Executive Summary

Course-taking patterns, policies, and practices in developmental education in the California Community Colleges

A report to the California Community Colleges Chancellor’s Office

June 2010

EdSource

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Suggested citation:
The visibility of developmental education—or basic skills education as it is called most often in California—has increased in recent years. One major catalyst was a comprehensive community college strategic planning process completed in 2004 that listed basic skills as a critical area of focus. Another was an increase in the system’s minimum course-taking requirements for the associate degree. These helped pave the way for the state’s Basic Skills Initiative (BSI) and greater public reporting of basic skills outcomes through the new Basic Skills Accountability Report (CCCCO, 2009). These policy actions underscore the place of developmental education as a cornerstone of the work and purpose of the California Community Colleges.

EdSource undertook this study, under contract with the Chancellor’s Office, to further understanding of several issues related to this part of the system’s mission.

This study has two parts. The quantitative section describes remedial course-taking patterns in the community colleges and examines the correspondence between those patterns and various student outcomes. The qualitative sections examine research and opinion on related policies and practices both historically and looking forward.

The present study focuses on the cohort of students who entered community college for the first time in Fall 2002, and who enrolled in credit remedial courses in mathematics, writing, or reading during a seven-year period. The quantitative section includes statistics describing the remedial sequences offered within the system and the students who enrolled in those courses. It also, for writing and mathematics, explores differences between those students based on the academic level at which they started. Finally, a further quantitative analysis looks at possible correspondence between student course-taking patterns and academic outcomes in these two subjects.

The system’s complexity and a lack of data set limits on this study

Because there was tremendous variation in how students moved through—or did not move through—the remedial writing and mathematics sequences, this study cannot provide a meaningful summary of students’ most common remedial course-taking trajectories. Instead, it focuses on key course-taking variables—e.g., the skill-level of a student’s first remedial course; delay in taking that course; passing that course; delay between a first remedial course and a second, more advanced course—all of which are used to characterize underlying patterns.

In addition, because student-level data on placement recommendations are not collected for the state of California as a whole, this study cannot describe students who “need” developmental education and compare them with students who “do not.” Rather, it focuses on students in the cohort who actually enrolled in a remedial course in writing, reading, and/or mathematics during the seven-year period analyzed.
California community colleges vary widely in how they organize remedial sequences in writing and reading.

The number of course “levels” offered below college composition varied among the colleges. In addition, slightly more than half of colleges offered some form of integrated (or combined) writing and reading instruction within their respective remedial sequences, with a few colleges offering them at every remedial level. This variation made an analysis of student course-taking in remedial reading impossible to do with any precision. (For the purposes of analysis, integrated courses were considered part of a college’s writing sequence.)

The structure of remedial mathematics sequences is more consistent

In general, colleges offered three or four levels of remedial coursework below college mathematics, which were coded with respect to their progression of content as follows: Basic Arithmetic (four levels below college math), Pre-Algebra (three levels below), Beginning Algebra (two levels below), and Intermediate Algebra/Geometry (one level below).

The study looks at students who took at least one remedial course

About half of the 122,427 first-time students in the Fall 2002 cohort\(^1\) enrolled in a remedial course during the seven-year period studied. In all, 41% enrolled in a course in a remedial mathematics sequence, 32% took a course in a remedial writing sequence, and 11% took a course in a remedial reading sequence. There was a great deal of overlap among these three groups: overall, slightly more than half of students who took a remedial course did so in more than one sequence. (See the figure on the next page.)

Compared with the full first-time cohort, a larger share of students who took a remedial course:

• Were of traditional college age (19 or younger).
• Aspired to transfer.
• Enrolled full time during their first year (12+ units per term), on average.
• Attended community college for a greater number of semesters.

About a third of developmental students in writing and mathematics completed a credential/degree and/or transferred. But large proportions of developmental students did not

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\(^1\) See page 15 for a detailed definition of this student cohort.
reach those milestones, including:

• Roughly two-thirds of students who enrolled in each of the remedial *mathematics* and *writing* sequences; and
• Nearly three-quarters of students who enrolled in a remedial *reading* sequence.

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**Fall 2002 first-time students who enrolled in one or more remedial courses in writing, reading, and/or mathematics**

- Students Who Took Reading = 13,052
- Students Who Took Writing = 38,672
- Students Who Took Math = 49,997
- All Three Subjects = 8,514

Data: Student course enrollment records provided by CCC Chancellor's Office Management Information System (COMIS) matched with course listings, descriptions, and prerequisites from the 2002–03 through 2008–09 course catalogs of the colleges.

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The starting levels of students in the sample who took a remedial writing and/or mathematics course

Students’ characteristics and attainment varied along with their starting levels

The characteristics, aspirations, behavior, and outcomes of first-time students in the Fall 2002 cohort who took a course in a remedial mathematics or writing sequence varied—sometimes substantially—depending on the level at which they entered a sequence. The pie charts on this page show the different levels at which students in the Fall 2002 cohort entered the writing and mathematics sequences.

Compared with students who began at lower levels within each remedial sequence, a larger share of the students who began at higher levels of the sequences:

- Were of traditional college age when they entered community college.
- Aspired to more ambitious academic goals.
- Enrolled full time during their first year (12+ units per term), on average.
- Completed college-level coursework beyond the sequence.
- Transferred or completed a degree or certificate, although their rates of doing so were still low. (Even among students who began remedial writing only one level below college composition, 62% neither transferred nor completed a degree or credential.)

Hispanic and black/African American students were overrepresented among those who began at lower levels of the state’s writing and mathematics sequences. Asian students were also overrepresented among those who began in lower-level remedial writing courses.

Across all starting levels, most students began taking a remedial writing or mathematics course during their first or second term of enrollment. More than half began immediately in Fall 2002 and another one in five students began in Spring 2003. Some deferred their first remedial course for longer periods of time, including until after Spring 2004.
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Incoming aspirations of students in the sample who took a remedial mathematics course, by starting level

<table>
<thead>
<tr>
<th>Course Level</th>
<th>Transfer &amp; Associate’s Degree + Transfer Only</th>
<th>Associate’s Degree</th>
<th>Vocational Associate’s Degree + Certificate</th>
<th>Job-Related</th>
<th>Remediation</th>
<th>Abstract + Undecided + Not Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate Algebra</td>
<td>64%</td>
<td>3%</td>
<td>2%</td>
<td>5%</td>
<td>2%</td>
<td>24%</td>
</tr>
<tr>
<td>Geometry</td>
<td>56%</td>
<td>5%</td>
<td>3%</td>
<td>6%</td>
<td>2%</td>
<td>27%</td>
</tr>
<tr>
<td>Beginning Algebra</td>
<td>50%</td>
<td>7%</td>
<td>4%</td>
<td>9%</td>
<td>3%</td>
<td>28%</td>
</tr>
<tr>
<td>Pre-Algebra</td>
<td>37%</td>
<td>6%</td>
<td>5%</td>
<td>14%</td>
<td>6%</td>
<td>31%</td>
</tr>
<tr>
<td>Arithmetic</td>
<td>37%</td>
<td>6%</td>
<td>5%</td>
<td>14%</td>
<td>6%</td>
<td>31%</td>
</tr>
</tbody>
</table>

Data: Student course enrollment records provided by CCC Chancellor’s Office Management Information System (COMIS) matched with course listings, descriptions, and prerequisites from the 2002–03 through 2008–09 course catalogs of the colleges. EdSource 6/10

Overall, very few students who began at the lowest levels of remedial coursework ever completed the last course in the remedial sequence or beyond. This prevented many of these students from meeting their long-term college aspirations, although some appear to have had goals other than transfer or a degree. (See the figure on this page for an example.)

The analysis of correlations between course-taking patterns and academic outcomes yielded information about starting levels, delays, and interim benchmarks.

Logistic regression was the primary analytical tool used for this portion of the study, which was conducted by Dr. Peter Riley Bahr of the School of Education at the University of Michigan.

Certain aspects of remedial course-taking behavior among first-time students who entered the community colleges in Fall 2002 appear to have had systematic relationships with these students’ progress and ultimate achievement in mathematics and writing, controlling for other variables. (It is important to note, however, that we cannot say necessarily that a particular pattern of remedial course-taking “causes,” “contributes to,” or “leads to” success or failure. We can say only that particular patterns of remedial course-taking are paired in systematic ways with aspects of progress or success.)

Students’ starting levels are related to subsequent course-taking in writing and mathematics, but not to delays in taking a first remedial course.

- The skill-level of a student’s first remedial mathematics or writing course does not appear to be related systematically to whether a student tends to delay this first course.
- With some exceptions, students who began at lower levels of the remedial mathematics or writing sequences were more likely to attempt—and less likely to delay—a second, more advanced course than students who began at the highest levels.
• However, even after accounting for these seemingly advantageous behaviors, the lower a student’s starting level in a remedial mathematics or writing sequence, the less likely the student was to complete a college-level course in that subject or a course one level below.

Delaying a first remedial course is related to later course-taking and success, notably in writing

• Students who delayed their first remedial mathematics course were less likely to pass that course, with the exception of students who delayed until their first summer. In writing, delaying a first remedial course was not associated consistently with success in that course.

• In general, students who delayed their first remedial mathematics or writing course for more than one or two semesters were less likely to attempt a second, more advanced course in those subjects, even among students who remained in the system for a long period of time.

• Moderate delays of a student’s first remedial writing course (i.e., until the second year) appear to be related negatively to a student’s likelihood of completing a college-level writing course or a course one level below. However, only quite lengthy delays of a students’ first mathematics course (i.e., until after the second year) appear to have similar consequences.

Passing the first remedial course is related to persistence in—and successful completion of—a writing or mathematics sequence

• Students who passed their first remedial mathematics or writing course were much more likely to attempt a second course, and much less likely to delay this course if they attempted it, than were students who did not pass their first course.

• In addition, there was a very modest positive relationship between passing the first remedial mathematics course and subsequent completion of a course one level below college mathematics, and likewise between passing the first remedial writing course and subsequent completion of a college-level writing course.

Students who delayed a second, more advanced course by more than a semester were less likely to complete the remedial sequence or a college-level course

• Generally speaking, even students who remained in the system for a long period of time were less likely to complete a college-level course or a course one level below if they delayed a second, more advanced course by more than one or two semesters. This was true in both mathematics and writing.

Completion of a college-level math or writing course is strongly related to a student’s likelihood of transferring and/or earning various credentials

• Students who completed a college-level course in mathematics or writing were much more likely to transfer or complete an academic associate degree (versus neither completing a credential nor transferring) than students who did not.

• Remedial course-taking patterns matter for these ultimate outcomes insofar as these patterns are associated with students’ attainment in mathematics and writing. In sum, particular aspects of remedial course-taking patterns appear to be associated with the likelihood of attaining key thresholds of mathematics and writing competency, and attainment of these thresholds is strongly associated with students’ likelihood of completing credentials and transferring to a four-year institution.
Current policies and practices, and issues going forward

The descriptive statistics and quantitative findings presented above offer valuable baseline measures related to developmental education that can be used to help evaluate policies and practices implemented recently and going forward. As the qualitative section of this report describes, a number of forces are converging to support changes in the shape of developmental education in this state and nationally.

Higher expectations for college attainment and success raise the stakes for developmental education

In 2006, the Board of Governors (BOG) revised the state’s Title 5 regulations to raise the minimum, statewide course-taking requirements for the associate degree. These new rules went into effect for students who entered in Fall 2009.

The higher minimum requirements (Title 5, §55063) establish that students must complete:

- [Transfer-level] Freshman Composition (or an equivalent English course); and
- [One level below transfer] Intermediate Algebra with Elementary Algebra as a prerequisite (or an equivalent mathematics course).

These higher minimum requirements were one catalyst for California’s Basic Skill Initiative (BSI). The BSI documents and promotes “best practices” in developmental education, in part to improve students’ chances of meeting the new degree requirements.

Another change to Title 5 regulations currently under consideration is raising similar questions. It would allow colleges to validate communication and computation prerequisites for courses outside the English and mathematics departments—e.g., a writing prerequisite for a history course—through a content review by faculty, without statistical validation as is now required. The current rules were one product of a lawsuit brought by MALDEF and settled by the system in 1991.

Supporters see the potential change as necessary to ensure the intended rigor of academic courses, and as a way to encourage earlier remediation among students who have not yet learned basic skills in English or mathematics. But the changes also pose implementation challenges for local colleges, and some worry a change could have a disproportionate impact on particular student groups.

Whatever decisions are made, changes to Title 5 will bring additional responsibility for colleges to provide effective developmental education and improve student success. These discussions inevitably circle back to ongoing efforts—in California and nationally—to rethink how developmental education is provided.

Can developmental innovation improve outcomes and ensure access?

Many stakeholders familiar with the BSI agree it has produced much-needed dialogue about the importance of improving student outcomes in developmental education in the state. And the initiative has drawn the system’s attention to “best practices” in developmental education. Faculty development and ongoing reflection on student outcomes are central to this work, and various efforts in California are trying to build the system’s capacity.

This new focus on the quality of developmental education and the need for more effective practices comes not merely from within the state, however. This is a period of intense scrutiny of developmental education by researchers, policymakers, philanthropic organizations, and national initiatives. This scrutiny has resulted in broad agreement that changes in practice related to developmental education are needed to:

- Improve students’ rates of successful course completion, and
Compress the amount of the time required for developmental students to become college-ready.

Various approaches to meeting these goals are increasingly cited. For example, research draws attention to the importance of better integrating developmental instruction with a suite of support services that ensure students stay engaged, receive assistance, and maintain a sense of forward progress toward their goals. Contextualization raises questions about the relationship between developmental courses and occupational or academic content in the rest of the curriculum. And the fact that students who begin at the lowest levels of remedial sequences are unlikely to complete those sequences has prompted some educators to think differently about the structure and goals of remedial sequences, through approaches such as acceleration and modularization.

In regard to state policies that support such innovation, California’s position is mixed. On the one hand, some have argued that state categorical funding structures and other restrictions, such as the requirement that colleges spend half of funds on direct classroom instruction, constrain administrators’ ability to “allocate college funding in ways designed to maximize student success” (Moore, Shulock, et al., 2007, pg. 40). On the other hand, California regulations allow for a variety of flexible course configurations, including open entry/exit courses, distance learning, supplemental assistance, and independent study.

Current fiscal constraints are of particular concern because of the time and resources needed for experimentation and the expenses associated with some models for providing extra supports to students.

Reducing the need for remediation remains a complicated goal to pursue.

The state of California would benefit financially and in terms of the educational level of its citizenry if fewer students entered community college in need of developmental education. That ambitious goal is complicated by many factors. For example, at the statewide level, there is not a straightforward policy about what students should know and be able to do at the end of high school, and for which postsecondary paths. As a result, students do not necessarily understand what level of high school preparation could land them in remedial instead of college-level courses.

The diversity of assessment practices among the California Community Colleges also leaves the system’s entrance expectations unclear. Pressure continues to increase for colleges to adopt a more uniform approach to the assessment of incoming students. A current proposal originating in the Chancellor’s Office—the Online Common Assessment Project, or CCCAssess—would provide a structure for colleges to save money by using common, centrally-delivered assessments, while providing students and counselors more complete information.

The California Community Colleges are also becoming more involved with the state’s Early Assessment Program (EAP), developed in 2004 by the California Department of Education, the State Board of Education, and the California State University (CSU). The EAP provides high school students with early feedback during the summer before their senior year about their preparedness for college-level classes in English and math. Many community colleges have agreed to accept some or all EAP results as a basis for exempting students from placement testing in English and/or mathematics, with more considering doing so. And some colleges have identified an EAP coordinator to conduct outreach to local high school students, in coordination with CSU.
Absence of clear and consistent data from the colleges is an obstacle to improvement

“The first step toward improving performance outcomes in developmental education is to get a firm handle on current student and institutional performance,” argues Michael Collins, a program director with Jobs for the Future (Collins, 2009, pg. 17). He adds that one key step in doing so is to gather data that clarify the need for developmental education and illuminate how that varies among different groups of students, depending on their age, ethnicity, and full-time versus part-time status. And a new national initiative—the Voluntary Framework for Accountability—is working toward developing measures that could be used by community colleges and easy for the public to understand.

California’s Basic Skills Accountability Report has helped highlight the need for more data standardization in the state and prompted an institutional response. For example, faculty have been addressing inconsistencies in how colleges have coded the course “levels” of their remedial sequences historically. The result is a series of rubrics that provide a common framework for coding the level of each remedial course within a sequence, more clearly defined in terms of levels below the transfer level. The rubrics related to credit courses define four levels below the transfer-level in writing (English), reading, and mathematics, with each level defined according to its general learning outcomes, or exit skills (ASCCC and CCCCO, 2010).

The new coding will enable more meaningful statewide data on student progress through remedial sequences. It could also provide a foundation for better articulating high school courses and noncredit adult basic education courses with credit instruction. Some worry the new coding system could institutionalize remedial course sequence structures that should be revised; others view common coding as a necessary first step for considering changes.

The conclusions and policy implications of this study

Current enrollment pressures, combined with financial constraints, have created something of a perfect storm for the California Community Colleges. That storm is testing their commitment to developmental education and their ability to strengthen the programs and services they provide.

But the community colleges cannot afford to ignore the rising call, both in California and nationally, for greater success rates for their students. As long as open access remains a core operating principle for these public institutions, improving developmental education and increasing student success are goals that go hand in hand.

The findings from this study have implications for college officials and state leaders as they continue to pursue both the access and success goals of the system.

Reducing the need for developmental education is a complex and long-term challenge. California’s state leaders ought to consider every strategy available for improving high school students’ preparation for community college. Current efforts to clarify academic expectations (such as the Early Assessment Program) and promote the use of common assessments are important first steps.

Delays in remedial course-taking are entwined with other issues and solutions need to be approached thoughtfully. For example, this study suggests that colleges might first focus on encouraging students to enroll early in remedial courses in writing. But deeper and more detailed research into local patterns would be an important precursor to the implementation of such a strategy on a given campus. Campuses might also want to examine their course schedules to determine ways they could encourage students to enroll in a given remedial sequence continuously, without interruption. Stronger support for students’ success during their first year could also help students in completing remedial sequences.
Students who enter the community colleges at the lowest levels face daunting odds. Further, black/African American and Hispanic students in the cohort studied were overrepresented at the lowest levels of the mathematics and writing sequences. The same was true for Asian students in writing. This raises questions about strategies for better supporting these students. For example, colleges in five counties educate two-thirds of African American community college students. A state-led focus on these colleges could have great benefit.

Innovations in developmental education need to be implemented and evaluated. What works where, for which students, and under what conditions warrants extensive and careful investigation. But for local educators and the state to learn more effectively from these efforts, common frameworks for measuring and evaluating outcomes are also essential. The system’s movement toward more standardized coding of course levels below transfer and toward other common metrics should be encouraged and supported.

The efficacy of the state’s investment in developmental education warrants more attention. It is not clear that the colleges have sufficient resources or motivation to bring successful innovations to scale and fully integrate them into existing curricula and services. But when students attend college and never leave the developmental sequence, it is costly both for them and for the state. Helping students get through developmental sequences in less time would help address this issue. Making sure students are aware of their options could also be a good investment for the state and for those students who are currently at the greatest risk of leaving community college empty-handed. For example, California might be better served if more students were encouraged to participate in high quality career technical programs rather than the emphasis being placed so heavily on transfer courses.
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