Improving Developmental Education Assessment and Placement: Lessons From Community Colleges Across the Country

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Abstract

At open-access two-year public colleges, the goal of the traditional assessment and placement process is to match incoming students to the developmental or college-level courses for which they have adequate preparation; the process presumably increases underprepared students' chances of short- and long-term success in college while maintaining the academic quality and rigor of college-level courses. However, the traditional process may be limited in its ability to achieve these aims due to poor course placement accuracy and inconsistent standards of college readiness. To understand current approaches that seek to improve the process, we conducted a scan of assessment and placement policies and practices at open-access two-year colleges in Georgia, New Jersey, North Carolina, Oregon, Texas, Virginia, and Wisconsin. We describe the variety of approaches that systems and colleges employed to ameliorate poor course placement accuracy and inconsistent standards associated with the traditional process. Taking a broad view of the extent of these approaches, we find that most colleges we studied adopted a *measured* approach that addressed a single limitation without attending to other limitations that contribute to the same overall problem of poor course placement accuracy or inconsistent standards. Much less common were *comprehensive* approaches that attended to multiple limitations of the process; these approaches were likely to result from changes to developmental education as a whole. Drawing from the study's findings, we also discuss how colleges can overcome barriers to reform in order to implement approaches that hold promise for improved course placement accuracy, more consistent standards of college readiness, and, potentially, greater long-term academic success of community college students.

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1. Introduction

A student matriculating at an open-access two-year institution is typically assigned to a set of courses that are deemed appropriate to his or her level of academic preparation. At most community colleges, this assignment is based on standardized placement exams that measure English and mathematics skill levels (Hughes & Scott-Clayton, 2011). Students who score above a cutoff are viewed as ready to take college-level courses in that subject area, while students who score below the cutoff are referred to developmental coursework in that subject area. The goals of the developmental education process are threefold: to ensure that students are successful in their first college-level courses; to provide students with the additional preparation needed to succeed in later courses; and to enable institutions to maintain standards of academic quality and rigor in college courses.

Recent research, however, has challenged the notion that the traditional developmental education process improves students' long-term academic success, given that the majority of students who enroll in developmental courses never complete their requirements, much less move on to college-level coursework (Bailey, Jeong, & Cho, 2010; Jenkins, Jaggars, Roksa, Zeidenberg, & Cho, 2009). As researchers and practitioners work to clarify the problems with the current system and test potential solutions, many have focused on improving the developmental curriculum or course pedagogy (e.g., Edgecombe, 2011; Hodara, 2011; Perin, 2011), while others have examined the assessment process itself (e.g., Hughes & Scott-Clayton, 2011; Venezia, Bracco, & Nodine, 2010). Research on developmental assessment has identified at least two problems with the typical assessment process: poor course placement accuracy and inconsistent standards of college readiness.

1.1 Poor Course Placement Accuracy

Student performance on standardized placement exams is weakly correlated with success in college-level courses; consequently, when colleges use these exams as the sole instrument of placement, a large proportion of students may be placed into courses for which they are underprepared or overprepared (Belfield & Crosta, 2012; Scott-Clayton, 2012). The tests' poor predictive validity may be due to a number of factors, each of

which represents a specific limitation of the typical assessment process. These include: (1) a lack of student preparation for the tests and understanding of the process, (2) a misalignment between the test content and academic curriculum and standards in college courses, and (3) the use of a single measure for placement.

First, many students are unaware of the purpose and consequences of the placement exams (Grubb et al., 2011; Venezia et al., 2010). Open-access colleges may be reluctant to stress the high-stakes nature of the exams for fear that students will misinterpret them as admission exams (like the ACT or SAT used at more-selective colleges). Students may be told that they cannot fail the exam, or that the exam is intended only to match them to the best possible courses. It is not surprising, then, that some students do not prepare for the exams or even set aside adequate time to complete them. Such students may have potential to do well in a college-level course, yet perform poorly on the relevant placement exam.

Second, standardized exams may have low validity because they are poorly aligned with the academic standards and expectations of college-level coursework. For example, math placement exams are typically designed to determine whether students are prepared for a college-level algebra course (Hughes & Scott-Clayton, 2011). Yet a liberal-arts student may be able to fulfill her college-level math requirement with a quantitative reasoning course, which does not require the same set of foundational concepts as college-level algebra (Cullinane & Treisman, 2010). As a result, even if the student prepared properly for the math exam and set aside sufficient time to complete it, her score on the exam may be a poor indicator of how well she would perform in her college-level math course.

Third, a single score on a test of academic proficiency provides only a partial indication of a student's degree of readiness for college coursework (Conley, 2010). Non-cognitive measures may be stronger predictors of course success. In particular, high school grade point average (GPA) is a better predictor than standardized placement exam scores of students' success in college-level math and English (Belfield & Crosta, 2012; Scott-Clayton, 2012), as well as a much stronger predictor of college graduation than SAT and ACT scores (Bowen, Chingos, & McPherson, 2009). This superior predictive power suggests that GPA signals far more than just math or writing proficiency; it is also

a measure of students' "motivation and perseverance" (Bowen et al., 2009, p. 124). A more comprehensive and, perhaps, accurate assessment and placement process would determine students' college readiness in the areas of cognitive strategies, academic behaviors and attitudes, and "college knowledge," domains that may be just as important for college success as academic proficiency in English and math (Conley, 2010; Karp & Bork, 2012).

1.2 Inconsistent Standards of College Readiness

A second overall problem is inconsistent standards of college readiness, which may have consequences for students as they navigate the educational pipeline. At least two factors contribute to inconsistent standards. First, high school graduation standards are often misaligned with standards for entry into the local community college, contributing to a difficult transition between secondary and postsecondary schooling (Venezia, Kirst, & Antonio, 2003). Second, different placement standards for two-year colleges within a state or system can cause frustration and confusion for students. In a study of California community colleges, Venezia et al. (2010) explain that:

> The inconsistencies were most problematic for students
> who were shopping around for classes at different colleges
> in the same region and receiving different answers, or
> encountering different expectations, from the various
> colleges. For example, we spoke with students who started
> in a particular level of basic skills and worked their way out
> of that level at one college, only to place below that level at
> another. (p. 14)

While there may be some advantages to aligning college entry-level standards with the local population, system-wide assessment and placement policies send a clearer message to high schools about standards of college readiness and facilitate lateral transfer between colleges within the same system (Prince, 2005).

1.3 Purpose and Organization of This Paper

To understand current approaches to assessment and placement that seek to address poor course placement and inconsistent standards of college readiness, we conducted a scan of assessment and placement policies and practices at open-access two-year public colleges across the country. In section 2, we provide a brief description of our

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data collection and analysis—the scan included interviews with hundreds of community college stakeholders at 38 institutions in seven different states. Then, we present our main findings. In section 3, we describe the variety of approaches that systems and colleges employed to address the three limitations that contribute to poor course placement accuracy and the two limitations that contribute to inconsistent standards of college readiness. In section 4, we take a wider view of our findings and discuss the extent to which systems, states, and colleges employed the various approaches. We find that most colleges adopted a *measured* approach, which addressed only a single limitation without attending to other limitations that also contribute to the same overall problem of poor course placement accuracy or inconsistent standards. In contrast, a *comprehensive* approach attends to multiple limitations of the process and largely results from changes to developmental education as a whole. We provide examples of two systems that are implementing a comprehensive approach. In the conclusion, section 5, we discuss how colleges can overcome barriers to reform to implement approaches that hold promise for improving course placement accuracy, creating consistent standards of college readiness, and, potentially, impacting the long-term academic success of community college students.

2. Data Collection and Analysis

Our findings are based on interview data from stakeholders at state-level offices and two-year colleges in seven states across the country. The data collection process (described in more detail in Appendix A) began by selecting a set of states that varied in terms of their geographical location, mix of technical versus community colleges, and degree of centralization. Table 1 outlines the primary features of each state. Of the seven selected states, two had separate systems for community colleges and technical colleges, resulting in nine "systems" in the study sample.

In each state or system, we spoke with state-level officials and then solicited interviews from targeted respondents at institutions who were recommended to us by other respondents because of their knowledge of assessment and placement or recent changes to the process. In total, we interviewed 183 respondents (see Appendix Table

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Table 1
Features of Selected States and Public Two-Year Colleges

State	Two systems	Centralized	Decentralized	Number of colleges[a]	Fall 2010 enrollment	Percent minority
New Jersey			✓	19	180,406	50
Oregon			✓	17	108,884	29
North Carolina		✓		58	253,871	48
Texas		✓		64	710,864	51
Virginia		✓		23	197,004	29
Georgia	Technical College System of Georgia	✓		25	190,842	51
	University System of Georgia[b]	✓		8	49,386	58
Wisconsin	Wisconsin Technical College System	✓		16	115,555	18
	University of Wisconsin[c]	✓		13	14,385	11

Notes. A centralized system has a governing board and system office that set system-level policies; a decentralized system has no board and no system office. Total enrollment is the full-time equivalent fall 2010 headcount from the Integrated Postsecondary Education Data System (IPEDS). This is a conservative estimate of the number of students who attend these colleges. Percent minority is also from IPEDS.
[a]The following colleges are not represented in this table and are not included in the study: one public, two-year college in Virginia that is not affiliated with the Virginia Community College System; six public, two-year military colleges in Georgia; two public, tribal community colleges in Wisconsin that are a part of the American Indian Higher Education Consortium.
[b]Six of the eight two-year colleges became four-year colleges after our data collection.
[c]The University of Wisconsin two-year colleges are not independent institutions; they function more as two-year branch campuses of the University of Wisconsin—they share the same upper-level administration (e.g., the Chancellor), admissions, financial aid, and registration staff and policies.

B.1). Interview questions covered a range of specific assessment and placement issues but focused on two general objectives. First, we wanted to understand the official policies of each state or system at the state-level (these are outlined in Appendix Table B.2). These data provided us with critical information on the policy context institutions in our sample were working under as well as current approaches that addressed limitations of the traditional assessment and placement process. Second, we wanted to learn about recent and ongoing changes to the assessment and placement process. To analyze the data, the research team first summarized the range of current policies and practices across

the sample, as well as recent and ongoing changes. We then returned to the interview transcripts and used Atlas.ti[1] to uncover respondents' rationales for maintaining the status quo, adopting a unique approach, or implementing changes to the process.

3. Addressing Limitations of the Assessment and Placement Process

In this section, we present the approaches we found across our sample that attempt to improve course placement accuracy or create consistent standards of college readiness.

3.1 Improving Course Placement Accuracy

Colleges that worked to improve the accuracy of student placement engaged in at least one of three approaches, each of which addressed a limitation that contributes to poor course placement accuracy. These include preparing students for the placement exam process, aligning standards of college readiness with expectations of college-level coursework, and using multiple measures of college readiness as part of the placement process.

Preparing students for the process. Colleges worked to prepare students for the placement exams at two different points. While a small but growing number focused on students who were taking the exam for the first time, most focused on students who were re-taking the exam after an initial failure. For first-time test-takers, the majority of colleges provided links to sample tests on their websites to help students prepare for the placement exams, but only a handful had any systematic practice in place to direct students to these online materials or other test-prep resources. The exception was a few technical colleges in Georgia that required entering students to sign contracts prior to testing stating that they were informed about the test, its purpose, and what they could do to prepare. These colleges also provided free tutoring to help entering students prepare for the test.

In contrast to the paucity of first-time test-prep resources, all colleges that allowed re-testing directed students to online review materials, and some offered "brush-up" or

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[1]Atlas.ti. Version 6.2.15 [Computer software] (2012) Berlin, Scientific Software Development.

"refresher" courses prior to re-testing. Perhaps the most systematic and comprehensive re-test review was created by a North Carolina community college. Their review was initially designed as a set of face-to-face review sessions, which was required prior to re-testing among students who placed into *two or more* developmental courses. The success of this practice convinced college leaders that the review and the opportunity for re-test should be offered to *all* students who placed into developmental education. As one faculty member explained:

> We found that the test wasn't really accurately measuring students' competencies. The students would often come to the college not even aware they had to take a placement test. They were led into the testing area, and the students were tired or had time constraints, and they didn't take it seriously.... It wasn't really an accurate measure.

In order to scale up the re-test review, the college created an online course for the reading, writing, and math placement exams, which students can access and complete from any computer at their convenience. The online course opens with a video of a student explaining the importance of the placement exams and the content of the review. For each subject, the course includes approximately one hour and twenty minutes of content: a diagnostic pre-test, information on areas where the student is weak, instructional videos that cover the test content, a post-test, and additional resources to help students prepare for the test, such as PowerPoint presentations created by faculty and links to ACT online practice materials. The online review course is now available not only to students who are re-testing but also to those testing for the first time, and the college has shared the course with other community colleges throughout North Carolina.

Overall, implementing placement test review seems to improve placement accuracy, in that it increases student access to college-level coursework without harming their academic success. For example, the descriptive findings from the North Carolina college show that from fall 2010 to spring 2011, among all students who took the review course before re-testing, about 60 percent tested at least one level higher in the developmental reading and English sequence than they had previously tested, and about 35 percent of students tested at least one level higher in the developmental math

sequence. Additionally, these students had similar or higher pass rates in the courses they retested into, compared with their counterparts who placed directly into the course.

Aligning standards of college readiness with expectations of college-level coursework. Although review sessions may improve student performance on the placement exam, the exam itself may remain a poor placement instrument if the skills and knowledge required to "pass" the exam are misaligned with the foundations required for success in college-level courses. Recognizing this, colleges frequently employed three tactics to improve alignment: allowing flexibility in entry standards across programs of study, raising cutoff scores across the board, and/or developing customized exams.

Flexibility in program entry standards. Many institutions in our sample acknowledged that different academic and professional pathways require different levels of academic preparation. Accordingly, colleges commonly set different cutoff scores and prerequisite requirements for different introductory college-level math courses. Typically, courses required of math-intensive programs required higher cutoff scores and more prerequisite courses, compared with math courses required of liberal arts or terminal degree programs. For example, the Georgia technical college system set lower cutoffs for enrollment in college courses required of certificate degree programs compared with those required of two-year associate degree programs. The Wisconsin technical college system had the largest variety of entry-level standards across a system in our sample; as one faculty respondent explained, programs at each college determined their own entry-level standards based on "the level of academic preparation students needed to succeed in [the program's] coursework."

Allowing flexibility in program entry standards provides two potential advantages for students. First, it may allow a higher number of students to access a college education. As one faculty member in North Carolina put it, the strategy creates "more varied pathways for students so that they can be successful." Second, differing standards may allow degree programs to be more responsive to the demands of the local labor market. A Wisconsin technical college faculty respondent explained that degree programs take into account the employment needs of the community when setting admissions standards:

> If we set the scores too high to get into a program, the
> students just won't go into that program. And then that

program goes away, and employers will go somewhere
else. But, we want to bring those students in.

Raising cutoff scores. A second common approach that colleges used to address misalignment between the placement exam and necessary college-level skills is raising placement exam cutoff scores across the board. For example, based on low student success rates in introductory college coursework for certificate programs, the technical college system of Georgia concluded that placement cutoff scores were misaligned with course expectations. As a result, the technical college system raised system-level minimum cutoff scores for certificate programs. Two other systems used a similar rationale to raise cutoff scores across multiple programs of study.

However, increases in entry-level standards were not always the result of a perceived misalignment. In some cases, they reflected efforts to manage student enrollment and maintain academic standards as the student body grew in size. For example, one faculty respondent explained why some technical colleges in Georgia have higher cutoff scores than the system-level minimums, while others do not:

Other schools, especially the rural ones, they probably
don't need such high cut scores. But in metropolitan areas,
students are vying for seats, so it's good to be able to raise
the cut scores and demonstrate students' readiness.

In other cases, increases in entry-level standards were aimed at improving completion by limiting who the colleges serve in traditional pathways. In particular, we observed a trend in implementing new cutoff score floors across three systems. Previously, students with the lowest placement scores had been served in the lowest levels of developmental education. Now, students who score below the cutoff score floor are no longer served in the developmental education sequence. They are instead referred to Adult Basic Education or, in some cases, the institutions create an alternative set of non-credit courses for these students.

Developing customized exams. If the content of the placement exam is well-aligned with the content of the college-level courses required by the student's program of study, and the cutoff is simply too low to capture mastery of the needed foundational skills, then raising the cutoff may be an effective response. However, if the content of the

exam is fundamentally misaligned, or, as in many cases, aligned with some college-level courses but not others, then raising the cutoff may not help matters. Therefore, to more directly address the misalignment issue, some institutions or systems used "homegrown" placement exams that were customized to the developmental and college-level curriculum. We saw examples of customized exams in Oregon, Texas, Wisconsin, Virginia, and North Carolina.

In Oregon's community college system, colleges may select their own placement exams. Among the Oregon colleges included in our sample, most chose to use commercially available standardized exams; however, one college's math department developed their own customized assessment. Dissatisfied with the placement accuracy of the commercial exam it had been using, this college borrowed a homegrown math placement exam from a neighboring community college and then adapted it for its own needs and curriculum. The assessment was used in conjunction with other factors to determine placement, as discussed in a subsequent section on multiple measures.

In Texas, community colleges may choose to use one of three approved commercial exams or the Texas Higher Education Assessment (THEA) to assess incoming students. The THEA was designed to align with the state's College and Career Readiness Standards, and Texas respondents expressed the sentiment that "it is a better assessment tool" than the approved commercial exams. However, some respondents also voiced concerns about it being more expensive to administer, and these costs are sometimes passed down to students. At the time of data collection, Texas was considering moving toward exclusively using the THEA as the statewide assessment instrument.

The University of Wisconsin first developed its customized exams in the 1970s. Twice a year, faculty from across the system of two-year and four-year colleges meet and receive training from psychometricians on item analysis, discuss the assessment and placement process, share changes to the curriculum in their discipline, review existing items, and create new items. A system-level official described the advantages of this process:

> The folks that work on these committees absolutely love
> it…. They are learning skills to help them develop their
> own assessments. Also, they can talk to colleagues across

the state about curriculum and assessment, and that makes it worthwhile. What we really like and really value is that it is tightly linked to us and it's completely in our control.... We control the balance of content, the types of objectives we assess. If we want to do something differently, we can do it…. That is something that is lost on a lot of people, but it is really huge…. If it is just a test off the shelf and other people are determining the content and administration, I really have no way of knowing how valid and appropriate it is for my use.

The system reported that the exams are highly predictive of student success in coursework they are placed into. Some two-year colleges, however, felt that the exams alone were insufficient to determine placement, as discussed in more detail in a subsequent section on multiple measures.

During the course of our data collection, the Virginia and North Carolina community college systems were planning for the development of customized exams for both English and math. Virginia is now in the process of implementing its new exams, while North Carolina's exams are still under development. In a subsequent section, we will describe these exams in more detail, in the context of larger developmental reform efforts taking place in each state.

Assessing multiple measures related to college success. Even if a student prepares for the placement exam, and the placement exam and standards are aligned with the student's program of study, the exam's placement accuracy may still be limited by the fact that college readiness is a function of myriad academic and non-academic factors (Karp & Bork, 2012). A more comprehensive multiple measures approach would provide colleges with more information about the specific areas their students are struggling with and the types of interventions, both academic and non-academic, that they need to prepare for and be successful in college-level courses (Conley, 2010; Hughes & Scott-Clayton, 2011). In our sample, we identified three institutions that were following this approach: a Wisconsin technical college, a University of Wisconsin two-year college, and an Oregon community college.[2]

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[2] There were also faculty at community colleges in Virginia and Texas administering a non-cognitive assessment, most commonly the LASSI, but this practice was not a part of the matriculation process for all

Non-cognitive assessment at a Wisconsin technical college. Several years ago, the college conducted a set of institutional research studies showing the complexities surrounding student course failure. As one administrator explained, this work prompted the design and implementation of a new non-cognitive assessment:

> We found common measures, like COMPASS, did not tell us who would succeed in programs and who would succeed in courses. The biggest reason students were failing was because of non-cognitive factors: weaknesses in degree choice, a lack of social support, financial concerns, and self-efficacy. We have found that learning confidence and learning habits are better determinants of success than cognitive measures. The [non-cognitive] test gives us a better prediction of who is going to have difficulty and why.

The college's new assessment was based on the Learning and Study Strategies Inventory (LASSI), a commercial non-cognitive assessment, but they customized the exam to fit their student population and evaluate students' strengths and weaknesses in the areas of career choices, learning habits, financial resources, social support, verbal confidence, math and science confidence, and prior academic experiences. Beginning in fall 2008, the college began administering the non-cognitive assessment along with the traditional placement exam used to determine students' first-semester course placement. The non-cognitive portion does not alter students' course placement, but is used to provide students with targeted counseling in an effort to improve their academic success. Students scoring low in areas related to academics are referred to an advisor while students scoring low in areas related to non-academics are referred to a counselor. College "intervention" staff work with students over email, phone, or in-person on the issues identified by the assessment. They may counsel students directly or refer them to other resources and supports. As described by one respondent, the counseling session might proceed in the following way:

> We sit down and look at [the assessment] scores. We talk about the challenges they might have and what kind of things we can do for them. If they say, I can't afford this school, but they may not know about Pell, FAFSA, I talk to

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entering students; instead, it occurred during the first week of class and was used to help guide instruction and provide students with targeted assistance within the classroom.

> them about it. If they ask more questions that I can't answer
> I make them an appointment with a financial aid officer.
> We hand off students a lot to each other. If [the advisor]
> gets someone that needs career counseling, [the advisor]
> sends them to me and I talk to them about their goals. If
> they need the Academic Services Center, I send them to
> [the advisor]. We talk about transfer. I help them fill out
> college applications…. Sometimes I call their instructors up
> about them. Sometimes I refer them out. Sometimes I take
> them to the health clinic. I've had three in the last year that
> I have taken to the doctor because of depression issues.
> There are quite a variety of things.

This description illustrates how the assessment process can be used to determine students' non-academic needs and provide them targeted counseling and advising in an effort to improve their academic performance.

   Multiple measures at a University of Wisconsin two-year college. In an earlier section, we described the University of Wisconsin's customized placement exam. While the placement exam seemed to perform well across the university system, English faculty at a small two-year college felt that they needed additional information, for two reasons. First, the English faculty felt a single exam could not provide the kind and amount of information required to determine the appropriate English placement for entering students. As one faculty member noted, "the [placement exam] is basically an editing instrument that doesn't tell you anything about the student." Second, the college had recently introduced supplemental courses to help prepare students for English Composition—including academic reading, a composition tutorial, courses that developed learning and study skills, and a conversation course for language minority students in the process of learning English—but the college did not have an effective way to refer students to these courses.

   As a result, the college's faculty and staff gradually changed the placement process by first introducing a writing sample to supplement the multiple-choice placement exam. They then worked with student services to access and review students' ACT scores, high school grades, class rank, math placement scores, and TRIO eligibility. Next, they added a student survey that asks incoming students about their high school curriculum, how long they have been out of school, and home language. Faculty review

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each student's profile of multiple measures at the beginning of each semester to make course recommendations. Students are referred to an English course (either first- or second-semester college English Composition, developmental English, or an English course for language minority students in the process of learning English), and, if needed, one or more supplemental courses.

This alternative approach functions well within the highly standardized University of Wisconsin policy environment because the faculty provide students with two options: (1) they may choose their assignment based on their placement score alone, or (2) they may choose their recommended assignment based on the review of multiple measures. For example, if the test score places a student into developmental English, but their high school record shows they did reasonably well in English courses, the student might be offered the option of either enrolling in developmental English (the exam-based placement) or enrolling in first-semester college English *and* the composition tutorial (the multiple measures-based recommendation).

Faculty at the college felt the new process was much more effective in providing students with the supports they needed, and the process began to spread to English departments at other two-year colleges. Given the intensive nature of the approach, however, it is perhaps not surprising that it was replicated only at other small colleges (with enrollments of around 1,000 students). A faculty member reported spending about 10 minutes reviewing each student file and making course recommendations, which amounted to about 40 hours for 250 student files in one semester. Respondents recognized that it may be much more difficult to implement this approach at a larger college unless there is broad support from student services, dedicated faculty willing to give their time to review student files, and compensation attached to reviewing student information. Yet they also viewed a multiple measures approach as a necessary component to setting students up for success. One faculty member described the benefits of the process:

> I think this is a superior model because every student is an
> individual, and determining every student's ability to be
> successful is a complicated, individual process. We know
> that we have a student with an essay sample that says they
> had a mental illness in high school and they have low high
> school grades. We are going to respond to that differently

than a student with great grades in high school and the same performance on the essay. We might say the first student might benefit from a slower start and a learning skills course and the next student may do fine in second-semester English Composition.

Furthermore, institutional research from one college found some support for the effectiveness of this process. Since the process was implemented, the proportion of students on academic probation (with a GPA below 2.0) fell from 20 percent to 16 percent. In addition, 61 percent of students who followed the recommended placement based on multiple measures were in good standing compared with 43 percent of students who enrolled in English coursework based solely on their placement score.

Student self-placement at an Oregon community college. A different type of multiple-measures approach was being used at a small community college in Oregon. The college requires students to take a customized math placement test (described in a previous section), but faculty regard the exam as only "a guideline" in terms of the student's placement. An advisor or math faculty member then reviews the results in consultation with the individual student, to help the student make his own choice in terms of first-semester math coursework.

This was the only college in our sample that used self-placement. Personnel from the college believed that the self-placement approach worked well because it leveraged multiple sources of information: student performance on the math placement exam, advisor or math faculty experience and judgment, and students' own self-knowledge of their math preparedness. One respondent described the process in such a way: "We don't have a lot of limitations on what a student can register for, but we do require that they go through a process to be informed." Similar to the University of Wisconsin two-year colleges that adopted the multiple-measures approach, this Oregon community college is small. Given that their approach requires personal advisement from advisors and faculty with every single entering student, the practice may not be feasible at a large college handling thousands of new entrants each semester.

Overall trends in improving course placement accuracy. To summarize, we found three primary ways systems and colleges sought to improve placement accuracy. First, some colleges explicitly prepared students for the exam, though this tactic tended to

focus on students who wished to re-test rather than on first-time exam-takers. Second, some colleges sought to increase the alignment between exams and college-level course content, by designing customized exams and/or setting different cutoffs for different programs of study. Another common tactic to improve alignment was to raise standards altogether. In this context, it is important to note that if misalignment is qualitative (i.e., the test content does not match the necessary foundational skills) rather than quantitative (i.e., the test content matches the necessary skills, but there is a gap between the cutoff and the necessary level of mastery), then raising cutoff scores will not in fact improve placement accuracy (Scott-Clayton, 2012). Third, we found multiple measures approaches occurring at three individual institutions. In general, these approaches were resource-intensive, raising the question of how to implement multiple-measures approaches at large resource-constrained institutions. In the following section, we turn to approaches that seek to address inconsistent standards by building consensus on the meaning and measurement of college readiness.

3.2 Creating Consistent Standards of College Readiness

Two approaches addressed limitations that contribute to inconsistent standards. First, across our sample, many systems and institutions were wrestling with a perceived disconnect between high school graduation and college readiness standards, so colleges were working with local high schools or secondary systems to assess high school students using college readiness standards. Second, while we did not find unanimous consensus across our sample that these standards had to be same across community colleges within the same state or system, four states were moving toward greater standardization, representing a trend across our sample in creating consistent standards at community colleges across a state.

Assessing high school students on standards of college readiness. There were two ways systems and institutions in our sample worked to assess high school students using college readiness standards: administering placement exams to students in high school, and aligning high school exit exams with college readiness standards.

Administering placement exams in high school. This tactic was fairly common; at least one institution in each of the nine states/systems in our sample administered its

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placement exams at local high schools. A few colleges were also directly involved in designing academic interventions for secondary students who failed the exam.

For example, a community college in New Jersey used grant funding to set up a process in which all seniors at the local high school took ACCUPLACER. Students who scored 10 points below the college-level cutoff on ACCUPLACER were provided free access to placement test preparation software and then were retested after completing the curriculum. A math faculty respondent involved in this initiative reported that it was a fairly effective means of reducing the remediation rate of high school students who failed the ACCUPLACER. However, this respondent also felt that the process did not necessarily help prepare high school students for the college curriculum, due to misalignment between the high school curriculum, the placement exam, and the college curriculum:

> [The high schools] have the HSPA [NJ High School State Assessments], so they are preparing their students to pass HSPA, but most of them won't pass ACCUPLACER. A lot of high school teachers have taken ACCUPLACER, but they don't teach in that way. It's the same general concepts but the questions are different. So they complain a lot about the ACCUPLACER. But, to try and change the high school curriculum is difficult, so I am bringing an English professor with me to a high school, and we are going to try and align our college curriculum to the high school curriculum.

In general, however, it was highly unusual for colleges to work with the secondary sector to offer interventions to high school students who performed poorly on the placement exams; most left these efforts to the high schools. Some of these colleges reported that high schools were responding well to the placement exam feedback. For example, a system-level official explained the results of administering the University of Wisconsin placement exams to high school juniors:

> We found that entering freshmen who placed into remedial math on the placement exam as a [high school] junior had a remedial rate that was half the rate for the [non-early assessment] user. So, we are hoping they were remediated in their senior year. We hear from [high school] teachers that they are changing the way they are teaching and that they are creating new classes, half-step classes…. So those

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students are benefiting tremendously from the school
recognizing that they need something a little different than
what they were offering and the school trying to tailor their
curriculum.

Aligning high school exit and college entry standards. Aligning standards for
high school exit and college entry is a second way to smooth the secondary-
postsecondary transition. The Common Core State Standards have established a
consistent set of standards regarding what students should be able to know and do by the
time they graduate from high school so that they can succeed in introductory, college-
level coursework (Common Core State Standards Initiative, n.d.). The participation of
postsecondary institutions in implementing these standards could have a profound
influence on improving the high school-to-college transition (Education Trust, 2011). In
interviews with respondents, we explicitly inquired about efforts to align their college-
ready standards with the Common Core standards, but no respondents were aware of any
movement in this direction. However, a small number of institutions were thinking about
how to align statewide high school standards with their college entry standards.

Among the systems in our sample, Texas was on the forefront of this
development. As one Texas respondent explained, previously "you could show you were
ready to graduate from high school in terms of math and language competencies, but that
same student who was ready at the high school level was not ready to enter college and
undertake freshman level courses." To address this problem, the state's K-12 agency and
higher education system collaborated to develop the Texas College and Career Readiness
assessment, which is aligned with college-readiness standards and is now deployed as the
state's high school exit exam. High school students who meet standards on the exam are
exempt from remediation at college. Moreover, as noted in a previous section,
community colleges in the state are moving toward adopting the THEA placement exam,
which was designed to align with the College and Career Readiness assessment. This
level of alignment requires collaboration on all levels; as one system-level official
explained:

My advice to other states: It's important that you get your
K-12 and higher education sectors working together. You
need to have state policymakers from the two sectors

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working together, folks from institutions working together, local community colleges and high schools working together, and faculty must be involved so when you go about trying to align the curriculum, you have K-12 and higher education faculty to inform those standards and work on material relating to those standards.

Creating consistent standards at community colleges across the state. Even if colleges are working with local high schools to assess students early, and the state has worked to align its high school exit exam with college readiness standards, the transition into college may still be hampered because colleges within the same system have inconsistent placement standards—either because they are using different exams to measure those standards or because they use different cutoffs for the same exam. In our sample, one state had recently worked through a process to standardize assessment and placement policies across its community colleges.

In New Jersey, prior to 2009, the 19 community colleges chose their own placement instruments and set their own exemption policy and cutoff scores. Respondents noted that this level of institutional flexibility resulted in inconsistencies in entry-level standards that were unfair to students and led to unclear standards of rigor in community college coursework across the state. The strong push for change, however, sprang from two legislative developments. First, in 2004, the state created the New Jersey Student Tuition Assistance Rewards Scholarship (NJ STARS), a state scholarship program, to cover full community college tuition for students who met college readiness standards. Community college leaders immediately recognized that their divergent tests and cutoff scores would complicate the scholarship awards process. A high-level administrator explained the issue:

Once we had this NJ STARS program, it would be hard to say to a student, You can be a Star because you scored a 73 [on the math placement exam] in Camden, but if you are in Burlington you have to have a 75 [on the math placement exam] to be a Star. Once there was a statewide program that offered benefits to students coming out of high school, it was incumbent on us to be able to say that wherever you were in the state you could access these benefits with the same score on a test.

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Then, in 2007, legislation passed guaranteeing junior-status to community college students who earned an associate degree and were admitted to a public four-year college. In anticipation of this legislation, the Presidents' Council was asked to demarcate a set of transferable courses, and community colleges began a review of general education courses to ensure consistent statewide standards. This process further increased awareness of the wide variation in college-level entrance standards across the state, which eventually led to a statewide standardization process.

The New Jersey standardization process was remarkable in that the state system is highly decentralized; the work was carried out by the colleges themselves through a process of collaboration and compromise. The academic officers identified faculty members from each college to serve on math and English committees that were tasked with developing statewide cutoff scores and exemption policies; these committees also included testing center coordinators and institutional researchers. The community college presidents eventually agreed to use the same placement exam (ACCUPLACER), SAT-based exemption policy, and college-readiness cutoffs on the math and English placement exams. Though colleges were not required to adhere to the resulting policies, all colleges voluntarily chose to follow them (although a few larger colleges have supplemented the English essay exam with additional assessment measures).

The most immediate outcome of New Jersey's standardization process was that colleges are now able to communicate consistent standards of college readiness to high schools and students. However, the process of coming together to develop a coherent system of assessment and placement also allowed colleges and faculty to think more critically about this process, and created an environment of ongoing review and reform. For example, the state would like to incorporate multiple measures into their placement decisions; accordingly, the community colleges have agreed to utilize "decision zones," a range of scores below the state-agreed-upon cutoff scores within which colleges can use additional measures to determine placement. Additionally, there are plans to further smooth the transition from high school to community college by aligning high school graduation and college readiness standards. Students who meet proficiency levels on the state high school exit exam, SAT, ACT, or newly developed end-of-course assessments will be permitted to enroll directly in college coursework.

In addition to New Jersey, several other systems in our sample were beginning to move toward more consistent standards. In particular, at the time of our data collection, both Texas and North Carolina had an approved set of placement exams from which colleges could select their own exam (see Appendix Table B.2). Currently, however, Texas community colleges are moving toward a single exam (THEA), and in North Carolina, as discussed in more detail in a subsequent section, the state system is creating a new exam that will be required for use at all community colleges. Additionally, as part of the developmental education redesign, Virginia has set new statewide policies regarding test exemption and retesting, and North Carolina may do so as well.

Overall trends in creating consistent standards. To address inconsistent standards of college readiness, systems and institutions were implementing two approaches. The most common approach was testing high school students using college placement exams, but only a small number of colleges were involved with secondary schools in designing interventions for students who did poorly on these exams. Texas was unique in its focus on aligning its high school graduation and college readiness standards, but this may become a more widespread practice in the future as a result of the Common Core State Standards Initiative. We also observed a movement toward more consistent system-wide assessment and placement policies in four states in our sample.

4. A Measured Versus Comprehensive Approach

As we have described, there are at least three dimensions to the problem of poor course placement accuracy and two to the problem of inconsistent standards, so while the specific approaches described above can address each of these limitations, one approach cannot entirely address poor course placement accuracy or inconsistent standards. We found that almost all of the colleges in our sample were employing only one approach in response to a particular limitation without attending to other limitations that contribute to the same overall problem. For example, a college would address the lack of placement test preparation with "brush-up" courses without considering that a lack of alignment between their exam's test content and expectations of college-level coursework also contributes to poor course placement accuracy. Or, a community college would try to

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address inconsistent standards by working with their local high schools to assess high school juniors using the college placement exams, but that college's standards of readiness were different than a neighboring college within the same system.

Additionally, because colleges employed only one approach, the large majority of colleges in our sample continued to follow a traditional assessment and placement process: using student performance on a standardized exam as the primary determinant of first-semester course placement. In the remainder of the paper, we term an approach that addresses a single limitation of the assessment and placement process as *measured* and one that tackles multiple limitations as *comprehensive*. In this section, we examine why measured approaches to improving assessment were much more common than comprehensive approaches. Then we provide an example of a comprehensive approach that addresses multiple limitations of assessment and placement.

4.1 The Extent of Measured Approaches

Across the sample, measured approaches were able to develop and succeed in a variety of contexts. Some took place across systems, and some took place within individual institutions. They were implemented at colleges in highly standardized (University of Wisconsin) and highly flexible (Wisconsin Technical College System) systems, in decentralized states (New Jersey) and centralized states (North Carolina), and at resource-constrained institutions and institutions buttressed by grants from private foundations. And they were prompted by institutional research, legislative developments, national initiatives, and/or highly motivated faculty and administrators.

Our sample suggests, then, that attacking a single limitation of the assessment and placement process through a singular approach can occur anywhere, under any policy environment. In some cases, as in New Jersey, initial reforms prompted further thinking and re-examination, and perhaps encouraged a longer term process of more substantial reform. But, in most institutions and systems, a singular approach did not lead to more comprehensive reform.

Shared perspectives among respondents provide two potential explanations for the lack of comprehensive approaches in dealing with the problems of assessment and placement and why measured change rarely led to more comprehensive change. First, a small number of respondents identified problems with the assessment and placement

process, but spoke of challenges to reform, sometimes undefined, that seemed insurmountable. For example, a faculty member in Oregon said, "We know we need to do something different…. There are some groups in the state that are getting together and working on it, but I doubt that we are going to be able to come up with a sound practice." Several technical college respondents in Georgia questioned the placement accuracy of commercial exams but could not identify a feasible solution. For example, an administrator said, "[Multiple measures] sounds wonderful, but I cannot think about what measures could be implemented that would be practical, that you would have the personnel to implement." An administrator at the University System of Georgia believed that solving any problem was beyond the scope of postsecondary institutions: "It's not clear what the problem is—the students, the test, the curriculum. It might be all. But a lot of the change really needs to come from K-12."

Second, unless they were actively involved in reforms to assessment and placement or identified problems but thought reform was impossible, stakeholders generally felt that the assessment system was not a primary reason for poor student outcomes, or a cause at all. For example, a faculty member in Oregon spoke of the general lack of focus on assessment and placement at his college:

> Overall, the perception is that placement testing is working pretty well. Upper level management are pretty okay with it. It is not on their radar. It is kind of like, "If it ain't broke, don't fix it." I think that is the energy here.

Similarly, an administrator at a Georgia technical college called their assessment system "just about as good as anything else." Other respondents, including those who were content with the current process, expressed that it was not the assessment and placement process that needed to be changed, but rather developmental education. For example, a Texas state official said this:

> Overall, I think our system of assessment and placement is working. I don't think that's the part of the developmental education that's giving us difficulty. It's actually getting students through sequences and into college-level work.

An administrator at a two-year college at the University System of Georgia agreed: "Bigger than the COMPASS is [developmental] instructional delivery. That is the real challenge."

These respondents make a valid point, given that research on developmental curricula and instruction suggests that real improvements are needed. This perspective also assumes, however, that the system of assessment and placement is disconnected from developmental education, yet these two systems are inextricably linked—reforms to one may require reforms to the other. For example, the major placement test vendors have offered diagnostic placement exams to colleges for many years, but most institutions have not adopted them, in large part because the traditional developmental sequence is not designed to be responsive to diagnostic input (Jaggars & Hodara, in press). Similarly, one of the few institutions in this study to adopt a comprehensive multiple-measures placement approach did so because they had introduced supplemental support courses into the curriculum and needed an effective way to refer students to these courses. In the next section, we describe the statewide reforms in Virginia and North Carolina that further illustrate the connection between developmental education and assessment and placement.

4.2 A Comprehensive Approach

A more comprehensive approach to improving the assessment and placement process attends to multiple limitations of the process and more than likely requires an ever larger effort to improve the outcomes of developmental education as a whole. Virginia and North Carolina have been involved in developmental education reform for a decade (Asera, 2011), but in recent years, each state began to understand that major improvements to developmental outcomes would require more comprehensive change.

Curricular changes prompt re-thinking of assessment. In each state, the central office brought together community college stakeholders from across the state to redesign the developmental system.[3] First, the initial task force decided on the guiding

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[3] There are several reports available about the Virginia redesign on the Virginia Community College System site. For a description of the goals of the redesign, see Virginia Community College System, Developmental Education Task Force (2009); for a description of the math redesign, see Virginia Community College System, Developmental Math Redesign Team (2010); and for a description of the

principles of the redesign. In both states, these goals or principles included reducing the overall need for developmental education, ensuring that students complete their developmental requirements in no more than one academic year, and improving rates of graduation and transfer among students who start in remediation. Second, the states set up math and English redesign committees to develop new developmental course structures intended to accelerate students' progress through developmental education. To allow for flexibility across programs of study, both states modularized the math curriculum into one-credit math courses, or units, such that students need to master only the competencies required by their program. For example, Science, Technology, Engineering, and Math (STEM) programs require a greater number of developmental math units than do liberal arts and career-technical programs. Both states also integrated developmental reading and writing, creating one developmental English program with opportunities for mainstreaming into college-level English students who place at the upper level of the placement exam. In the third phase of planning, English and math faculty formed the curricular committees that developed the specific learning outcomes for each of the math units and levels of integrated reading–writing courses. The faculty worked backward from the college-level curriculum to determine the competencies students needed to be successful in college coursework, and these formed the basis for the developmental learning objectives.

The newly proposed courses and curricula, as well as a commitment to reduce the need for remediation, prompted the need for changes to the assessment and placement process. A system official in Virginia explained their rationale for assessment and placement reform:

> It was not because the instrument was substandard that triggered the reform. It was that we looked at student success in developmental education and determined from our data that we have significant issues in developmental math and developmental reading and writing…. The byproduct of that is the current placement instrument that we have will not serve the new structures we are putting in place.

English redesign, see Virginia Community College System, Developmental English Redesign Team (2011).

In other words, as a result of changes to course structure and curriculum, Virginia realized they needed a new assessment instrument, and in the fourth phase of planning, placement test teams, one for English and one for math, met with a test vendor to design new statewide instruments. North Carolina is following a similar process. As one respondent in that state explained, they felt that the course curriculum and structure must be redesigned prior to developing the assessment instrument:

> As educators we need to be able to choose the right course structure and the right textbook or supplements to best facilitate those learning objectives. Once that's done, then we need to identify an assessment tool that's going to match what we've designed—not the other way around.

Addressing multiple assessment and placement problems with multi-faceted reform. Virginia and North Carolina's multi-faceted assessment reforms include four key elements. Two elements, increased placement test preparation and customized aligned assessments, address poor course placement accuracy, and two elements, testing at the high-school level and greater standardization, address inconsistent standards. Together these reforms may be more effective at improving course placement accuracy and defining clearer standards of college readiness than they would be had either state chose to implement a single approach.

First, both states are scaling up placement test preparation with online sample exams that "students take before they walk in the door." This approach also includes assessing high school students using the new assessments. According to a system-level official in Virginia, "One goal [of the online sample exams] is that students in high school will be able to determine to what extent they will be prepared for college-level courses."

Second, the placement exams are customized to the new curriculum; they assess students' mastery of the new curricular objectives and place them into the new developmental structures. In math, the placement exams are diagnostic in that they determine exactly which math units, if any, the student needs to take to be prepared for college-level math in her degree program. In English, the placement exams have both a reading comprehension and essay component, allowing assessment of both reading and writing skills.

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Finally, the new exams will be required for all community colleges within the given state, with consistent test exemption and re-testing policies across colleges. Virginia began assessing entering spring 2012 students using their new math assessment, with the English assessment to follow in the spring of 2013. North Carolina is allowing colleges to pilot the new curricula and assessments, and plans to require full implementation of the math assessment in fall 2013 and the English assessment in fall 2014.

Of course, the new assessment and placement processes are not without their drawbacks. For example, some respondents were concerned about the length of time the new exams would require, especially when compared to their pre-reform, computer-adaptive exams. However, a North Carolina state-level respondent noted that any extra time would be worth it because:

> The registration agenda has given way to the completion agenda and success agenda, and so that means we have a little more room to change that foolish policy of having students do everything all in one stroke. We put some money into the advisement of students and assessment of students, investing on the front end so that students can be properly placed, saving money for colleges and students later.

5. Discussion and Recommendations

Overall, we found states, systems, and colleges implementing a variety of approaches in an attempt to address various limitations of the traditional assessment and placement process. Yet, most colleges in our sample followed a fairly traditional process of assessment and placement, incorporating perhaps one approach to address a single limitation. Two college systems were systematically working to address multiple limitations of the assessment and placement process. In both cases, the assessment and placement reforms were prompted by a larger reform of developmental education and its goals. Taking a wider view, this linkage makes sense: How can one effectively reform assessment and placement if the larger developmental course structures, curricula, and supports remain the same? A North Carolina counselor summed up this point well saying,

"The assessment isn't the issue. It's what you do with the information." Overall, then, an overhaul of developmental course structures and curriculum may be the driving force behind comprehensive changes to assessment and placement that address multiple limitations of the traditional process.

Implementing changes to assessment and placement—even measured changes that tackle only one component of the problem—can be complex, as different stakeholders bring varied and sometimes conflicting perspectives and concerns to the table. In a detailed examination of developmental placement policy at an urban community college system (Jaggars & Hodara, in press), we identified three sets of tensions inherent in stakeholder motivations—efficient versus effective assessment, system-wide consistency versus institutional autonomy, and supporting student progression versus maintaining academic standards—that often work at cross-purposes and thwart efforts at reform. We observed these tensions emerge across our sample, but systems, states, and colleges also provided valuable lessons on how to navigate these tensions and implement promising assessment approaches.

Using the three tensions noted above as a framework, we end this paper with lessons from the present study, based on promising approaches from our sample as well as from ideas for experimenting with new approaches to assessment and placement. We propose three recommendations for improving course placement accuracy, three recommendations for creating consistent standards of college readiness, and a final recommendation for implementing comprehensive change to assessment and placement in order to improve the overall, long-term academic success of students.

5.1 Lessons in Improving Course Placement Accuracy

At open-access institutions, the tension between efficiency and effectiveness can hinder the development and implementation of a more accurate assessment and placement process. At the time of data collection, almost all institutions in our sample used standardized tests as the primary measure of placement. This process is highly efficient: The exams can be administered quickly, scored by computer, and almost instantaneously applied to determine the placement for each student. However, some stakeholders also recognized that this process can misplace many students. For example,

one administrator explained why his college had recently adopted a placement test review course:

> We can show statistically that there is an over-diagnosis in the developmental education arena—many students are diagnosed as needing developmental education even though they don't benefit and would have been fine without those courses. We're trying to weed out that population of students being over-remediated.

For these misplaced students, the "efficient" process is not at all effective. Moreover, it is not efficient in the sense that students must pay course tuition and spend an extra semester in college to re-learn skills that they do not need.

It is also the case that some students who are deemed prepared by the exam go on to fail college-level math and English. Some of these students have reasonably high academic test scores; they may fail college-level math and English due to poor non-cognitive skills, which are not assessed by the traditional placement exam. Thus, for students who are assigned—based on cognitive skill alone—to coursework they are not prepared for, the placement exams are also ineffective. Yet larger community colleges are concerned that intensive multiple-measures approaches, such as those adopted by a handful of small colleges in our sample, would simply require too much money and time to execute each semester in the face of thousands of incoming students. That is, the inefficiency of the intensive multiple-measures approach may make it infeasible for some colleges, regardless of its effectiveness.

To work through the tension between efficiency and effectiveness, we recommend the following. First, colleges and systems should consider implementing systematic pre-test preparation, such as that adopted by some colleges in Georgia and North Carolina, that will likely reduce rates of underplacement (i.e., the placement of students into developmental education who could have succeeded in college coursework). According to respondents at institutions with placement test review courses in our sample, the pre-test preparation is relatively low in cost and easy to scale up; thus it may be feasible even at a large or resource-constrained community college. However, this approach does not attend to non-cognitive factors that impact student success. What is more, using it could also increase rates of overplacement (i.e, the assignment of students

to college coursework who needed more support) if the test is not well-aligned with expectations of college coursework.

Therefore, our second recommendation is that colleges and systems consider a more comprehensive approach to improving course placement accuracy. A more comprehensive approach first considers how to create the most effective developmental curriculum—including integration of non-academic skills into the developmental curriculum, academic or non-academic support courses and services, or contextualization of the curriculum to the student's stream of study—and *then* considers whether the current exam is sufficient to refer students to the appropriate set of courses and supports. To align with the curriculum, the exam may need revision, as North Carolina and Virginia have found.

Third, we find a need for greater experimentation around developing ways for systems and large institutions to incorporate non-cognitive measures into their placement process without a strong loss of initial efficiency. One possibility is to administer a non-cognitive assessment to incoming students. While the technical college in Wisconsin uses a non-academic assessment to assign students to out-of-class supports, a non-cognitive assessment could also be used in conjunction with placement test information to automatically refer students to sections of academic courses that integrate non-academic supports or to stand-alone non-academic support courses. Another potential way to incorporate non-cognitive factors is the use of high school GPA, which may signal students' non-cognitive abilities. To leverage GPA information efficiently, colleges may explore entering into data-sharing agreements with their city or state department of education to automatically collect GPA information on college-bound high school students. Grades could be then be used in a less-intensive multiple measures approach; for example, students with low test scores but fairly good high-school GPAs may be good candidates for accelerated developmental coursework or for college-level coursework with embedded developmental supports.

5.2 Lessons in Creating Consistent Standards

The tension between consistency and autonomy can inhibit the implementation of a balanced approach that provides students within a state or system some level of consistency but also meets the needs of specific colleges and their student populations. In

our sample, we observed four states moving in the direction of greater consistency in order to ease both students' transition from high school to college and the process of transfer between colleges. However, among respondents in other states, there was considerable support for institutional autonomy in setting assessment and placement policies because, as one administrator in Oregon said, "by being an independent institution, you also have the ability to be truer to the idea that you are genuinely responsive to the community you serve." We observed three ways to create consistent policies that all member colleges could feel comfortable adopting.

First, a system-wide assessment and placement policy should be created through collaboration and discussion across colleges and educational sectors, rather than being externally imposed. For example, in New Jersey, although colleges were not required to adhere to the new statewide policy, they all chose to do so because they participated in the process of creating it. North Carolina and Virginia followed a similar process of cross-college participation in the redesign, creating ownership of the reforms among stakeholders across the state. And in Texas, the higher education sector collaborates with the secondary system in order to align their high school exit and college entry standards.

Second, a commitment to a process of continual improvement and reform can temper stakeholders' unease about adopting system-wide policies. For example, in New Jersey, deciding on consistent policies for the English assessment process stalled several times because of disagreements between faculty. But an administrator explained that the disagreements were finally resolved by a commitment to evaluate the adopted policies:

> It was really two steps forward, one step backward, two steps forward, one step backward…. So [a high-level administrator] stepped in and said we are going to work with the College Board, and if you can get us a recommendation based on research and the information that you have, then make your best decision, and we will collect data over a year … and do some validity studies with the data. That's when things finally started to turn. Because academics know when push comes to shove the best way to make a decision is with data and research. Finally, everybody started agreeing a little bit more.

As a result, attached to the English placement policies approved by the presidents was the stipulation that each college's institutional research office would track students' grades in

English Composition for three years after implementing the cutoff scores and then determine the reliability of the new scores. Similarly, in Virginia, a state official said of their statewide developmental education redesign, "We are not thinking about it as the perfect solution. We are going to continually tweak it over a five-year time frame. If it doesn't change, then we haven't done our job."

Third, a number of institutions in our sample allowed for varied standards across different programs of study, a policy that widens access to college coursework. To maintain different standards for different programs of study but provide some level of consistency, each program's standards should be the same across a state or system. For example, in the Wisconsin Technical College System, admissions requirements for entry into the nursing program are standardized across the state; as one respondent noted, "You should be confident that a nursing student at [respondent's college] receives the same education in [another Wisconsin technical college]." Although nursing standards are consistent across Wisconsin technical colleges, those standards are different (usually higher) than those of other degree programs. Virginia and North Carolina followed similar approaches by creating consistent mathematics standards across the state within each program, but varied standards across programs. One drawback to defining varied standards across programs is that students may misinterpret *program readiness* standards as *college admission* standards. To encourage students to tackle challenging programs of study for which they may not yet qualify, colleges will need to build clear remediation pathways for each program of study, while ensuring students have the flexibility to change paths if they later change their mind regarding their program of study.

5.3 Supporting Overall Student Success

A third tension faced by open-access institutions involves the need to support student progression while upholding academic standards. This struggle plays out in assessment and placement when systems and colleges decide where to set their cutoff scores. When cutoff scores are lowered, more students are able to access college-level math and English. While some of these students fail, others succeed; the overall result is an increase in the total number of students who complete college-level math and English (Scott-Clayton, 2012), or greater rates of student progression. One undesirable side effect, however, is lower pass rates in college-level math and English. Alternatively,

colleges can improve within-course pass rates and uphold academic standards by raising cutoff scores, but this policy change may decrease access and student progression.

One tactic to support student progression without threatening academic quality is the use of an acceleration model. Such models allow students to complete their developmental requirements more quickly, often by exposing them to material that the placement exam suggested was too difficult for them, while providing built-in academic and non-academic supports (Edgecombe, 2011). In fact, many institutions in our sample were implementing acceleration models. Yet most of these same institutions had no plans to alter their assessment system to match their new acceleration models. We contend that changes to the developmental curriculum should generally be accompanied by a thorough examination of assessment.

Overall, student success may be bolstered most strongly by multifaceted reforms to developmental education that both improve course placement accuracy and create more consistent standards of college readiness. The assessment process is an important point of contact with students, providing an opportunity to identify key areas of academic and non-academic strengths and weaknesses to which appropriate interventions and coursework may be offered. Through more accurate assessment and appropriate follow-up, colleges may help to ensure that students are successful in their first courses, provide students with the preparation needed to succeed in subsequent courses, and enable them to maintain standards of academic quality and rigor in college-level courses. The assessment process is also a critical link along the educational pipeline, and improvements to it could build stronger connections between the secondary and postsecondary system as well as between colleges in the same state or system. Therefore, in general, attending to multiple limitations of the assessment process could have a potentially transformative impact on the long-term academic success of students.

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Appendix A: Data Collection Process

Prior to data collection, the research team conducted a state selection process by reviewing the types of two-year college systems and policies in all states across the country. We then selected seven states that provide a diversity of contexts.

Across the spring and fall of 2011, the research team conducted telephone interviews with state and institutional-level stakeholders. Interview questions addressed six main themes: official policies; the college matriculation processes; stakeholder perceptions; policy change and innovation; policy compliance; and innovative practices. The protocol varied slightly for state-level and institutional respondents. The interview protocols are available upon request. To focus our investigation within each state, we first contacted an individual at the system-level office to understand the context, identify key players in assessment and placement policy at the state-level, and obtain recommendations for institutions in their state or system to study in more depth.

State-level respondents recommended colleges that had innovative assessment approaches, that were undergoing changes to assessment practice, or that had individuals who were especially knowledgeable about issues surrounding assessment and placement. Based on this information, we selected colleges within each state or system and initial respondents at the colleges; the colleges selected were not necessarily representative, but efforts were made to achieve some diversity in terms of geography, size, and other institutional factors. At each institution, respondents included presidents, academic officers, deans, department chairs, faculty, and developmental education and assessment coordinators.

After soliciting enough interviews to understand state/system-level policies, current policies and practices at the institutional level, and recent or ongoing change, we then used a multi-step process to analyze the data. First, the research team wrote detailed reports of the system- and institutional-level assessment and placement policies and of recent innovations and developments around assessment and placement at the system- and institutional-levels. These reports also included any student-level outcome data that we collected from institutions on the impact of recent innovations. Based on the reports, we evaluated the extent and range of current assessment and placement policies and practices and changes to the process across our sample. Then, using Atlas.ti, we returned

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to the interview transcripts to uncover any rationale among respondents for maintaining the status quo, adopting a unique approach, or implementing changes to the process.

Appendix B: Supplementary Tables

Table B.1
Number of Interviews in Each State or System

State/system	State or system-level	Institutional-level	Total
University System of Georgia two-year colleges (USG)	5	8	13
Technical College System of Georgia (TCSG)	5	38	43
New Jersey (NJ)	2	17	19
North Carolina (NC)	4	18	22
Oregon (OR)	3	16	19
Texas (TX)	6	12	18
Virginia (VA)	5	8	13
Wisconsin Technical College System (WTCS)	5	23	28
University of Wisconsin two-year colleges (UW)	2	6	8
Total	37	146	183

Table B.2
Assessment and Placement Policies as of Fall 2011

	Most standardized ←								→ Most flexible
Policy	UW	VA	NC	USG	TX	TCSG	NJ	OR	WTCS

				Who sets the assessment and placement policy?					
SAT, ACT, and/or high school exit exam scores that exempt students from testing	System: no test exemption allowed	Institutions	Institutions	System, scores are minimums[a]	System	Institutions	Statewide Voluntary Agreement	Institutions	Programs
Placement exam(s) used	System: UW placement exam	System: COMPASS	System: ACCUPLACER, ASSET, or COMPASS	System: COMPASS	System: ACCUPLACER, ASSET, COMPASS, or THEA	System: ACCUPLACER, ASSET, or COMPASS	Statewide Voluntary Agreement: ACCUPLACER	Institutions: any exam including home-grown	Programs: any exam including home-grown
Cutoff scores that sort students into college-level vs. developmental coursework	System	System, decision zones[b]	System	System, scores are minimums	System, scores are minimums	System, scores are minimums	Statewide Voluntary Agreement	Institutions	Programs/ Some Institutions
Mandatory enrollment in developmental coursework	System	System	System	System	System	System	Statewide Voluntary Agreement	Institutions	Programs/ Some Institutions
Retesting	Institutions	Institutions	Institutions	Institutions	Institutions	Institutions	Institutions	Institutions	Programs

Notes. To understand the policy context of the sampled institutions, we outline each college system's degree of standardization in terms of five key assessment and placement policies (test exemption policies, the type of placement exam administered, the cutoff scores on that placement exam, whether developmental placement is mandatory, and retesting procedures). To identify the degree of standardization, we indicate whether each policy was set by the system, by each institution, or by individual programs within each institution. The states and system are ordered from the most standardized (University of Wisconsin) to most flexible (Wisconsin technical colleges), although there is some overlap and ambiguity in the degree of standardization among states and systems along this continuum. We refer to policies outlined in this table throughout the study.

[a]"Scores are minimums" indicates that the system set minimum cutoff scores, but the institutions could set any cutoff score above the minimum.

[b] "Decision zones" indicates that the system set a decision zone for each placement exam, i.e., a minimum cutoff score and a maximum cutoff score. Institutions could set their cutoff score for placement into college-level or developmental anywhere in the decision zone.