

SOURCEBOOK AND GUIDE

Strategy Institute for the Multiple Measures Research Study

Prepared by

JBL Associates, Inc.

A partner in the North Carolina Multiple Measures Research Study

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SECTION ONE

Introduction to the Sourcebook

❖ CONTEXT AND PURPOSE

AS IS WELL KNOWN TO THOSE WHO WILL READ THIS SOURCEBOOK, North Carolina is one of many states across the country which has been wrestling with how to most effectively address the challenges of persistence and completion facing community colleges, and how best to assess a student's need for developmental education. As part of this process the North Carolina State Board of Community Colleges recently approved a policy change that authorizes the use of multiple measures, including high school GPA, for guiding developmental education placement decisions. The multiple measures policy as it currently stands represents a significant shift in the state's approach to both college placement and to assessing students' need for basic skills education as a first step in their higher education career.

Community colleges across North Carolina now find themselves gearing-up for the implementation of this new policy and preparing to address its implications for the institution and, broadly, for student success. Many are concerned that students who place out of developmental education under the new policy guidelines due to their high school GPA may still be academically at-risk. The students may lack key college success skills, and in this regard not be college-ready. They may need supplemental supports to strengthen foundational math, reading, and writing skills in order to confidently take on the demands of college-level coursework, and be well-positioned to complete credential requirements. Importantly, community colleges have the go-ahead under the State Board's new guidelines to implement support strategies for students who receive a multiple measure waiver from developmental education due to their high school GPA, and they have the option to require groups of students to participate in these programs.

The decision to develop this sourcebook emerged out of the concern among community college practitioners and institutions over how best to support students who place out of developmental education under the multiple measures policy but, nonetheless, may be challenged in their ability to persist and complete. It also has its origins more directly as part of the technical assistance being provided to a group of colleges in North Carolina as part of the North Carolina Multiple Measures Research Study. This two-year study involves an implementation analysis of intervention strategies aimed at supporting multiple measures waiver students and a student outcomes analysis and data collection effort. The technical assistance component includes this sourcebook as well as an intensive Strategy Institute.

The Sourcebook and Guide should be viewed as both a catalogue – presenting ideas, best practice examples, source links, key success factors, and program design principles – and as a toolkit, complete with templates and checklists that can be used for strategic planning and self-assessment activities. The document is modest in scale and character, and it is assumed that it will be used as a supplement alongside other resources that may be available to the

practitioner. As is well-known to those reading this guide, there is a wealth of readily accessible information for community college practitioners to draw upon and learn from with regard to in designing, implementing, evaluating, and improving student success strategies.

A scan of the contents table will show that this sourcebook provides a mixture of actionable information. The intent was not to develop another best practices directory, of which there are many available today, but to provide practitioners with a cross-section of key ideas, principles, practices, strategies, and tools for discussion and application. Material for the sourcebook was drawn from higher education research, best practices literature, the experiences of practitioners, and from observations shared by subject matter experts.

The sourcebook will benefit practitioners in several ways, to include:

- ❑ Highlighting key factors and principles that support effective intervention strategies, along with drivers that help to generate effective learning behavior and outcomes.
- ❑ Profiling the elements of effective practices and programs currently in place on college campuses, including those considered high-impact in their results.
- ❑ Framing effective program and practice design elements, including key principles and activities, that when incorporated into intervention strategies enhance their efficacy.
- ❑ Identifying fundamental attributes for developing a strategic action plan and logic model to ensure more effective program development and implementation processes.

There is a good chance that the high-engagement practitioners who are the primary audience for the Sourcebook may already be aware of many of the strategies, resources, and examples presented within the cover. Many also may already make good use of the types of action planning and self-analysis tools presented throughout the document. In this case, it will not so much support a discovery process as constitute a platform for reviewing that which is already known or has been put to good, strategic use on the college campus. Regardless of its direct relationship to the reader, the Sourcebook will serve as an opportunity to reflect on what works and what doesn't work in trying to generate positive improvement in student achievement.

❖ **DEVELOPMENT OF THE SOURCEBOOK**

THE INFORMATION PROVIDED WITHIN THIS WORKBOOK was compiled largely through a structured scan and review of the sizeable, and well-developed, body of information currently accessible via the Internet. Researchers relied on this portal to tap into relevant research, commentary, repositories, and documentation. The review encompassed material provided by higher education associations and organizations, research-based reports, commentary and blogs, college-based learning and research centers, best and promising practice repositories, and

award initiatives such as the Bellwether Awards, MetLife Foundation Community College Excellence Award, and the Innovation of the Year Award presented by the League for Innovation in the Community College. Telephone interviews also were conducted with community college practitioners to develop the descriptions and key highlights that accompany the examples of programs and practices. In addition, subject matter experts were consulted and graciously provided their perspectives along with relevant materials.

The reader should take note that no specific definition of the terms ‘best’ or ‘effective’ or ‘exemplary’, as they might be applied to a practice or strategy, was used to guide the research. Nor were efforts taken by the researchers to independently determine the efficacy of the examples and ideas mentioned throughout the document. The protocol was to generally accept the designation that accompanied a practice or principal as it was presented in the extant literature. The reader can be assured, however, that intentionality and scrutiny were applied throughout the research process and the sources used for the information presented are widely held as reputable and reliable.

It is worthwhile to pause for moment and consider that while there continues to be significant growth and development in what might be referred to generally as the best practices literature, there is no formal or agreed upon definition of a best practice – or for that matter a promising, emerging, or effective practice. And while there are many practices and strategies that receive these designations for their work in supporting student outcomes, it varies as to whether the interventions have evidence to support the claim. Thus, while the term best practice continues to be common in the discourse of student success it is also commonplace for this recognition to be based on suggestive conclusions or perceptions of effectiveness. As is discussed below, there are, of course, many excellent and well-considered ideas and strategies that are implemented each day on college campuses, but it is only recently that efforts have been more pronounced at collecting evidence of the results of these ideas and strategies.

❖ **THE WELL OF QUALITY PRACTICES IS DEEP – AND ACCESSIBLE**

THE COLLECTION OF IDEAS, PROGRAMS, STRATEGIES, AND PRACTICES – in addition to tools and templates – that educators have available to them today as suggestions and guides for developing effective intervention strategies has never been more comprehensive, nor more accessible. An abundance of research reports, articles, blogs, websites, associations, teaching and learning centers, awards, online repositories, conferences, and workshops enable economical access to a wealth of support materials and to the achievements and stories of practitioners in the field. The body of literature on effective community college developmental education practices and policies is particularly extensive. Relevant research findings and new ideas to support student success are also being generated and vetted on a regular basis.

What does this situation indicate and mean to practitioners? One, it shows that the volume of data and information available for use by colleges in building student success strategies has, essentially, exploded over the past decade or more. Two, access to this developing body of information, and the diffusion and transfer of knowledge in general, has improved significantly with the dawning of the Internet and the enhanced focus on best practices. And three, it clearly indicates that college practitioners across America today are involved in a broad range of efforts to promote student success – and they are willing to share their experiences widely to everyone’s benefit. Each of these conditions is encouraging and highly supportive of the development of engaged and connected, as well as effective, communities of practice.

As readers of this sourcebook are aware, a lot of exciting change ideas and practices are making a difference on college campuses these days under the umbrella of student success initiatives.

- Student engagement activities are being enhanced on college campuses with Internet-based tools and in-person campus programs being used in often innovative ways to facilitate the development of social and academic connections, interest groups, and more meaningful connections between students and faculty.
- Learning communities, supplemental learning labs and workshops, course modules, tutoring, and peer mentoring programs are being used to deepen the learning process, help students help each other to stay motivated and persist, and to empower them to more effectively integrate course material and build stronger connections in learning.
- Student support services and learning centers are being redesigned to be more user-friendly and student-centered while at the same time instruction, counseling, and learning support practices are increasingly being integrated to enhance collaboration and coordination, and to boost meaningful impacts at the student level.
- Intrusive and just-in-time advising are becoming normalized practices as are efforts to address the holistic needs of learners. Retention and early alert systems are also being both rationalized and enhanced to more effectively monitor at-risk students and to enable immediate and targeted deployment of assistance.
- Academic questions and discussion of real-world problems are being woven more frequently into content delivery within the setting of the classroom or lab, and colleges are expanding experiential learning opportunities, using simulation technology, and focusing students’ learning on valuable competencies such as problem-solving, critical inquiry, and quantitative literacy.
- Colleges are being more purposeful in their efforts to motivate and guide students in their journey from college to career by using degree maps, student success plans, and pathways that take a student from start to finish through a program of study.

Providing quality assistance to all students, and in particular to at-risk and underprepared students, in order that they may have a real chance to be successful in college remains at the

core of the community college mission. And institutions in the two-year college community have responded to the challenge of improving student success rates by embarking on often sweeping changes in mindsets, institutional practices, and intervention strategies. “Research, institutional data, and student voices tell the same undeniable story about what matters most for student success,” notes Arleen Arnsparger, Project Manager with the Center for Community College Student Engagement. She continues: “Leaders at colleges that are increasing course completion, graduation and transfer rates see that taking the steps needed to help community college students finish what they start is less about the challenges inherent in today’s environment than it is about changing college culture and strengthening practice.” [1]

Across the nation’s campuses, community college practitioners are drawing upon traditional and alternative these methods to construct productive learning experiences for students. A snapshot of the range of methods in use today is provided on the following page. While ‘what they do’ and ‘how they do it’ can differ widely, these efforts collectively speak to the rich capacity of colleges, and their instructors and practitioners, to be creative, constructive and effective at improving the chances of students to build meaningful, and perhaps even transformative, learning lives.

The bottom-line is that in today’s setting, a lot of good, often innovative, change ideas and practices are being implemented on college campuses. The quantity and quality of knowledge and lessons learned emerging from the use of these strategies, and flowing across practice communities, is unprecedented. The claim can be made that the level of effort today for supporting student success has never been more impressive or comprehensive, and that the drive for both designing and implementing effective education practices has never been more informed and intentional – as well as recognized.

❖ THE CHALLENGE OF CHOOSING WHAT PRACTICES TO USE

A COMMON QUESTION ON THE MINDS of practitioners, faculty members, and administrators today is ‘what student success practices and strategies, among the many, are best suited for our students and thus worth our college’s investment?’ The question is not an easy one to answer. As Pamela Burdman notes in *Changing Equations: How Community Colleges Are Re-Thinking College Readiness in Math*, it’s quite difficult to know whether new practices and strategies, alone or in combination, will create the necessary conditions for students to succeed in college, in particular for those who traditionally struggle with subjects such as math and English. [2]

It can be difficult to know what practice will make a difference – or how much of a difference – when implemented on a particular campus and under local conditions. And as practitioners know, it’s not just about looking at the national literature and picking from the options. Confirmation typically only comes from experimentation and close observation to see what

is moving students in the right direction. And even with this the results can be tentative as conditions change with time. Turning again to the observations of Arleen Arnsparger:

“All student success courses are not created equal! All orientations are not created equal! All learning communities are not created equal! Research and practice tell us – as do the voices of student across the country – that we need to intentionally build into our practices those elements that are most beneficial to students, then provide the professional development faculty and staff need to bring those elements to life.” [3]

What then to do? First of all, as Ms. Arnsparger notes, practitioners need to be intentional in making choices when designing and implementing strategies. They need to engage in quality strategic planning processes and look to proven practices for inspiration, ideas, and to replicate. They also need to ground their practices in principles that are commonly found at the base of effective initiatives and activities. And they need to focus on ensuring that any practice is well-designed and implemented, and that there is a clear process for evaluation and review.

Fortunately, there have been significant gains made in recent years in identifying strategies, principles, and practices that are shown to make a difference on the ground. And, as was noted above, in today’s information rich environment, these are often widely disseminated and discussed, and accessible in the public domain. In addition, many come with communities of practice already in tact that lend support to their adoption. We know, for example, that:

...students give high marks to teachers who interact with students and who connect students with each other from the first day of class. Extensive research has shown that learning, persistence, and attainment are strongly associated with a student’s engagement with college faculty and staff, other students, and with the subject matter they are studying. [4] Students benefit most when engagement is supported from start to finish and as an essential tool to help students get that strong start out of the blocks in their college experience.

...offering student support as an optional feature of the college experience doesn’t work in achieving desired results if for no other reason than most students do not enter college knowing what they need to know to succeed. Students may think they know what will be expected of them, what their goals are, and what to do to achieve those goals but typically they do not. They rely on practitioners and faculty members to provide them “with the information they need, to guide them in the right direction, and to create a learning environment that will help them achieve their goals.’ [5]

...integrating quality academic instruction and intrusive, proactive student support can have a significant impact on student persistence and attainment. Students benefit when they are ‘wrapped-in’, and they are empowered when they have access to peers

and others who model effective strategies for success and who are available to them for guidance and support, both within and outside the classroom. [6]

...consensus is taking shape around what activities constitute high-impact practices. Research and practice indicate a broad range of strategies and programs can have high-level impact on students ranging from learning communities, student success courses, and first-year experiences to collaborative assignments and experiential learning, among others. [7]

...the effectiveness of any educational practice, no matter how modest or scaled, depends on both the quality of the initiative's design and that of its implementation. It's about what you do. It's about how you do it. It's about how strategic, intentional, and evidentiary you are in doing it. A quality program design or change idea poorly implemented or inadequately evaluated has little chance for success.

Practitioners understand that no single instructional method or learning support strategy can solve the diversity of challenges that can push or pull a student off their college track and raise barriers to their return. Experience has taught that students are best served using a diversity of practices and activities to reflect the fact that for any one student numerous drivers lie behind their ability to succeed. As such, and into today, there is growing consensus among researchers and practitioners that an integrated and strategic mix of instructional and support services will better accommodate the needs of different learners and add up to success for students. [8]

It is the case, for example, that a larger proportion of students succeed when they are guided with care, and a coordinated collection of helping hands, through the college's "front door" and into active learning environments; when faculty members and support staff work together to encourage engagement, provide high-impact learning experiences inside and outside the classroom, and set high expectations along with the support students need to meet those expectations; and when the college offers clear and coherent pathways for students to follow across their coursework and field of study toward their career. Mathematics practitioners, for example, know that ambitious and innovative projects like Statway, Quantway, New Mathways, and the New Life Project of the AMATYC, reflect these practices. However, there are many more modest efforts across college campuses that show the value added when integrated and strategic approaches define a college's methodology to supporting student success.

❖ CONCLUDING REMARKS

THE FACT THAT SO MANY STUDENTS CONTINUE TO FAIL to make progress and get stuck or drop out early in their college experience is evidence of the numerous barriers these students face in reaching their education goals. It is also evidence that colleges continue to wrestle with how

best to reduce these barriers and better meet the myriad challenges to student success. [9] However, there is no question that a broad and concerted effort is being made on campuses each day to lower or eliminate the barriers students' encounter on the road to completion. What is evident in this Sourcebook and Guide, and illustrated clearly in the national literature from which it draws its content, is that high-quality practices and strategies proliferate within the college community, intentional communities of practice are forming to disseminate and further these strategies, and both are making their mark on student success rates. As Brenda Brecke, formerly a Dean at Southwestern Oregon Community College, has observed in this regard, "community college faculty, administrators, and project directors are hungry for opportunities to engage, explore, discover, and share together their successes, challenges, lessons learned, and resources with each other." [10]

The practitioners who read this sourcebook will no doubt agree that while there is much work to be done to improve student achievement, there is also much quality support and thoughtful instruction available to support students along their education pathway. The work being undertaken on- and off-campus, in the classroom, and in the learning support center, clearly demonstrates the value that is created when determination and effective strategies come together, not only as applied to individual students and their personal success in their studies but for practitioners and their colleges' efficacy at promoting student achievement.

Notes for the Introduction

[1] Excerpt from an article written by Ms. Arnsperger in Ferris State University's Community College Leadership program publication: *Perspectives: Community College Leadership for the 21st Century*.

[2] Burdman, Pamela. *Changing Equations: How Community Colleges Are Re-Thinking College Readiness in Math*. (2013) page 6. LearningWorks: Oakland, CA. Retrieved at http://www.learningworksca.org/wp-content/uploads/2013/10/LWBrief_ChangingEquations_WEB.pdf

[3] Quote provided to Sourcebook researchers by Ms. Arleen Arnsperger.

[4] Center for Community College Student Engagement. (2013). *A Matter of Degrees: Engaging Practices, Engaging Students (High-Impact Practices for Community College Student Engagement)*. Austin, TX: The University of Texas at Austin, Community College Leadership Program. P. 3. Retrieved at http://www.ccsse.org/docs/Matter_of_Degrees_2.pdf

[5] Quote provided to Sourcebook researchers by Ms. Arleen Arnsperger.

[6] The Massachusetts Community Colleges Developmental Education Best Policy and Practice Audit. 2009. Final Report Prepared by Charmian B. Sperling. Massachusetts Community Colleges Executive Office. Page 4.

[7] Kuh, George. *High-Impact Educational Practices: What They Are, Who They Are, Who Has Access to Them, and Why They Matter*. 2008. AAC&U: Washington, DC. Also from comments made by Arleen Arnsperger in a personal interview with researchers.

[8] Boylan, Hunter (2002). *What Works: Research-Based Best Practices in Developmental Education*. Boone, NC: National Council for Developmental Education.

[9] Goldrick-Rabb, S. (2010, September). p. 459. *Challenges and opportunities for improving community college success*. *Review of Educational Research*. 80. 3. Pp. 437–469 Retrieved at <http://knowledgecenter.completionbydesign.org/sites/default/files/75%20Goldrick-Rab-2010.pdf>

[10] Quote from a personal Interview conducted by researchers with Ms. Brenda Brecke.

SECTION TWO

Factors and Drivers of Student Success

Topic 1: Key Factors for Student Success at the Community College

FACTOR #1: Student success is fundamental to the culture of the institution.

- A success-oriented culture is evident across the institution and is bolstered by a clear commitment to cultivate and sustain core learning values and outcomes.
- An institution-wide student success plan is in place that is comprehensive and legitimized by key leadership groups on campus and that drives policy and program decisions.
- A student-centered approach to teaching and learning aims to empower students to be confident, engaged, and motivated learners is standard across the curriculum.

FACTOR #2: Students are prepared and empowered to achieve academic success.

- A comprehensive set of strategies is in place that promotes college readiness and effective student transition from high school or the workforce into college.
- An integrated support network is embedded and operates from a platform of collaboration among learning support specialists, faculty, and student services professionals.
- Curricular, instructional, and program strategies target student persistence and are used to build learning momentum and reduce time-to-completion.

FACTOR #3: Students are guided toward career readiness using the principles of rigor and relevancy in teaching and learning support.

- Building students' capacity for a career and further education is an articulated priority and aligned through policy and practice with the college's commitment to student success.
- Approaches to teaching and to learning support that emphasize competency-building, student engagement with course content, and collaboration are embedded.
- Experiential and problem-based learning are key strategies to enhance learning and employability external partnerships are leveraged to support program strategies and improve student outcomes.

FACTOR #4: Student success is effectively linked with data, evaluation, and continuous quality improvement.

- Evidence-building using systematic data collection and evaluation provides a comprehensive picture of student progress and outcomes, and program effectiveness.
- Continuous monitoring and feedback are used as tools for improving student achievement and completion and to inform faculty and support staff with real-time data.
- Self-assessment and program review are used frequently to enhance organizational learning and to improve effectiveness from the level of instruction to that of the institution.

Topic 2: Drivers of Student Success and Productive Persistence

FACULTY MEMBERS, college practitioners, and administrators are all too aware that large number of students entering community colleges each year never complete their required mathematics courses, blocking their road to completing a program of study, earning a credential, and moving forward into a career or additional college learning. It is not uncommon to find students simply withdrawing effort soon after a math class begins and challenges begin to mount. It is also not uncommon for students who do persist to course completion – who stay focused in class, study hard, and demonstrate an intentionality to succeed – to use ineffective learning strategies that limit their capacity to learn and strain personal resources, including time and money.

In an effort to disrupt this dynamic of student failure and inefficiency – and to help more students succeed academically, the Carnegie Foundation for the Advanced of Teaching recently launched an innovative initiative entitled *Productive Persistence*. According to the Carnegie Foundation, the concept of productive persistence refers to “a set of behaviors that involves the tenacity and good strategies students need to be academically successful.” The initiative is both research and intervention-based, and its design reflects the idea of empowering students through intentional interventions to be tenacious when faced with challenges and to take on their learning tasks efficiently and effectively using good strategies.

Taken as a whole, *Productive Persistence* was launched with several core aims in mind.

- Identify prominent conditions that contribute to students withdrawing effort from their mathematics courses or otherwise not persisting in their coursework.
- Develop a framework that captures specific drivers for student success; conditions that constitute a force to compel positive change in student behavior and attitude.
- Develop a coherent and testable set of metrics of the drivers of productive persistence
- Organize communities of practice that will use research to build an evidence-based structure for practices that improve student motivation and engagement at scale.

The Carnegie Foundation’s initiative uses a detailed framework of behaviors and change ideas to direct practitioner attention and academic support efforts toward the actionable drivers, or conditions, that commonly promote effective student behavior and habits. The framework can be found at http://www.carnegiefoundation.org/sites/default/files/PP_driver_diagram.pdf. The core or primary drivers of student success as identified by the Foundation are listed in the table on the following page. The framework, according to the Foundation, “is both a visual representation of a system that we wish to change as well as a common language for improvement.” Emphasis is placed in the framework on highlighting both drivers of success and conditions that often challenge students to achieve, and to engage with other students,

faculty, and the college experience. The framework links these drivers to related change ideas, or actionable and practical intervention strategies. These interventions can be implemented separately or integrated with others to promote the type of motivation, engagement, and achievement that can counter the all too common reality of students failing to complete in math, and, more broadly, dropping off their path toward obtaining a credential.

Primary Drivers of Student Success

Students have skills, habits and know-how to succeed in college setting

Students believe they are capable of learning math.

Students believe the course has value.

Students feel socially tied to peers, faculty, and the course.

Faculty and college support students' skills and mindsets

As part of their *Productive Persistence* project, the Foundation engages in several related initiatives. These include supporting the *Productive Persistence (PP) Subnetwork*, which is comprised of college faculty members working as part of a cross-college collaborative to design, test, and adapt interventions to address the challenges to student success linked to motivation and engagement, among other factors. Attention is directed foremost to the hurdles encountered by developmental math community college students. A more complete discussion of the *Subnetwork* can be found at <http://commons.carnegiefoundation.org>. The Foundation also developed the *Alpha Labs Research Network* within which education researchers partner with community college faculty and practitioners to test interventions that address specific skills and frames of mind necessary for students to succeed in their learning. Additional information on *Alpha Labs* can be found at <http://www.carnegiealphalabs.org>.

Topic 3: Key Factors Generating Motivation and Engagement

IT IS A WELL-SUPPORTED FACT in higher education research and practice that student motivation and engagement are key factors underlying the success of students. When students are involved, inspired, and empowered to contribute in meaningful ways to their learning experiences there is a greater likelihood they will succeed in their academic pursuits. But students often need a helping or guiding hand to generate the motivation to become, and stay, engaged whether within the classroom setting, a learning support environment, or more generally across their college-going experience. The Cornell University Center for Teaching Excellence has developed a comprehensive list of instructional practices and strategies that have been shown to be effective for generating and sustaining motivation and for fostering engagement in the classroom and learning support settings. These practices include:

- ❑ Provide clear course objectives and learning outcomes and reinforce what students will gain from attaining these outcomes.
- ❑ Communicate in both the syllabus and directly to students how to be successful in the course and repeat this message throughout the semester.
- ❑ Provide students with regular feedback; help them learn how to assess their own work and progress, and create ample opportunities for self-assessment.
- ❑ Discuss the definition of participation, formalize it by putting it in the syllabus, and empower students to be active participants in the classroom.
- ❑ Let students know clearly and consistently what is expected of them; set expectations high but within reach of the students; and offer effective support.
- ❑ Clearly articulate any ground rules for class participation and discussion while empowering students to participate in developing the rules.
- ❑ When possible, provide rubrics and utilize maps and milestones to guide students in their classroom experience.
- ❑ Offer choices with assignments and assessments when possible, and create opportunities for students to choose how to demonstrate their knowledge.
- ❑ Be conscious of students' confidence levels; provide small opportunities for success early; and be constructive and encouraging when providing feedback.
- ❑ Introduce students to group processes and empower them to practice assessing both their own work and that of their peers.
- ❑ Incorporate real-world and problem-based learning opportunities into the classroom experience, and help students link learning with their life.

Topic 4: Supplemental Instruction: Factors for Student Success

RESEARCH HAS SHOWN that several elements of the Supplemental Instruction model operate to influence higher levels of academic performance and persistence. The following factors are often mentioned by staff, faculty members, and students as generative to positive outcomes.

■ **Intervention is Proactive Rather than Reactive**

... Schedules are set during the first week of class, allowing students to obtain assistance before they encounter academic difficulty. The approach contrasts with early alert programs that are not triggered until the student has already experienced difficulties.

■ **Supplemental Learning is Attached Directly to Specific Courses**

... Reading, learning, and study skill instruction is offered in the context of course requirements and as an outgrowth of student questions and concerns. The instruction has immediate application and is directly supportive of class experience.

■ **Instruction Leaders Attend All Class Sessions**

... Leader attendance promote constructive modeling and opportunities for engagement and represents a viable alternative to the more common tutorial practice of providing instruction based largely upon the student's perceptions of what occurred in class.

■ **Intervention is Not Designed (nor Operated) as a Remedial Program**

...The students who are most likely to initially reach out for supplemental support are those who tend to be better prepared academically. However, the willingness of this group to participate encourages the participation of less able students who often find it difficult to admit they need assistance or otherwise may be less inclined to attend.

■ **Sessions Promote a High Degree of Student Interaction and Mutual Support**

...Well-supported student interaction leads to the formation of peer study groups and facilitates the mainstreaming of culturally diverse as well as disadvantaged students.

■ **Faculty Members Benefit from Instruction Leader Feedback**

... Students generally hesitate to be candid about academic concerns to course instructors. They are more inclined to discuss their challenges with the instruction leader. The role of the leader is to listen to their comments and then to redirect the students toward developing strategies to cope with the situation.

Adapted from Arendale, David R. (1992). Understanding the Supplemental Instruction (SI) Model. San Jose State University. <http://www.sjsu.edu/advising/docs/Arendalex.pdf>

Topic 5: Seven Principles for Good Practice in Supplemental Instruction

1 Good Practices Encourage Contact Between Students and Faculty

Frequent student-faculty contact in and out of classes is a key factor in student motivation and involvement. Faculty concern helps students get through rough times and keep on working. Knowing faculty members well enhances students' intellectual commitment and encourages them to think about their own values and future plans.

2 Develop Reciprocity and Cooperation Among Students

Learning is enhanced when it is more like a team effort than a solo race. Good learning is collaborative and social, not competitive and isolated. Sharing one's own ideas and responding to others reactions sharpens thinking and deepens understanding.

3 Encourage Active Learning

Students do not learn much just by sitting in classes listening to teachers, memorizing pre-packaged assignments, and reciting answers. They must talk about what they are learning, write about it, relate it to past experiences and apply it to their daily lives.

4 Give Prompt Feedback

Students need appropriate feedback on performance and frequent opportunities to receive suggestions for improvement. When getting started, they need help in assessing existing knowledge. They also need chances to reflect on what they have learned.

5 Emphasize Time on Task

Learning to use one's time well is critical for students. And the fact is that most need help in learning effective time management. Allocating realistic amounts of time means effective learning for students and effective teaching for faculty.

6 Communicate High Expectations

High expectations along with high support are important for everyone – for the poorly prepared, for those unwilling to exert themselves, and for the bright and well motivated. Expecting students to perform well becomes a self-fulfilling prophecy

7 Respect Diverse Talents and Ways of Learning

Students bring different talents and styles of learning to college. They need the opportunity to show their talents, learn from their talents, and learn in ways that work for them. Then they can be pushed to learn in new ways that do not come so easily.

Adapted from Zywicki, Craig. (n.d.) Supplemental Instruction & the Seven Principles for Good Practice in Undergraduate Education. Iowa State University. <http://www.dso.iastate.edu/asc/supplemental/7Principles.pdf>

NOTES

SECTION THREE

High-Impact Practices and Pathways to Improving Student Success

Topic 1: High-Impact Education Practices and Learning Experiences

WHAT ARE HIGH-IMPACT PRACTICES and why do they add value to student learning and achievement? According to the report, *High-Impact Educational Practices: What They are, Who They Are, Who Has Access to Them, and Why They Matter*, authored by George Kuh, and supported by the Association of American Colleges and Universities, high impact practices are those practices that education research clearly suggest increase student persistence and completion rates and promote student engagement within the context of their educational experience. While these practices can benefit all students, they demonstrate more bearing and significance as factors for success in supporting achievement and completion rates among less-advantaged and at-risk students.

In a high-impact learning experience, students have available to them opportunities to acquire and engage new ideas through lectures and discussions and to explore real-world issues, problem-solve, think generatively, apply their knowledge, work collaboratively with others, and build valuable career-oriented competencies and skills. According to Kuh, high-impact practices share several common traits:

- They encourage rigor and discipline, and they demand that students make a substantive commit of time and effort, and thus investment, as part of the experience.
- They use strategies that leverage commitment, collaboration, and sharing to help students develop meaningful relationships within an active learning setting.
- They emphasize the value of communication, feedback, and exchange in solving problems and building effective learning strategies.
- They create opportunities for students to experience personal development beyond course-based intellectual growth.

There are a range of practices that have the potential to generate high-level impact on students. The practices and strategies listed below, along with activities such as mentoring, tutoring, and academic coaching that have long demonstrated their capacity to help students improve behaviors and outcomes, have the potential to offer meaningful support to students in their early years of college and across their higher education. The driving goal of each is to involve students in ways that leverage engagement in order to help build motivation and meaning into learning experiences. And they all model the perspective that working directly with students, with an intentionality to actively address their needs, while helping them self-build their own capacity to succeed in college is essential to effective education.

Kuh's List of High-Impact Practices

First-Year Seminars and Experiences
Learning Communities
Common Intellectual Experiences
Collaborative Assignments and Projects
Writing-Intensive Courses
Experiential Learning
Capstone Courses and Projects
Undergraduate Research
Diversity/Global Learning
Shared Learning Environments

■ **First-year Experiences:** The most effective first-year seminars and experiences, according to research, emphasize skills that develop both intellectual and practical competencies. Key strategies that have been found to be effective when setting the ground for students' first year in college include critical inquiry, frequent writing, information literacy, and collaborative learning. First year experiences are significant for providing instructors with the chance to introduce students to foundational knowledge and skills in particular fields of study. They also are rich settings for bringing together, as a team, faculty and learning support staff to help students build college knowledge and student success skills; practice important student success behaviors; and to lay the necessary groundwork of motivation and engagement to make it through the challenges of their first year in college. Importantly, students also have the chance to sharpen their knowledge by engaging fellow students' ideas and insights, especially those with different backgrounds and experiences.

■ **Sharing and Collaboration:** Shared learning environments, collaborative projects, and common intellectual experiences whether offered to students as part of a first-year experience or as a component of a senior year capstone course, provide students the opportunity to jointly explore important concepts, themes, and ideas. Such shared experiences may come in the form of a learning community, study groups within a course, team-based assignments and writing, cooperative projects and research, or a set of required common courses that students take sequentially as part of a group of learners. Learning communities and clusters have proven particularly effective for advancing knowledge and promoting skill enhancement in a collaborative setting. They enable students to direct their own learning and to work with and listen to others as part of a community of learners.

Topic 2: CCCSE's Work on High-Impact Education Practices

THE CENTER FOR COMMUNITY COLLEGE STUDENT ENGAGEMENT, building off the work of Kuh and others as well as their own in-depth research, has been actively engaged in directing educator attention to high-impact practices. It is currently on the backend of a multi-year practice- and improvement-initiative that has its focus practices that can make a significant change in student behavior and achievement. Preliminary findings drawn from over a decade of CCCSE survey data collected from students, faculty members, and community colleges point to a core set of thirteen promising practices for student success that have the potential to be high-impact generating change ideas and interventions. These practices were identified and discussed in the Center's 2012 report entitled *A Matter of Degrees: Promising Practices for Community College Student Success (A First Look)*. A follow-up report, *A Matter of Degrees: Engaging Practices, Engaging Students (High-Impact Practices for Community College Student Engagement)*, looked more closely at the practices which have been found to engage students most effectively. The practices are presented in the diagram below.



Topic 3: Pathway Models: Statway® and Quantway®

STATWAY AND QUANTWAY are two innovative pathway models developed by the Carnegie Foundation for the Advancement of Teaching to improve developmental math completion rates among community college students. Both were designed to empower students to complete their academic work and to better navigate their college experience, as well as to find direct value in understanding and applying mathematics as a part of everyday life. A key strategy is to provide students with a strong start along a clear and coherent pathway to completion. The initiatives offer integrated learning support, intensive student engagement, and foster high expectations: all key design principles for a successful intervention strategy. Both models have been in operation at colleges across the country for over two years. They have proven effective at accelerating students through their developmental mathematics sequence and a college-level course for credit, and at increasing student course completion rates and learning. They've also shown broad success in promoting mathematical understanding and quantitative literacy.

Statway Model

“Statway is designed to teach mathematics skills that are essential for a growing number of occupations and professions, and are those needed for making decisions under conditions of uncertainty, an inescapable condition of modern life. This is the math that will help students understand the world around them and it is the math they can use right now.”

This initiative integrates basic skills mathematics and college-level statistics into a collaborative, problem-focused instructional system of in-class and on-line learning. Emphasis is placed on statistical reasoning, quantitative literacy, and data analysis. Statway provides a two-semester pathway that replaces the traditional algebra sequence and enables developmental math students to earn college-level credit for statistics in one academic year. This design feature incentivizes course completion and provides students with a more cost efficient approach to meeting course requirements. Over the course of twelve modules, which involve printable materials and on-line lessons, students work collaboratively to apply mathematical concepts and statistical reasoning to practical, real-world problems. This approach, with its strong emphasis on student engagement and peer-supported learning, builds students' confidence in their ability to “do” math and lays a strong foundation for future college-level math courses.

Quantway Model

“The aim of the Quantway pathway is to promote success in community college mathematics and to develop quantitatively literate citizens. It is Carnegie's belief that community college students will have greater motivation to succeed and persist if their mathematics study is engaging, meaningful, relevant and useful.”

This initiative also take an intensive and real-world approach to improving developmental math completion rates and accelerates student movement into college-level math courses. Emphasis is placed on developing skills for using data and reasoning for decision making, argumentation and sense making about real-world questions, problems and contexts of personal, social and global importance. Quantway courses enable students to complete both their developmental math requirements and their first college-level math class over the course of two terms, with each course consisting of four modules. According to the Foundation, the program is designed to engage students in “productive struggle” – a psychological perspective that encourages collaboration and conceptual learning to further student growth and development. Quantway saves students time and money by streamlining the number of courses needed to move through and past their first college-level math class, not relying on a textbook, and centralizing into the curriculum the connection of mathematical concepts with daily living experiences.

Key Elements of the Statway and Quantway Pathway Models

- Two semester pathway to completion with identified milestones and a reduced number of critical junctures that serve to increasing success rates in mathematics
- Ambitious and shared learning goals centering on empowering students with knowledge, skills, tools, and highly motivating learning environments
- Emphasis on mathematical understanding and quantitative literacy and the everyday application of numeracy to help students build meaning and make sense of their world.
- Use of both formative and summative assessments, including end-of-module and end-of-course assessments, to provide ongoing tracking of student progress and implementation efficacy.
- Highly intentional evidence-gathering and rapid analytics to support the continuous improvement of teaching and of course materials and program change.
- Use of small group projects and other forms of intentional and collaborative, project-based learning to promote student engagement and the formation of social support networks.
- Language and literacy component to better ensure instructional materials and classroom activities are accessible to all and that interventions more effectively support student learning
- Actively supported, dynamic learning environments, both in-class and on-line, designed for network engagement and collaboration.
- Emphasis on professional development and the integration of best practices to ensure instructors have the knowledge and skills to be effective instructors, tutors, and mentors.
- Designed and implemented to focus more on student learning than instructional practices and based on what research has demonstrated to be effective learning structures and processes.

Statway: <http://www.carnegiefoundation.org/statway>

Quantway: <http://www.carnegiefoundation.org/quantway>

Topic 4: The New Mathways Project

THE NEW MATHWAYS PROGRAM was developed out of a collaboration between the Texas Association of Community Colleges and the Charles A. Dana Center at the University of Texas at Austin as a systematic approach to improving student success in mathematics and to supporting the development of mathematical reasoning, skills, and critical thinking. The effort is designed around three accelerated mathematics pathways each built upon a foundation of relevant and challenging mathematics content: statistics, quantitative literacy, and STEM. It also includes a one semester, co-requisite student success course and a bridge course to allow students to move across the pathways. Strategies aimed at building student success skills and reducing the barriers to student completion are embedded across the curriculum and within the learning environments. Each mathematics pathway includes rigorous, transferrable, and college-level content. Nine colleges have pilot tested the New Mathways courses.

In similar fashion to the Carnegie Foundation's Statway and Quantway initiatives, New Mathways' core principles and practices place emphasis on providing a coherent pathway for students to move efficiently, and with a strong base of support, through developmental math and into college-level math courses at an accelerated pace. The initiative relies strongly on integrating proven and innovative practices in pedagogy, curriculum design, learning support, and assessment. In addition, emphasis is placed on reinforcing the ability of student's to integrate core mathematical concepts and on the development of quantitative literacy skills.

Key Elements of the New Mathways Model

- A curricula and pedagogy that is rooted in proven practices, a student-centered approach to learning, and the relevancy of mathematics to real-world conditions.
- Pathways and practices built on the importance of getting students through developmental math faster and more cost-effectively to promote momentum and completion.
- Consistent set of expectations that is integrated into classroom and online experiences and reinforced in the delivery of both content and learning support.
- Systematic focus on the development of core math and quantitative literacy skills, problem-solving strategies, and analytical abilities and logic.
- Use of curricular materials designed for a classroom-based delivery process with online materials to facilitate classroom activities, discussion, and out-of-class learning.
- Technical assistance tools and service to build capacity among faculty, administrators, Institutional Research staff, and student support personnel.

New Mathways: <http://www.utdanacenter.org/higher-education/new-mathways-project/>

NOTES

SECTION FOUR

A Sample of Practices from the National Literature and Practitioner Interviews

Math Success Center

Chaffey Community College, CA

<http://libguides.chaffey.edu/mathsc>

THE MATH SUCCESS CENTER is a free resource provided to all Chaffey Community College Students for supplemental support and learning assistance in mathematics and related science and technology fields of study. The Center provides tutoring, math workshops, learning groups, and math assignment resources. Peer and faculty tutors are available for students and focus on developing and applying problem solving techniques for working-out coursework assignments; understanding math concepts; and generally improving learning skills. Tutors work with students to guide them through their homework and help them build key math and numeracy skills. Two other key services include math workshops and learning groups. Topics covered during the workshops vary; however, the common goal is to reinforce the learning that takes place within the classroom setting. As with tutoring, key concepts are reinforced and explained and mathematical understanding is supported along with providing tools for addressing classroom assignments. Workshops usually run one hour and are oriented toward collaborative peer learning. In the learning groups, students participate as members of a community of learners led by a Math Success Center apprentice. Learning groups meet for one hour and use facilitated discussion and work sessions to help students. Participants learn to apply different techniques to solve math problems in a group setting, benefit from the knowledge shared by the Math Success Center apprentices, and have the opportunity to learn from other students' experiences. The Center also provides assignment and test review resources, including on-line materials covering math concepts and problem-solving techniques.

Key Highlights:

- Comprehensive, one-stop shop approach for students seeking math assistance that provides active learning assistance and supports classroom instruction.
- Provides a blend of individualized and group learning activities along with instruction, learning groups, and supplemental resource material to promote skill-building.
- Focus is on providing just-in-time assistance along with building longer-term capacity in key areas such as reasoning, problem-solving, engagement, and critical thinking.

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Math Café and Learning Commons

Community College of Allegheny County, PA

<http://www.ccac.edu/default.aspx?id=152814>

THE MATH CAFÉ AND LEARNING COMMONS, located on each of the campuses of the Community College of Allegheny County, are drop-in math assistance centers where students can collaborate with facilitators, math faculty, peer tutors, and other students to receive individualized and group learning support. The Learning Commons provides support beyond math to include all students needing assistance with reading and writing assignments in any course. When at the assistance centers students have the opportunity to participate in a variety of mathematics skill-building activities from facilitated math homework assistance and computer-assisted learning to peer tutoring and instruction. The Math Café provides free placement test preparation for students to help them self-assess their current skills and competencies and identify related skill-gaps and needs, and to enable them to refresh their knowledge of key math concepts and formulas, as well as build confidence, before the math placement test. The Commons and Café offer a supportive learning space where students can meet with faculty and facilitators, receive as-needed support, attend a skills workshop, work on a group project, and generally build their confidence and competencies for learning. The open door approach of both centers means students are always welcome to walk in without an appointment. The facilities are staffed by trained facilitators and tutors who offer services during day, evening, and weekend hours. The flexible hours of operation enables the staff to more effectively support students who may have just-in-time homework assistant needs, and to help meet the time challenges commonly faced by community college students. The Math Cafés are funded by grants from The Heinz Endowments and The R.K. Mellon Foundation.

Key Highlights:

- Provides a range of individualized and group learning activities, and engagement opportunities, to supplement classroom instruction and help students skill-build in math.
- Focuses on providing as-needed assistance by trained facilitators, faculty, and tutors as well as longer-term capacity building in skills workshops.
- Provides students the opportunity to self-assess their skill level and prepare for the college's math placement test.

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Math Up

Daytona State College, FL

<http://www.daytonastate.edu/asc/>

THE MATH UP PROGRAM AT DAYTONA STATE COLLEGE is designed to provide students with a rigorous and timely opportunity to strengthen their mathematics skills. The program is structured as a free, four-day workshop and is offered the week before classes begin in both the Fall and Spring semesters. The initiative's primary objective is to increase student success in foundational mathematics courses as a base for broader student achievement and persistence. Math Up provides participants the chance to improve their knowledge and understanding of mathematical concepts and to strengthen study skills and student success behaviors. Students also are introduced to the learning and student support resources available at the college. Both tenacity and good strategies are stressed throughout the learning experience in order to help students approach their academic tasks more effectively. The program's integrated approach enables students to concurrently focus on strengthening baseline competencies in mathematics while also learning how to be a successful college student. Math Up's curriculum and strategies are developed through a collaborative effort involving mathematics faculty and Academic Support Center learning specialists. While the program is open to all students, it targets those who fail two introductory math courses, Intermediate Algebra and Elementary Algebra. The Support Center reaches out to these students through advisers and faculty at the end of each semester to encourage them to enroll in the program. The Center also conducts regular end-of-session surveys to support program efficacy and improvement.

Key Highlights:

- Provides strategically timed support and aims to help students get a strong jump start in their mathematics classes.
- Integrates instruction and skill development in mathematics with guidance in how to strengthen college and academic success skills.
- Developed and operates from a base of close collaboration between mathematics faculty members and learning support personnel at the college's Academic Support Center.
- Utilizes a range of techniques and embedded relationships to reach out to the target student population and encourage their participation in the workshop.

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Math Boot Camp

Lower Columbia College, WA

<http://www.lowercolumbia.edu/activities-services/math-bootcamp.aspx>

THE MATH BOOT CAMP PROGRAM is part of Lower Columbia College's effort to close the mathematics preparation gap for newly enrolled students. The Boot Camp constitutes a one-day, intensive, refresher math class that focuses students' motivation on improving both their understanding of foundational math concepts and their study skills. The college also conducts more involved three-day Math Boot Camps during the academic year. A key objective of the one-day Math Boot Camp is to help students address weaknesses that may challenge their ability to place into required math courses for their specific academic pathway. As such, instructors in the Boot Camp integrate a generalized approach to content delivery, by reviewing core mathematics concepts and reasoning strategies, with a more customized approach that takes into consideration individual student learning needs and related challenges to meet math placement goals. Participation in the Boot Camp is optional for students and is open access. However, students that demonstrate deficiencies on math placement tests are specifically targeted and encouraged to take the refresher course. Students who enroll at the college are required to take a math prep test to identify their math proficiency level. Immediately after they complete the assessment, personnel from the Admissions Center Office meet with each student to discuss the results and the student's academic goals. If a student is on the threshold between placement levels, or otherwise demonstrates weaknesses in math understanding and skills, they are encouraged to attend Math Boot Camp to strengthen their skills and be better positioned to place at a higher proficiency level upon retaking the test.

Key Highlights:

- Boot camp format exposes students to an intensive learning experience aimed at strengthening knowledge and skills and motivates them to place higher in math prep test.
- Program focuses on both academic knowledge and basic study and student success skills for broader college-readiness preparation.
- Content delivery covers both general concepts and strives to support student-specific needs in mathematics and study skills.

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Math Awareness Week

Palm Beach Community College, FL

<http://www.palmbeachstate.edu/MathAwareness/>

THE ANNUAL MATH AWARENESS WEEK hosted by Palm Beach Community College is aimed at helping students understand the value of mathematics to daily life and at building their interest in, and comfort with, mathematics as a knowledge field. The week is theme-based on the Math Awareness Month sponsored by the American Mathematical Society. During the week-long event at Palm Beach, students participate in a variety of events, activities, teaching-moments, and games that open the door to strengthening quantitative literacy, mathematical understanding, reasoning, critical thinking, and real-world problem solving; and to helping students better comprehend and feel comfortable with key concepts and ideas found in math. Faculty members, administrators, and tutors offer workshops, presentations, and interactive sessions that touch-upon all levels of math from basic skills to calculus. Among the events held in 2014 there was a presentation by a world-renowned magician and investigator of paranormal and pseudoscientific claims, and a lecture by the college's Associate Dean titled "The Power of Mathematics in Describing the Fundamental Forces of Nature." The majority of events are free, and the audience includes students who are located all along the scale of math competency. The college reaches out to faculty and the Student Activities Team to raise awareness of the event and attendance has been on the rise every year since its inception. The college reports that faculty and students are more engaged during the week; people are having fun with math; and students' consistently comment that they are learning of new possibilities and opportunities in mathematics beyond the classroom.

Key Highlights:

- Focuses on raising students' awareness to the importance, and intersection, of mathematics to happenings in every day life.
- Uses a wide variety of events, activities, learning environments, and games to make learning and thinking about mathematics more engaging and fun for students.
- College faculty, administrators, and learning support staff join together to create learning opportunities for students.

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Math Jam

Pasadena City College, CA

<http://www.pasadena.edu/externalrelations/tlc/mathjam.cfm>

MATH JAM IS A CORE COMPONENT of Pasadena City College's First Year Pathways Program. The summer bridge experience offers entering students a two-week-long opportunity to prepare for math classes, learn about college, develop student success and study skills, establish a network of supportive peers at the college, and become familiar with campus resources, personnel, and services. The program is free, and no-credit, and is geared for recent high school graduates seeking to get a head start at college. Math Jam is the required first step for students who are enrolled in the college's Pathways Program. A central goal of the Pathways program is to ensure that entering students make a successful transition from high school to college, a proven factor for student persistence and completion. The Math Jam strategy focuses on creating a supportive and motivating learning environment within which students can strengthen their math knowledge and reasoning skills; build confidence, connectedness, and motivation; and work on developing good strategies for studying and test preparation. The environment of Math Jam is low on stress and high on support and engagement. Innovative math instruction is integrated with student support services and engaging college orientation activities. There are no grades or homework. The courses are tutor-driven to ensure student-specific needs are addressed. A key incentive for participating in Math Jam is that students receive priority enrollment in highly sought after math courses.

Key Highlights:

- Captures the students early and intentionally and provides a highly supportive environment to help students move successfully from high school into college.
- Takes a comprehensive approach to orienting students to college culture and campus life as well as helping students strengthen success skills and behaviors.
- Integrates instructional practices to build academic knowledge with learning support, guidance, and opportunities for meaningful engagement.
- Part of a broader Pathways approach that provides students with a strong start to college and a clear sense of how to move forward toward completion.

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Center for Success in Mathematics

Richland College, TX

<http://www.richlandcollege.edu/csm/>

THE CENTER FOR SUCCESS IN MATHEMATICS at Richland College offers free math assistance for all students on the college campus. The Center provides comprehensive assistance with mathematics homework, test preparation, and review; provides a supportive space for students to engage fellow students, faculty, and support personnel and to strengthen their study skills; and initiates referrals to other resources and services available at the college. Students are provided help on lab quizzes, computer evaluations, and take-home tests, as appropriate. Drop-in tutoring is available to all comers, and the center's tutors are trained to cover all levels of developmental math. The Center is staffed full-time with math coaches and tutors who circulate among students requiring assistance. These support staff are tasked with promoting independence in learning, modeling effective learning behavior and mindsets, facilitating discovery and an awareness of key concepts, reinforcing classroom methods, referring students to resources, and working to make sure key mathematics concepts are clearly understood by students. Among the Center's objectives are to help students successfully navigate their immediate mathematics support needs and to empower them through example and teaching to become effective lifelong learners. The Center offers instructional support for developmental math courses by providing students with on-line access to a range of study materials that complement and reinforce classroom learning.

Key Highlights:

- Modeled as a student-centered, drop-in math assistance facility staffed by trained math coaches and tutors.
- Offers a range of activities to provide just-in-time learning support, on-line access to learning materials, and guidance in the development of effective learning strategies and behaviors.
- Provides targeted instructional support, learning assistance, and guidance for students taking developmental math courses.

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Individualized Advising and Student Success Plans

Indian River State College, FL

<http://www.irsc.edu/advising/advising.aspx>

SIGNIFICANT TO INDIAN RIVER STATE COLLEGE'S student success strategy is a dedicated student advising model and a student success plan that reflects the individual needs and goals of each student. Students are assigned a specific advisor that becomes their 'go-to person' from enrollment to graduation. To support this relationship, advisors take a tailored and personal approach to engaging students: one that is informed by the student's background, challenges, needs, and goals, as they are configured upon entering college and as they may change over the course of their college experience. An important point of collaboration between student and advisor is the development of a customized education plan. Counselors carefully evaluate each student's interests and past academic record to co-design a plan that will help guide the student from start to finish. The college's dedicated support model also includes providing faculty members with contact information for each student's assigned advisor on their class roster. This link connects faculty members with advisors, facilitates communication between them, and supports timely collaboration when challenges may arise for a student. This model of advising and engagement has been found by the college to be an effective tool for fostering engagement and momentum as well as retention. It also reports that when students developed a meaningful working relationship with their advisor, they were more likely to return to their advisor for guidance when facing critical junctures in their academic experience.

Key Highlights:

- Integration of a personalized advising model and customized student success plan helps to guide a student from orientation to completion.
- Relationship-building, engagement, and commitment are utilized to keep students on-track and directed toward course and degree completion.
- Student success mindset and norms are supported through ongoing interaction with an advisor and formalized in a student success plan of action.
- Short, intermediate, and long-term goals are incorporated into the student's educational experience through their personalized plan.

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Student Ambassadors

Cuyahoga Community College, OH

<http://www.tri-c.edu/counseling/Pages/Orientation.aspx>

THE USE OF STUDENT AMBASSADORS at Cuyahoga Community College is considered an important and effective strategy for supporting persistence and completion. The program demonstrates that student success is possible with proper support and guidance. Student Ambassadors play a role in the college life of new students beginning at New Student Orientation. During the orientation sessions they lead groups of up to ten students in guided conversation and role-playing. Through this connection, they move from being student ambassadors to becoming peer mentors for about eighty students. Over the course of the new students' first semester, the ambassadors-turned-mentors follow a structured communication plan in which they reach out to mentees before, during, and after their first semester to provide support. In their capacity as mentors, they serve as role models and as a source for not only information but for encouragement and guidance. They help their mentees discover ways to get involved in student life and develop strategies for engaging fellow students and faculty members. The peer mentors offer new students confirmation that the challenges they experience can be overcome, whether these challenges are experienced within the classroom; with trying to balance learning and socializing; or with meeting the demands of homework and exams. Student Ambassadors are required to participate in a Leadership Certification Program and bi-annual college-wide retreats that were established as a part of the program in order to ensure they are ready to serve their peers effectively.

Key Highlights:

- Dedicated ambassadors-turned-peer mentors help students develop a success oriented mindset and strategies for learning and personal development.
- New students are supported by their peer mentor throughout the duration of the first semester from orientation through completion of coursework.
- Peer mentors model effective behavior and serve as readily available sources for information, guidance, and advice.
- Role-readiness among mentors is ensured by providing them with skill development opportunities including educational retreats and workshops.

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Embedded English and Math Tutors and Math Resource Center

Johnson County Community College, KS

http://www.jccc.edu/photo_stories/2014/0505-embedded-tutors.html

THE MATH AND ENGLISH SUPPLEMENTAL INSTRUCTION PROGRAMS, and the Math Resource Center, at Johnson County Community College, are key strategies in the college's effort to support student success in math, reading, and writing. The embedded tutoring programs are optional as is participation in the Resource Center. In the embedded tutors program, the English and math tutors attend classes and offer supplemental study sessions. Tutors are actively engaged in the classroom setting and model positive student behavior as well as work with faculty to support class discussion and group work. Outside the classroom, the tutors facilitate study sessions, compare notes with students, address questions, skill-build, and help in test preparation. In addition to the supplemental instruction programs, the Math Resource Center is a cornerstone learning support strategy at the college aimed at building math competencies. The Center offers tutor-based math support for students taking all levels of math classes. Trained tutors work one-on-one with students to answer questions and address math problems. The Center also offers textbook solution manuals, calculator rentals, study rooms for students to reserve, and a computer lab. Some faculty members also hold their office hours in the Center. Importantly, the Center constitutes an active social environment where students meet and greet and learn together within a setting high on collaboration and support. There were approximately 26,000 visits to the Center during the 2013–14 academic year. The average number of visits per student in Fall 2013 was nine.

Key Highlights:

- The guiding philosophy of the programs is that success is directly linked to building student capacity and to cultivating a felt sense of belonging to a committed community of learners.
- High value is placed on empowering students to have the confidence to excel; over the course of the semester the embedded tutor becomes less important as the students gain the skills and confidence to take charge in directing their own learning experience.
- Center tutors work to build ties with students and encourage collaborative learning; tenacity, commitment, success modeling, and 'making a friend' are key strategies and values.

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Holistic Advising and Student Life Skills

Broward College, FL

<http://www.broward.edu/studentresources/advising/>

BROWARD COLLEGE USES A HOLISTIC APPROACH to student advising that is delivered across a student's first year in college by Student Success Specialists. The aim is to use intentional and holistic support to empower students to succeed. Key to the effectiveness of this strategy is the Success Specialists. These individuals work collaboratively with faculty members, learning support staff, and campus Success Coordinators to facilitate an effective transition for students into college life. Success Specialists employ a personalized approach to advising and coaching. At the start of the first-year each Specialist guides their students through the enrollment and registration process; introduces them to the college's student portal; and offers intake advising. The support offered during this transition period also extends forward over the course of the students' entire first year of college. Successive interventions include mentoring, career coaching, a review of the student's admission and financial aid status, and course registration advising. Each Specialist also tracks their students' academic progress and helps them to formulate an education plan. First-year students are encouraged to take a Student Life Skills course and also have the opportunity to participate in team building activities, attend success skills workshops, and perform service learning. This strategy is particularly geared for developmental education students, and data have shown increased retention rates among those who are advised using this intervention model.

Key Highlights:

- Engaged and holistic advising provides a guided experience for first-year students and offers a point person for students to go to for support.
- Focus is on fostering a strong motivation to persist by encouraging independence, engagement, responsibility and confidence along-side high external supports.
- The personal attention advisors offer to students is the type that many at-risk students need to help them navigate successfully the issues of college life.
- Support Specialists are readily accessible to support and guide students through critical junctures that may have direct bearing on their academic success.

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First Four Weeks

St. Louis Community College, MO

<https://www.stlcc.edu>

FIRST FOUR WEEKS (F4W) is an innovative strategy offered at St. Louis Community College that is aimed at leveraging the role and proximity of faculty members to students, as well as the value of student-faculty engagement, to help students overcome the challenges they may face during the most critical weeks of the semester, the first four weeks. The program was developed by the Professional Development coordinators on each campus of the St Louis Community College system in coordination with faculty members. As part of the initiative, participating faculty select at least four classroom activities, practices, or strategies, from over twenty-five that are provided to them, and commit to implementation during the first four weeks of the semester. The activities are linked to five areas of the student learning experience that have proven to be critical drivers for student success and achievement: building and encouraging relationships and engagement; raising expectations for success; promoting active and motivated learning; integrating student support into learning experiences; and ensuring that students have adequate performance feedback. Among the goals for F4W is that of increasing student retention and pass-rates. In addition, the effort is aimed at building-out a network effect by involving as many faculty as possible in student success strategies, and ensuring faculty have access to information on best practices and student resources. The program's perceived value and effectiveness is demonstrated by the fact that almost six hundred faculty members have been involved in the initiative.

Key Highlights:

- Faculty-student engagement is approached with a high level of intentionality and regarded as key to generating positive student outcomes.
- Faculty members engage students early and often, especially during the most critical weeks at the beginning of the semester.
- Faculty members commit to using a range of proven student success strategies over the course of the semester to support persistence and completion.

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FOCUS Program

Texas State University San Marcos, TX

<http://www.math.txstate.edu/devmath/>

THE FOCUS PROGRAM (Fundamentals of Conceptual Understanding & Success) spearheaded by Texas State University San Marcos strives to reduce students' time-to-degree and to improve their mathematics skills and competencies by allowing students to fulfill remediation requirements while also receiving college credit for math within a single semester. The co-requisite instructional model was developed and tested at TSU San Marcos and has been piloted at several community colleges across the state. The program enables students with a math placement test score in a range below but near the "cut score" to enroll simultaneously in remedial math and one of two options – college algebra or college algebra with statistics – depending on their academic and career needs. Students receive research-based quality instruction and academic support in a student-centered learning environment. Students also receive supplemental support each week through tutoring, mentoring, and content-based workshops. The learning support lab offers small group instruction on topics covered in developmental math or credit-bearing math courses. Evaluation of the program is comprehensive and based on information from an array of sources including student surveys, instructor observations, samples of student work, weekly meetings with instructors, and instructor logs and journals of classroom events. An intentional professional development component offers instructors and academic support personnel with ongoing training and is oriented toward supporting an active community of practice.

Key Highlights:

- Learning and motivation are actively supported by combining high expectations with high support delivered within intensive learning environments.
- Supplemental learning sessions provide opportunities for in-depth math discovery and exploration and are designed to support and extend classroom learning.
- The co-requisite model enables students to enroll in both developmental math and credit-bearing math courses with support.
- The instruction approach is student-centered and capitalizes on the value of using real world activities to contextualize math concepts and build problem-solving skills.

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⌘ Practitioner Interview: BRETT COOPER

Mr. Cooper is an Assistant Professor of Mathematics and Director of the Math Resource Center at Johnson County Community College in Kansas. The following are edited excerpts from a telephone interview with researchers in which he discussed the the Embedded Math Tutors program offered at the college and the Math Resource Center.

What elements of Math Tutors and Math Resource Center programs would you say are the most effective in supporting student success, and why?

BC: There are several factors. Location is one of the biggest factors for supporting participation. The Resource Center is located where everyone can see us when coming out of math class. When the college built the building, the Center was designed into it – on four sides there are faculty offices and on the fifth side are math classrooms. The Center is essentially the geographic center of the math department. Students exit the math classroom and they see the Resource Center.

In addition, it's crucial that we have good staff and that we keep people around. We've had a good go of hiring the right people to be tutors and retaining them. Some tutors have worked with us for seven or eight years. We have one tutor who has been here twelve years. So there is a consistency in the learning support staff, and students value this. It also supports relationship-building. Tutors get to know the students that attend; students get to know the tutors. As students go into higher levels – even though there aren't as many tutors to work with at the higher levels – they know the tutors and know who can help them. Staff and tutors work together and develop familiar dynamics and work practices that support collaboration.

We have instructors that understand and appreciate the value of the Resource Center and encourage students to use what is available to them. The philosophy of the department is that while there may be different levels of math, all students are there to learn mathematics whether at the basic level or a higher level. And thus students at the Center mix together. Lower level students have the chance to see the higher level students at work. They begin to model their behavior. They learn from them about how to successfully use the center.

Lastly, there is a lot of faculty buy-in for both the SI program and the Resource Center. Faculty are not required to participate in either. But we aren't shy to ask 'who would like to participate'; 'what class would you like to have tutors as supplemental supports?'; 'who will hold office hours in the Center?'. The faculty who do participate want to be involved and are fully on-board with the programs. As well, faculty and tutors often form a good, strong bond. They work together and understand their roles as supportive of each other. If they don't already know each other; they get to know each other. They coordinate and work together. One example, is that instructors use a system called Remind 101, which is a texting service. Instructors send text alerts to students to remind them of assignments, exams, and so forth. Instructors use this to also support the tutoring work of the Supplemental Instructions Leaders.

What key challenges have you faced in operating the programs?

BC: The big challenge has been to get enough qualified tutors to work with the students. It's difficult to find those who have both the math knowledge and the interpersonal skills and mindset to be successful tutors. Usually only about twenty percent of applicants are selected. So, the capacity at the Center is typically challenged. There are many students who seek support from the Center. And this often means students have to wait a bit for assistance, but usually not long, and they understand this and are patient.

Another challenge we deal with regarding the SI program is ensuring students know about the program early and when they register for classes. In the past, students were often already registered for a specific math class or section prior to when the announcement was made as to which class would have an embedded tutor. Information didn't get posted or it didn't get into the catalogue in time. The result was that we would have a low turnout for embedded tutors. We are working hard to get the word out sooner; advertise more effectively; make sure that the students know which sections will have embedded tutors prior to registering.

Is participation in your programs mandatory or optional for students?

BC: Both programs are optional. The incentive for SI participation is that students see benefit from visiting the Center and from working with a tutor in the class. There is encouragement from other students and from faculty, too. So, they don't receive specific incentives but they are incentivized by what they hear from others and experience themselves.

How do you reach out to students to encourage them to participate?

BC: We rely mostly on word-of-mouth, social networking, advertising about services around the campus, and making sure the services provided are effective and a positive experience for all students. Student's sharing with other students is a key method for encouraging participation. The relationships that built and the quality engagement between tutor and student that goes on in both programs also provide encouragement for students to continue seeking support.

Who hires, trains, and monitors tutors for the SI program and the Resource Center?

BC: The human resources department at the college is responsible for posting opening for tutors for both the Resource Center and the Embedded Tutors program. They post this on the web site. They also make use of social networks. The Center Director also uses his personal network, contacting colleagues at other colleges and universities in the area. Staff members at the Resource Center also reach out to faculty for suggestions of students they think might be good tutors. There are some tutors from the community college but most are undergraduates from Kansas University who have attended Johnson County Community College and transferred. Some tutors are working teachers and engineers; some retired teachers.

As far as training for tutors at the Resource Center, the key is to hire the right people and let them do their thing – and to build into the culture of the Center a comfort with seeking assistance as needed from other tutors, staff, and faculty. There is an orientation each year

for new and returning students where goals, values, and processes are reviewed. There is a weekly seminar for tutors who work with students on business math to ensure that they are up-to-date on the topics being covered in the class each week. But this development experience is specific to tutors specializing in business math. This year a new category of Senior Tutor was created and there is a professional development requirement attached to this position. But for other tutors there is no ongoing training. Everyone is encouraged to reach out to their colleagues when they have questions. It's emphasized that the work at the Center is a team effort.

With regard to the course-embedded tutors, there isn't much in the way of training. All tutors, new and returning, attend an in-service meeting prior to the semester beginning. Here they discuss goals, good practices and strategies, and the values and philosophy of the program. It serves as a reminder to returning tutors and a primer for new tutors – and a chance to share experiences. At the meeting they talk about what worked and what didn't work; lessons learned; and ideas and insights gained. Beyond this engagement there is no formal training.

Do you monitor the activities of your tutors?

BC: We conduct surveys of students every semester. There are also periodic observations and faculty also keep engaged as to who they think are doing their work well. So, we use a mixture of observation and evaluation to monitor activities.

How do you track if students participate attend or participate in the programs?

BC: We use a card swipe system at the Resource Center and also conduct student surveys. As far as the Embedded Tutors program goes, tutors keep track of student participation.

Lastly, what are a couple key lessons you've learned from being involved with the programs?

BC: Hire the right people. You just can't look at a transcript and say you've had the right classes and you're good to go as a tutor. People may know the math but they have trouble working through questions and problems with others, and managing the interpersonal side of the tutoring role. It's not easy being a good tutor. So, it's not just about the math knowledge but knowing how to help others; how to best use resources and to guide people to using resources effectively; and how to model good behavior. Tutors have to be mature and knowledgeable enough to handle any questions and to handle them in the appropriate tone. They need to understand what it means to 'work with' another person and to see the tutoring relationship as collaborative, cooperative, and supportive. You have to know the needs of your audience.

Second, it's important to not only construct a supportive environment, but to have in place a setting that is high on the value of collaboration and that is all around supportive. You need to have a setting in which the students are comfortable and safe and know it's okay to ask questions. Collaboration, cooperation, relationship-building, and teamwork are all key values – and practices – that make a difference in tutoring and learning.



⌘ Practitioner Interview: BROCK KLEIN

Dr. Klein is the Interim Dean and Director of the Teaching and Learning Center at Pasadena City College in California. The following are edited excerpts from a telephone interview with researchers in which he discussed the Math Jam summer bridge program offered at the college.

What drives the effectiveness of Math Jam?

BK: Specifically, some of these factors are that we committed to creating a learning environment that is low on stress, non-credit, and effectively uses math as a vehicle for a much broader learning and socially engaging experience. In Math Jam, students have the chance to build their confidence with learning; build comfort. The invitation to students is that this is free, there's no homework, and there's really no stress. But it's not just about fun; it's about serious learning, but serious learning about math and student success that is made accessible, enjoyable, and positive for the new students.

Another factor is that we use math as a vehicle, but other subject areas could also be the vehicle. The short-term outcomes are not about math. They are about building a base of connection to the campus community, identifying resources, developing a network of support. Math Jam is as much a math experience as it is an orientation to college where students meet faculty, support staff, other students, tutors all of whom will continue to provide support for them as they move into their coursework. Math Jam is part of our Pathways approach so this is the time they build the base for that experience. So, it's not about fixing a math problem. But it's a positive hit on math.

We've also designed curriculum that's highly interactive and very engaging. We've also found there's lots of power in the non-credit approach. There's the chance for adaptation, and lots of open space for creating innovative learning experiences.

The tutors are the essential component for Math Jam. It is really an empowerment program for tutors. We believe that students entering college need to see people like themselves in a power position. We see this as a powerful and positive experience. Important is that there is strong coordination among tutors-coaches-counselors. They work well together and set the tone for collaborative learning, cooperation, and mutual support.

What are some of the challenges you've faced in operating Math Jam?

BK: The logistics and nuts and bolts of program operation is a key challenge. For example, Math Jam is getting larger and growing. It's become very popular. So, it's also getting more difficult to find classroom space when summer classes are in-session. And within this there are at times schedule conflicts with other things happening at the college that are credit bearing. Math Jam doesn't get priority because we are non-credit, so we often have to do work-arounds to manage this and keep the program flowing smoothly. The students are very patient with this.

Other challenges include hiring the right types of tutors and training, as well as monitoring, them. It can also be a challenge to choose faculty who will fit well with the program. We tend

to see the younger more idealistic faculty members taking to it more quickly. We use adjunct faculty and full-time faculty members. It's key that we help them to understand and feel comfortable with what Math Jam is all about – what we're trying to do; the culture of the program. There can be some hurdles in making sure tutors meet with the teachers and the coaches and the counselors. There are thirty-five tutors and five teachers and there is a Math Jam coordinator and assistant and there are student support coaches, so it can be difficult to get everyone together and all aligned.

One interesting challenge we have had to work through is that students have fun with math in Math Jam. Then they get into their courses during the semester and see that it's not as fun. They go back to being bored with math. So we impress upon them – the messaging in Math Jam is – that we are preparing them for the reality of the Fall or Spring semester. We want to keep it light, no credit, no stress while at the same time not mislead the students. We tell them math won't be as engaging as it is in Math Jam.

How do you reach out to students to encourage them to participate?

BK: Keep in mind that Math Jam is part of our broader Pathways initiative, so recruitment is about being a part of a larger experience. But, we generally say we can give you something concrete that will enhance your college experience and your math skills. We take our message into the high schools. We conduct information sessions in the early summer for parents and students. Students do their assessments on-site and then are invited to join Pathways – and thus Math Jam. Once they make the decision to be in Pathways they have prep sessions and get priority for registration.

The program relies on tutors so what type of training is conducted to prepare your tutors?

BK: We have an awesome cadre of tutors. Ideally, the tutors are alumni of the program: they've gone through Math Jam a year two before. We recruit by looking for students doing well on math, and we invite them to be tutors. They receive training by working in our Teaching and Learning Center and then we invite them to be tutors in Math Jam, and pay at that point them. We have students who have transferred to a four year college and come back to tutor in Math Jam. We have engineering students, math majors, new Math Jam graduates, among others. We integrate tutors with student success coaches and counselors, and they also work closely faculty. Tutors usually work with eight to ten students and some of the more experienced work with fifteen to twenty.

What activities seem to work best to get students them engaged and learning?

BK: Important to the program's effectiveness is integrating instruction in math with building college-readiness and student success capacity. We integrate and balance these two priorities. When students reflect on what they liked about Math Jam they often say: one, it provided them the chance to get priority registration; two, they valued the tutors as well as working with the advisors/coaches; and three, they made friend, and built a network of support.

In addition to tutors, are there other types of support personnel available to students?

BK: We provide success coaches and advisors and faculty are involved, as well.

What are a couple key lessons you've learned from being involved with the program?

BK: We've always made it a point not to look at this effort with the mindset that we have a problem and let's just give students a two-week hit and it'll fix everything. This isn't going to work and certainly won't lead to broader outcomes related to learning and engaging. What we've learned is that it's about what's taught and how it's taught; and how these are brought together. It's just not about bolting-on something to expand an experience. It's not just about looking for the most readily available or most simple solutions to a perceived problem. It's about thinking more broadly and looking at how the problem is understood and what gaps may be present in current efforts.

We've learned that building familiarity and connection is also crucial. Students who are most in need are the least likely to take advantage of available resources and support. How do we get to those students – how can we be more intrusive and reach out to those students? We foremost need to reach out to them and to build settings for learning and engagement that are about connection. We want to give students the chance to have friends, a network of support, and places to go to get help. This is why we link Math Jam with a Pathways experience and the Teaching and Learning Center. Connection and engagement are critical to success.

One more lesson learned is that regardless of the initiative that is planned and implemented it's important to localize the effort. It's not just about replication of an effective model at another college. Practitioners need to understand what will work at their college and for their students. There needs to be customization and also there needs to be ample room for adaptation, in both design and operation. It takes time and commitment to develop an effective initiative and practitioners need to allow it to evolve – to happen – and to use lots of monitoring and review for guidance. Each of the parts of Math Jam are not necessarily new or different, but what's particular is how these parts are integrated and packaged into the whole experience and how they are understood as contributing to the whole experience. We also closely monitor and watch each piece as well as keep a close eye on the whole.



⌘ Practitioner Interview: KATHYRN BYRNE

Dr. Byrne is an Associate Professor in English and Journalism at Johnson County Community College in Kansas. The following are edited excerpts from a telephone interview with researchers in which she discussed the Embedded English Tutors/Supplemental Instruction program at the college.

What elements of your program would you say are the most effective, and why?

KB: Tutors are trained well and are encouraged to be a part of a community of practice. Faculty and tutors work closely together and there is strong buy-in from instructors supporting the program. But key to the programs success is the emphasis on socializing students to feel a part of a learning community or group; to cultivate in them a sense of engagement, belonging, and community to support persistence. Tutors actively model the principles of determination and commitment and also practice effective behavior in the classroom. Students mirror this behavior and often look to the SI leaders for cues as to how to be strong students. When students do their labs and homework, it's not only about learning content, it's about learning how to be a student and how to be a member of a study group – and it's about understanding the value of the group. Students are empowered by the SI Leader to run the groups – to be leaders themselves. And they usually are taking on this role by the end of the semester. Key elements, then, include confidence-building, building a sense of belonging, making friends while learning, and modeling the practices of effective learning.

Is participation in your tutoring program mandatory or optional for students?

KB: It's optional.

When your college was developing the embedded English tutors program, what factors determined if participation would be optional or mandatory?

KB: There was the view that we can't make them pay for something they aren't receiving credit for. We can encourage them to participate. We can frame the experience with the tutors as something more than just another study lab, in order to help students see how beneficial the supplemental instruction can be to their coursework and their learning experience.

So, since participation is optional, what are the incentives for students to attend?

KB: There are incentives, such as extra credit in their classes. But, the real incentive comes from the sense of camaraderie and belonging that develops among the students who actively participate in the SI labs. Students see what is happening – they see students doing well, answering questions, being engaged in the classroom – and they want to be involved. They want to be a part of the community. There is a socialization effect; a network effect that draws students in. The SI leaders cultivate this not only through their own behavior but by focusing on building an accessible community for people to be a part of. The faculty members also support this activity and perspective.

How do you reach out to students to encourage them to participate?

KB: Recruitment is often self-motivated. Students see the value of participating in the SI learning group and want to be involved. They get feedback from other students. They also receive encouragement from the instructor and from the SI Leader when they are in the classroom. Generally, then, we rely largely on word of mouth and on teachers and SI leaders encouraging students to participate. It's real powerful for the students to see other students benefit from the additional learning time with others.

Who hires and trains the supplemental instructional leaders?

KB: The director of the program hires, trains, and monitors the SI leaders. Recruitment is often based on recommendations from existing tutors and from faculty.

What are the qualifications for being a Supplemental Instruction Leader?

KB: Students need to be committed to working with others, to teaching their peers, and to the value of learning. In other words, they need to demonstrate their capacity to work with others and to be willing to, themselves, be engaged learners.

What training and compensation do SI Leaders receive, if any?

KB: The training for being a tutor in English is very intensive. There is a lot of training upfront in the form of reading, discussion, and goal review. And students are offered – and encouraged to participate in – ongoing opportunities for learning and skill development. SI Leaders also observe other leaders in action and meet weekly with instructors and the SI Director. The faculty members also may work directly with the tutors, giving them the chance to model behavior in class. Emphasis is on building a community of practice and in this setting encouraging tutors to support each other and to build a network. Some tutors stay on in their role after finishing at the college, and so they build a deep base of experience to share with others. A key part of the training is building a connection with the program and its values. Students generally work seven hours per week. Students are compensated for their time in the classroom and lab as well as time meeting with the instructor and SI Director each week. They are also paid for one hour of preparation time each week.

Are the activities of your tutors monitored or evaluated?

KB: The SI Director visits classes and instructional sessions and offers feedback from her observations. Faculty members provide input, as well. Surveys are also used to gather feedback from participants. They are asked about their experience, perceptions of its benefit, and whether they would participate again. I'm happy to say that consistently, the experience with the tutors is viewed as very supportive and popular.

How do you track if students participate in the supplemental instruction sessions?

KB: We mostly rely on the SI Leaders to provide feedback about their work with students, including participating rates and experiences. The close contact with the leaders supports

this practice. The SI Director also strategizes with tutors if there are students who represent a challenge or are having difficulties.

What are a couple key lessons you've learned from being involved with the embedded tutors program that you'd like to share with other practitioners?

KB: The value of good, engaged, planning is the biggest lesson. It takes a significant amount of time and energy to orchestrate a happy and effective group of tutors who feel a part of a community of practitioners. And it takes a lot to ensure that teachers feel a part of the program and build productive relationships with the tutors. It's inspiring to watch the tutors and see how much enjoyment they gain from working with students. It's encouraging to see that they love it and in some cases that it changes their career path. We've had a number of tutors decide to go into education after they've worked as an instructional leader. There is much fulfillment to see how participation as a Leader inspires and builds confidence.



NOTES

SECTION FIVE

Strategic Planning: Building a Process for Effective Design and Implementation

Topic 1: Strategic Planning for Your College's Intervention

AT THE HEART OF ANY EFFECTIVE PRACTICE or program is a clear and coherent strategy: a plan of action or policy designed to achieve a set of goals and related outcomes. Planning for success is central to any intervention aimed at supporting student achievement in college, and such planning requires strategic thinking and a detailed map to guide program development. Effectual instructional and student support practices don't just emerge organically from the random confluence of conditions. They are outcomes of deliberative and directed processes that leverage the value of strategic planning.

The fact of the matter is that strategic planning is critical to developing and implementing an initiative that is both efficient and effective. A quality strategic planning process provides an organized structure within which to gather information and ideas, define and deliberate key issues, mobilize stakeholders, identify resources, and ultimately take concerted action steps. Within this process practitioners move their intervention from idea to actuality to outcomes. Strategic planning not only communicates what is to be done, why, and by whom. It also signals who is to be served, how will activities be monitored and assessed, and how those involved will know the intervention is successful in the short- and longer-term.

A Quality Planning Process Ensures Stakeholders...

- Work Collaboratively and Toward Shared Goals
- Establish an Agreed Upon Course of Action
- Identify and Access Critical Resources
- Build Linkages and Deliberative Processes
- Direct Activities Toward Intended Outcomes
- Have a Platform for Assessing and Adjusting Strategies

In summary, strategic program design and implementation reflects purposeful thinking and intentionality. As is discussed below, numerous design elements and principles are crucial to fostering the efficacy of any student success intervention. Basic, as well, is the extent to which a practice or program connects actions with audience, and both elements with clearly formulated goals. A quality strategic plan identifies the links necessary to make this connection real, and it brings the whole picture into focus so practitioners can see where they are going, how they are going to get there, and what will happen on the road to achieving stated goals.

Topic 2: Key Design Principles for Building Effective Practices

THE EFFECTIVENESS OF ANY PRACTICE or program depends on both how it is designed and the manner in which it is implemented. Both are critical to achieving desired outcomes. Simply said, a well-implemented practice will fall short of expectations if it is not well designed. “It doesn’t matter what you call it; it’s what resides inside it that matters!” according to Arleen Arnsparger, Project Manager for CCCSE’s *Initiative on Student Success*. Similarly, the best designed program, if poorly implemented, will struggle to achieve its intended outcomes and can easily end-up in the dust bin of well-intentioned but ineffective programs.

Research has shown that intervention strategies are more likely to have meaningful impact on student behavior and outcomes if they incorporate proven principles into their design frame, and ensure these principles are at work during implementation. These principles serve as filters through which to plan the overall intervention and its specific activities. They also guide practitioners when selecting activities that match the needs of their target student population and when building a rationale – and buy-in – for their initiative and its activities.

The Center for Community College Student Engagement (CCCSE) notes in their report *A Matter of Degrees: Promising Practices for Community College Student Success (A First Look)* that there is an emerging consensus around a core set of design principles, common across effective programs and practices, that stand-out as key factors for fostering student academic achievement, persistence, and completion. No matter what intervention strategy or change idea a college implements, notes CCCSE, it is likely to have a greater impact if its design incorporates these effective principles. Time and again these principles have shown themselves generative to the ability of an intervention strategy to move the needle on student outcomes.

CCCSE Design Principles for Effective Practices

A Strong Start
Clear, Coherent Pathways
Integrated Support
High Expectations and High Support
Intensive Student Engagement
Design for Scale
Broad-based Professional Development

■ **Strong Support: Ensuring students get a strong start out of the blocks.** There is strong evidence that students benefit directly from having quality contact with other students and college personnel, including faculty and support specialists during the early days and first weeks of college. Colleges can increase the likelihood that students get a strong start if they provide opportunities for meaningful shared experiences that emphasize engagement and connectivity; help students understand their responsibilities as learners; and that focus students' attention on the value of motivation, confidence, and tenacity to success.

■ **Clear, Coherent Pathways: Guiding students from entry to completion.** Practitioners and faculty members can go a long way toward supporting student achievement and progress in college by creating clearly understood pathways to completion. Students face an array of choices and challenges as they manage individual course requirements and navigate their way through college systems. Offering accessible directions and maps, complete with goal posts and milestones and that identify supports along their journey, can make a substantive difference in the quality of a student's higher education experience and in their outcomes.

■ **Integrated Support: Connecting student support efforts and classroom experiences.** Colleges devote significant resources to developing and delivering effective learning support and student services. Considerable effort goes into building quality academic courses for a wide range of programs of study, as well. These components of the college experience are most impactful, however, when they are integrated and coordinated – and not walled-off in silos. Student support practices that are coordinated, woven, or embedded formally into coursework have been shown to be highly effective relative to when they are separated from the classroom learning experience. As well, when faculty and support personnel work collaboratively toward common goals, and regularly share experiences and feedback, efficiencies are gained and the success of students is more likely to be achieved.

■ **Student Engagement: Reaching out to foster involvement and connectivity.** Success in college for any student is a dynamic and complex process. It develops over time from the interplay of an assortment of factors both academic and non-academic. Many of these have their roots in the life of the student prior to when he or she enters college. Once in the door, the student experience continues to be conditioned by factors that can increase, or lessen, the likelihood of student persistence. Research has shown that among the many factors that contribute to success, at the top of this list is an individual's engagement with fellow students, faculty members, and the college experience at-large. The quality of a student's engagement has been shown time and again to be instrumental in helping students both start and finish strong. Engagement has to be intentional, however, and, as such, all college personnel need to be on task in making engagement unavoidable for students.

WorkSheet: Are Your Practices Grounded in Key Design Principles?

THE FOLLOWING CHECKLIST guides college practitioners through a short assessment exercise based on the design principles that have been identified by CCCSE as highly effective for their ability to support improvement. This worksheet asks the user to evaluate whether for any specific practice or program each of these principles is located meaningfully within its design and implementation framework. If the conclusion is that it isn't – or has been attributed little value – then it is important to explore what can be done to upgrade the status of this principle as a key factor for success. Remember, an intervention strategy is only as good as its design *and* implementation – and the principles at the center of both activities.

Are These Design Principles Embedded in Your Practices? They need to be!!

- | | | |
|----------------------------|----------------------------|-------------------------------------------------------------------------|
| <input type="checkbox"/> Y | <input type="checkbox"/> N | The practice helps ensure that entering students get a strong start. |
| <input type="checkbox"/> Y | <input type="checkbox"/> N | The practice integrates student support with coursework. |
| <input type="checkbox"/> Y | <input type="checkbox"/> N | The practice sets high expectations and provides strong support. |
| <input type="checkbox"/> Y | <input type="checkbox"/> N | The practice encourages learning in context. |
| <input type="checkbox"/> Y | <input type="checkbox"/> N | The practice will accelerate student progress toward completion. |
| <input type="checkbox"/> Y | <input type="checkbox"/> N | The practice is integrated into clear & coherent pathways for students. |
| <input type="checkbox"/> Y | <input type="checkbox"/> N | The practice includes strategically focused professional development. |
| <input type="checkbox"/> Y | <input type="checkbox"/> N | The practice is designed for scale in order to have greater impact. |

Topic 3: Applying a Quality Strategic Planning Process

THERE ARE A VARIETY OF BLUEPRINTS and approaches available for framing the development and roll-out of a strategic planning process. It's a popular arena of activity and thus many templates and guidelines exist to inform planners. However, within the field, several elements are commonly considered as essential to carrying-out the type of planning that will generate a quality program design and implementation experience. Incorporating these elements or attributes into a strategic planning process enhances the capacity of planners to not only capture the vision and goals of the program in action steps but to have a greater chance of addressing the needs of those the program was designed to support.

Among these elements, the following four should be incorporated into the planning process for any success intervention. There are others, of course, but these are foundational to fostering good outcomes and adding value to the planning experience.

■ **Learning about your Target Population.** A quality strategic planning process begins with building a profile of the target population. The axiom 'know your audience' readily applies to quality program design and effective implementation. The objective is to construct as informative a profile of the target group as possible relative to intervention goals. Collecting a range of outcomes data as part of this learning process will provide valuable and actionable information for program planners. In addition, it will establish baseline measures from which to review the effectiveness of the initiative down the road and once the program is in operation.

■ **Taking Stock of What's in Place.** Conducting a comprehensive inventory of programs, practices, and policies currently in place at the college relevant to the initiative under consideration is an important preliminary step in building an action plan. The inventory will better position college leaders and practitioners to recognize weaknesses and gaps as well as strengths in the college's extant efforts. It will also assist in the identification of resources that may be available for any new initiative and to catalogue challenges and supporting conditions that may impact the new effort's effectiveness. In general, building an inventory adds value to a strategic planning process by helping planners in the following ways:

- Understand what the college has in place to support a prospective initiative
- Pinpoint existing resources that may be tapped or leveraged
- Flag gaps and challenges that may confront planners of a new initiative
- Capture lessons learned that could be applied to strengthen a new program

■ **Conducting a Self-Assessment and Review.** An additional preparatory step that is basic to constructing a quality plan of action is for planners to conduct a self-assessment and review. This exercise is a practical method for reviewing what you are doing, why you are doing it, and what needs to be done to improve performance and better support desired outcomes. This step takes planners beyond just taking stock of inventory to engaging in a reflective discussion about the scope and efficacy of current intervention strategies. Conducting a self-assessment, in this regard, means asking: ‘what are we doing?’; ‘are we meeting our goals?’; ‘are we making a difference with what we are doing?’ The most valuable review process produces meaningful information and insights that lead directly to a quality strategic plan and action steps.

Among the outcomes that may emerge from a self-assessment process are the following:

- Practitioners and planners develop a deeper understanding of the college’s approach to supporting student learning, persistence, and completion.
- Gaps in capacity and performance, as well as strengths and weaknesses, are discussed that may impact service delivery and resource allocation.
- Teamwork and cross-unit communication and collaboration is enhanced as the practice community comes together to review strategies and practices.
- Elements of the college’s culture, such as shared expectations, assumptions, and values, are discussed that may impact the outcomes of any new initiative.

■ **Building an Action Plan.** Identifying key design principles, developing a profile of the target population, building a program and practice inventory, and conducting a self-analysis is most beneficial when done with clear outcomes in mind and an intentionality to transform what is learned into an action plan. Creating a game plan is essential to building a winning intervention strategy. A strategic action plan not only maps what is going to be done, it also serves as a source of motivation for practitioners and planners and guides them to take intentional, and measurable, steps toward program development and implementation. The strategic planning templates presented later in this Sourcebook, provide a comprehensive framework for building an action plan. However, as a preview, the following list identifies five of the key steps that should be taken when building a quality action template:

- Defining core strategic goals and related objectives.
- Identifying activities and decisions that must be taken to achieve outcomes.
- Establishing a time frame for program development and delivery.
- Identifying resources necessary to carry out the plan.
- Specifying factors that may enable or challenge implementation efficacy.

WorkSheet: Building an Inventory of Existing Practices and Programs

A KEY STEP in developing a Strategic Action Plan is to take inventory of programs and practices already in place at the college, and to pinpoint existing resources that may be leveraged to support a new intervention strategy. Taking stock of what's in place at the college helps all stakeholders: (1) understand the college's existing capacity in areas related to a prospective initiative; (2) identify and link resources that may support a new initiative; (3) flag gaps that may need to be filled in instructional or programmatic activity; (4) review key lessons learned that could be applied to improve program development processes and outcomes; and (5) identify methods used for monitoring student progress and evaluating program and practice efficacy. The following template identifies important categories to frame the collection of information for purposes of building an inventory. Practitioners may want to add categories depending on their information needs.

Current Program/ Practice	Target Population	Key Inputs or Resources	Lessons Learned Strengths/Gaps	Evaluation
<p><i>Identify and briefly describe the programs, practices, and/or policies currently in place that provide similar types of support, or that otherwise relate to, the initiative under consideration for adoption and design.</i></p>	<p><i>Identify the students who constitute the target population of the programs or practices listed in column one. Include relevant data in order to provide useful insights into who is being served.</i></p>	<p><i>Identify the resources that support the programs or practices listed in column one and that enable each to achieve its objectives; include funding, collaborating partners, existing organizational networks, staff and volunteers, facilities, equipment, and supplies.</i></p>	<p><i>Identify key lessons that have been learned during the development and implementation of the programs and practices listed in column one, including what worked and what didn't work, and the reasons underlying outcomes.</i></p>	<p><i>Identify the methods used to track participation in the programs and practices listed in column one, as well as approaches used to monitor outcomes and evaluate the efficacy of the intervention strategy.</i></p>

WorkSheet: Strategic Action Plan #1 (Initiative-Level Planning)

INITIATIVE TITLE:

(1) INITIATIVE DESCRIPTION

- a. *Identify the purpose(s) and principle objectives and outcomes of the initiative.*
- b. *Identify and briefly describe the target population.*

(2) KEY PERSONNEL AND ORGANIZATIONAL ALIGNMENT

- a. *Identify the initiative leader and core team members; include their roles and responsibilities.*
- b. *Identify the areas and departments of the college that will be involved in the initiative.*

(3) KEY ACTIVITIES

- a. *List the activities that will be undertaken for developing and implementing (and assessing) the initiative. Activities include processes, techniques, methods, tools, events, and technology that will be used to operate and deliver the planned program.*

(4) RESOURCES NEEDED

- a. *List the resources that will be needed to design, implement, and assess the initiative. Include on the list the human, financial and material inputs that may need to be accessed and incorporated in order to achieve identified goals.*

(5) POTENTIAL CHALLENGES

- a. *Identify conditions that might challenge the ability of the college to design, implement, and assess the initiative effectively and that could obstruct goal achievement.*

(6) SUPPORTIVE OR ENABLING CONDITIONS

- a. *Identify the conditions that are likely to be supportive of the ability of the college to design, implement, and assess the initiative effectively and that may enable goal achievement.*

WorkSheet: Strategic Action Plan #2 (Activity-Level Planning)

A RANGE OF ACTIVITIES will need to be executed in order to develop, implement, and evaluate your initiative over its lifetime. These are the things that will need to be done in order to not only design the initiative but to get it up and running, maintained, and to assess its outcomes. The following template is for planning each activity as a feature or component of the overall initiative. You may want to only identify the key activities listed in your initiative-level strategic plan or be more inclusive. You are asked to identify the specific activity and then detail information on related action steps. It is also important to list resources, challenges, and enabling conditions as all are key to ensuring the effectiveness of both the specific activity and the overall initiative of which the activity is a component part.

ACTIVITY: Identify the specific activity that will be part of developing and implementing your overall initiative. The effective design and operation of this activity will support the achievement of core strategic objectives and help generate desired outcomes.

	Activity Action Steps	Personnel	Stakeholders	Timeline
1	<i>Indicate the specific action that will be taken in order to develop, implement, and assess the specific activity identified above.</i>	<i>Those responsible for completing this action step.</i>	<i>The individuals, units, and/or departments that have a role or will be affected by this action.</i>	<i>Period from launch to completion.</i>
2	<i>Additional action steps...</i>			

Resources Needed: *What resources will be needed to develop and implement the activity, and assess its effectiveness? (Suggestion: List all resources, including funding, collaborating partners to existing organizational networks, staff and volunteers, facilities, equipment, and supplies.)*

Potential Challenges: *What conditions could obstruct the implementation of the activity and the achievement of related objectives; and/or make it difficult to complete action steps? (Suggestion: You may want to rank the conditions based on the extent to which they represent a challenge.)*

Supportive Factors: *What conditions will support the implementation of the activity and the achievement related objectives and outcomes; and/or support action steps? (Suggestion: Cultivating specific supportive factors could be included as a goal or action step in your strategic plan.)*

Topic 4: Building a Plan for Success: National Mathematics Summit

THE NATIONAL MATHEMATICS SUMMIT was convened in response to the national crises in developmental education, especially in mathematics. A forum was created to allow experts who have conducted scholarly research and institutionalized programs to discuss effective mathematics practices and faculty training techniques to support improved student learning outcomes. Many organizations, foundations and centers have different parts of the mathematic success puzzle covered through intervention strategies. However, there has not been a national forum or similar systematic effort to clarify the key pieces of the puzzle and shape them into a coherent success plan. The National Mathematics Summit took on this task in the context of mapping a strategic approach for institutions to use to design and implement new programs and to identify the best options for supporting student success in mathematics. The outline below highlights key elements of the Summit's Math Success Plan. The original document has been edited for purposes of presentation in this Sourcebook and in order to provide supplementary explanation for several of the elements.

Math Success Plan for College Innovation: Key Elements of the Plan

1. Rationale for Math Success Plan

Problem/Gap

- a. What problem or gaps have been identified
- b. Which problems need to be addressed?
- c. What do you want to achieve or improve?

Desired Outcome

- a. What are the desired and measurable outcomes?
- b. What baseline data need to be collected?

2. Proposal-National Models/Interventions

- a. Contextualized Learning
- b. Course Modularization
- c. Emporium
- d. Co-curricular/paired classes/co-requisite
- e. Accelerated/Compressed Curriculum
- f. Pathways Curriculum Reform
- g. Online/Hybrid Courses and Support
- h. Other math learning strategies

3. Selection of model/intervention or math learning strategies
 - a. Which national models/interventions are required or best fit your campus?
 - b. Which math learning and support strategies can best implement 3a?
4. Sponsors/Stakeholders for the innovation on your campus
 - a. Who will be involved in planning and data collections?
 - b. What committees or partnerships will be necessary and beneficial?
 - c. How will you develop conditions that are conducive for productive deliberation?
5. Design Principles: Examples...
 - a. Doable on all campuses
 - b. Financial aid implications are considered
 - c. Clarity provided for students at the front door
 - d. Ease in registration
 - e. Keep cost of materials down
6. Assessment Plan
 - a. What are the common assessments your college already has in place?
 - b. Are these assessments effective in generating valuable information?
7. Faculty Development/Training Needs
 - a. Budget for professional development and training
 - b. Resources available to support professional development/training needs
 - c. Faculty Engagement (ownership)
8. Timeline
 - a. How long will the innovation take to plan?
 - b. What is your implementation time-line?
 - c. Which semester/term(s) do you plan to begin offering the innovation?
9. Communication Plan: Stakeholders to reach...
 - a. Developmental Mathematics Faculty
 - b. Dean/Coordinator/Department Chair
 - c. Curriculum Committee
 - d. Institutional Research
 - e. Support Services
 - f. Student Services/Affairs
 - g. Faculty Development
 - h. Information Technology
10. Potential Issues or Concerns?

SECTION SIX

Sources from the National Literature on Best and Promising Practices

■ National Awards and Program Recognition Initiatives

Aspen Prize for Community College Excellence

The Aspen Institute

<http://www.aspeninstitute.org/policy-work/college-excellence>

Awards of Excellence

American Association of Community Colleges

<http://www.aacc.nche.edu/About/Awards/Pages/default.aspx>

Bellwether Awards

University of Florida

<http://education.ufl.edu/futures/>

Exemplary Initiatives Competition

National Council of Instructional Administrators

<http://cehs.unl.edu/ncia>

Exemplary Practice Awards

National Academic Advising Association

<http://www.nacada.ksu.edu/Events-Programs/Awards.aspx>

Innovation of the Year Awards

League for Innovation in the Community College

<http://www.league.org/league/competitions/innovations/>

Leah Meyer Austin Award

Achieving the Dream

<http://achievingthedream.org/resources/initiatives/leah-meyer-austin-award>

MetLife Foundation Community College Excellence Award

MetLife Foundation

<https://www.metlife.com/metlife-foundation/about/student-achievement.html>

■ Repositories for Best and Promising Practices

Basic Skills Initiative of the California Community Colleges

<http://basicskills.publishpath.com/effective-practices>

California Acceleration Project

<http://cap.3csn.org/category/disciplines/math/>

<http://cap.3csn.org>

California Community Colleges Success Network

<http://3csn.org/2010/11/15/exemplary-programs/>

Center for Faculty Excellence
UNC-Chapel Hill
<http://cfe.unc.edu>

Coastal Carolina Community College, NC
<http://www.coastalcarolina.edu/faculty-staff/professional-development/instructional-resources/best-practices/>

Center for Teaching and Learning
UNC-Charlotte
<http://teaching.uncc.edu/learning-resources/articles-books/best-practice/instructional-methods/best-practices-summary>

Center for Teaching Excellence
Cornell University
www.cte.cornell.edu

Center for Teaching Excellence
Lansing Community College
<http://www.lcc.edu/cte/resources/>

Faculty Focus: Higher Education Teaching Strategies
www.facultyfocus.com

The Florida College System
Chancellors Best Practice Archive
<http://www.fldoe.org/fcs/pdf/BestPracticeArchive.pdf>

Florida Department of Education
Best Practices in the Florida College System
<http://www.fldoe.org/fcs/retention/>

LearningWorks
www.LearningWorksCA.org

LEAP Campus Toolkit Resource: Resources and Models for Innovation
Association of American Colleges and Universities
<http://leap.aacu.org/toolkit/projects/roadmap-project/resources-for-participants>

Online Student Support Services
League for Innovation in the Community College
<http://www.onlinestudentsupport.org/Monograph/>

Texas Education Agency
Best Practices Clearinghouse
http://www.tea.state.tx.us/best_practices/

■ Associations, Organizations and Research Centers

American Mathematical Association of Two-Year College (AMATYC)

<http://www.amatyc.org/>

Bill and Melinda Gates Foundation

<http://www.gatesfoundation.org/>

California Community College Success Network

<http://3csn.org>

Carnegie Foundation for the Advancement of Teaching

<http://www.carnegiefoundation.org>

Center for Occupational Research and Development

www.cord.org

Center for Community College Student Engagement

<http://www.ccsse.org/center/>

CollegeBoard

<https://www.collegeboard.org>

College Reading and Learning Association

<http://www.crla.net>

Community College Research Center

<http://ccrc.tc.columbia.edu/>

Jobs for the Future

<http://www.jff.org/>

League for Innovation in Community Colleges

<http://www.league.org/>

Learning Assistance Association of New England

<http://www.laanechapter.org/about-laane>

Lumina Foundation

<http://www.luminafoundation.org/>

MDRC

www.mdrc.org

National Association for Developmental Education

<http://www.nade.net/>

National College Transition Network
<http://www.collegetransition.org/home.html>

National College Learning Center Association
<http://www.nclca.org>

National Center for Academic Transformation
www.thencat.org

National Center for Developmental Education
[http://ncde.appstate.edu/.](http://ncde.appstate.edu/)

Office of Community College Research and Leadership
College of Education at the University of Illinois at Urbana-Champaign
<http://occr.illinois.edu>

The Aspen Institute
<http://www.aspeninstitute.org/policy-work/college-excellence/guide-effective-practic>

The International Center for Supplemental Instruction
<http://www.umkc.edu/asm/si/index.shtml>

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