analytics.

Providing Structured Pathways to Guide Students Toward Completion. By Mina Dadgar, Andrea Venezia, Thad Nodine, and Kathy Reeves Bracco for Completion by Design. http://www.wested.org/online_pubs/resource1280.pdf

This brief outlines some of the major issues that colleges are discussing or experimenting with that are related to the creation of more structured student pathways, including: a) Mandating intake processes that provide educational and career counseling, inform students about programs that are related to their interests, and help students explore and develop educational goals, career goals, and a degree plan; b) balancing flexibility and prescription in student selection of courses and majors; and c) defining clear instructional programs so that students can complete a program as quickly as possible.

Simplifying Complexity in the Student Experience. CCRC Practitioner Packet. By: Shanna Smith Jaggars, Jeffrey Fletcher, Georgia West Stacey, & Jill M. Little. Community Colleges Research Center, Teachers College, Columbia University, June 2014
http://ccrc.tc.columbia.edu/publications/simplifying-complexity-student-experience.html?utm_source=ASEE+conf&utm_campaign=UA-2832117-7&utm_medium=email

Part one describes data-gathering methods colleges can use to help them understand how students experience intake, orientation, registration, advising, and the overall process of academic decision-making. Part two describes how colleges can use these data to identify areas of confusion, and to engage stakeholders in devising and implementing solutions. Part three describes how to evaluate redesigned processes and procedures in order to assess their impact and further refine them. Part four is an appendix that includes detailed examples of data collection and project management materials.

Understanding the Student Experience through the Loss/Momentum Framework: Clearing the Path to Completion, by Elisa Rassen, Priyadarshini Chaplot, Davis Jenkins and Rob Johnstone, for Completion by Design. <http://completionbydesign.org/sites/default/files/site-uploads/main-site/pdf/ncii-inquiry-guides-understanding-the-student-experience-lmf.pdf>

C. Videos and Presentations

Lumina Strategy Labs interview with Fred Corey, ASU Vice Provost re: pathways at ASU: <http://strategylabs.luminafoundation.org/champion/frederick-corey/>

Lumina Strategy Labs interview with Tristan Denley, vice chancellor, Tennessee Board of Regents, former provost, Austin Peay University: <http://strategylabs.luminafoundation.org/champion/dr-tristan-denley/>

Lumina Strategy Labs interview with Cheryl Hyman, City Colleges of Chicago Chancellor: <http://strategylabs.luminafoundation.org/champion/cheryl-hyman/>

Lumina Strategy Labs webinar by Davis Jenkins, Community College Research Center, “Start with the End in Mind: Building Guided Pathways to Accelerate Student Success”
<http://strategylabs.luminafoundation.org/higher-education-state-policy-agenda/core-element-three/action-13/>

“Guided Pathways to Success” (PowerPoint) by Complete College America, <http://www.completecollege.org/docs/GPS%20BOOKLET%2006-14%20FINAL.pdf>

D. Case studies

The following institutions have implemented guided pathways (or key aspects of them) at scale. Published case study information indicated below each.

- Arizona State University - has developed guided pathways and sophisticated eAdvisor system to track the progression of its own students. Also developed transfer pathways with Maricopa (Phoenix) community colleges and others throughout AZ and some in CA. This example shows how universities can extend pathways back down the “supply chain” to help build strong transfer pathways for students.
 - Lumina Strategy Labs interview with Fred Corey, ASU Vice Provost re: pathways at ASU: <http://strategylabs.luminafoundation.org/champion/frederick-corey/>
 - ASU’s eAdvisor system described on this website: <https://eadvisor.asu.edu/>

- City Colleges of Chicago
 - Article from Governing magazine on the City College Reinvention: <http://www.governing.com/topics/education/gov-chicago-reinvents-community-college.html>
 - Lumina Strategy Labs interview with Cheryl Hyman, City Colleges of Chicago Chancellor: <http://strategylabs.luminafoundation.org/champion/cheryl-hyman/>
 - Davis has advised on the City College redesign and has access to PowerPoints and other materials produced by the CCC.

- Guttman College (New CUNY community college)
 - Case study of the creation of the new CUNY cc: <http://www1.cuny.edu/mu/ncc/2013/04/22/case-study-published-about-creation-of-the-new-community-college-at-cuny/>. *Rethinking Community College for the 21st Century* reviews the planning of the NCC, including building the college model, infrastructure, accreditation, and outreach across the university and at the state level. Authors Alexandra Weinbaum, Camille Rodriguez, and Nan Bauer-Maglin spent four years studying and documenting the complex work of developing an innovative new community college focused on student learning and success within the City University of New York, the largest U.S. urban university.

- Florida State University – pioneer in guided pathways
 - Graduation is Everyone’s Responsibility: Lessons from Florida State University, by Jennifer Engle, case study for the Replenishing Opportunity in America: 2012 Midterm Report of Public Higher Education Systems in the Access to Success Initiative, The Education Trust. http://www.edtrust.org/sites/edtrust.org/files/publications/files/2012%20A2S%20Case%20Study_Florida_FINAL.pdf
 - Website on the FSU Academic Interest Mapping System: <http://artsandsciences.fsu.edu/For-Undergraduate-Students/Current-undergraduate-students/Academic-Interest-Mapping-System>
 - Yeado, J., Haycock, K., Johnstone, R., and Chaplot, P. (2014). *Learning from High-Performing and Fast-Gaining Institutions*. Washington, DC: The Education Trust.

- Miami-Dade College – Student Achievement Initiative
 - Rodicio, L., Mayer, S., & Jenkins, D. (2014 forthcoming). Strengthening Program Pathways through Transformative Change at Miami Dade College. In., Hughes, K., and Venezia, A.Eds., *New Directions in Community Colleges*.

- Queensborough Community College (CUNY) – freshman academies

- Excellent overview of QCC freshman academies in 2011 AACU newsletter:
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ENDNOTES

¹ For a review of the literature, see Melinda Mechur Karp, *Entering a Program: Helping Students Make Academic and Career Decisions* (CCRC Working Paper No. 59, Assessment of Evidence Series). New York, NY: Columbia University, Teachers College, Community College Research Center, May 2013.

² See Davis Jenkins, Alison Kadlec, and James Votruba, J, *The Business Case for Regional Public Universities to Strengthen Community College Transfer Pathways (with Guidance on Leading the Process)*, Maximizing Resources for Student Success, HCM Strategists, July 2014. See also Stephen J. Handel and Ronald A. Williams, *The Promise of the Transfer Pathway: Opportunities and Challenges for Community College Students Seeking the Baccalaureate Degree*, The College Board, October 2012.

³ Davis Jenkins and Madeline J. Trimble, *Charting Pathways to Completion for Low-Income Community College Students*. (CCRC Working Paper No. 34). New York: Community College Research Center, Teachers College, Columbia University, September 2011.

⁴ Judith Scott-Clayton and Olga Rodriguez, O., *Development, Discouragement, or Diversion? New Evidence on the Effects of College Remediation.* NBER Working Paper No. 18328. National Bureau of Economic Research. August, 2012.

⁵ For research on “co-requisite” approach: Sung-Woo Cho, Elizabeth Kopko, Davis Jenkins, and Shanna Smith Jaggars. *New Evidence of Success for Community College Remedial English Students: Tracking the Outcomes of Students in the Accelerated Learning Program (ALP)* (CCRC Working Paper No. 53), New York: Community College Research Center, Teachers College, Columbia University December 2012. For a study of the cost-effectiveness of alternative math pathways, see Robert Johnstone *Fiscal Considerations of Statway® and Quantway®: We should be doing this anyway, but here’s how it may help the bottom line.* National Center for Inquiry & Improvement, November 2013.

⁶ Karp, *Entering a Program*, 2013.

⁷ Shanna Jaggars, and Jeffrey Fletcher, *Redesigning the Student Intake and Information Provision Processes at a Large Comprehensive Community College.* (CCRC Working Paper 72.) Community Colleges Research Center, Teachers College, Columbia University.

⁸ Judith Scott-Clayton, *The Shapeless River: Does a Lack of Structure Inhibit Students’ Progress at Community Colleges?* (CCRC Working Paper No. 25, Assessment of Evidence Series). New York, NY: Columbia University, Teachers College, Community College Research Center, 2011.

⁹ Peter M. Crosta, *Intensity and Attachment: How the Chaotic Enrollment Patterns of Community College Students Affect Educational Outcomes.* *Community College Review*, in press.

¹⁰ Public Agenda. *Student Voices On the Higher Education Pathway: Preliminary Insights and Stakeholder Engagement Considerations.* San Francisco, CA: WestEd, 2012. See also Kathy Booth, Darla Cooper, D., Kelley Karandjeff, Rogear Purnell, Eva Schiorring, and Terrence Willet, *What Students Say They Need to Succeed: Key Themes from a Study of Student Support.* RP Group: The Research and Planning Group for the California Community Colleges, January 2013.

¹¹ Davis Jenkins, and Sung-Woo Cho, *Get With the Program...and Finish It: Building Guided Pathways to Accelerate Student Learning and Success.* In Phillips, B., & Horowitz, J. (Eds.), *New Directions for Community Colleges* (Special Issue: The College Completion Agenda: Practical Approaches for Reaching the Big Goal.), Winter 2013(164): 27-35. See also Josh Wyner, J. S. (2014). *What Excellent Community Colleges Do: Preparing All Students For Success.* Cambridge, MA: Harvard Education Press.

¹² Alison Kadlec, John Immerwahr, and Jyoti Gupta, Guided Pathways to Student Success Perspectives from Indiana College Students and Advisors. New York: Public Agenda, March 2014.

¹³ In states such as California and North Carolina, where tuition is low and colleges return their tuition revenue to the state to be doled out across the respective system, tuition is less of an incentive for improvement.