

**Report of the CUNY Task Force
On Developmental Education**

June 1, 2016

Introduction

Each fall, approximately 20,000 students—more than half of all freshmen who start CUNY colleges—are assigned to developmental education in at least one subject, especially mathematics. In associate programs, where developmental education courses are offered, 74 percent of freshmen were assigned to developmental education in math in fall 2015, 23 percent in reading, and 33 percent in writing. The scale of CUNY’s developmental instruction alone would merit our attention, but in recent years evidence has mounted that the way in which developmental education is conducted at CUNY, including placement, instructional formats, and policies governing exit, may not be serving our students well. This research has shown that the standardized tests that CUNY uses to place many students into developmental education are weak predictors of performance in credit-bearing courses.¹ Moreover, because of changes in high school assessments and test publishers, every exam that CUNY currently uses to assess basic skill proficiency will change in the next year, requiring us to re-assess placement policies.² The national literature also strongly suggests that many students do not benefit from, and may be even be harmed by, being assigned to conventional developmental courses.³ For example at CUNY, students who place into math developmental education are about half as likely as other students to complete an associate degree within three years. At the same time, it is clear that many students do in fact need support to succeed academically.

Developmental education policy has high stakes for students: traditional developmental courses do not advance students toward a degree, but they do consume financial resources. And because CUNY policy restricts developmental courses to associate programs, the University’s developmental standards have become a de facto second layer of admission requirements for bachelor’s programs at the senior colleges. Finally, because black and Hispanic students are almost twice as likely as white and Asian students to be assigned to developmental education, developmental policies can contribute to racial gaps in access to bachelor’s programs and in educational attainment.⁴ Given this situation, CUNY launched a thorough and wide-ranging review and reform of its developmental education policies and practices.

CUNY Task Force on Developmental Education

In the fall of 2015, University Provost Vita Rabinowitz convened a CUNY Task Force on Developmental Education. The 19 members of the Task Force included the faculty chairs or co-chairs of the Mathematics, Reading, and English Discipline Councils, four chief academic officers from colleges

¹ Scott-Clayton, J. E., Crosta, P. M., & Belfield, C. R. (2014). Improving the Targeting of Treatment: Evidence From College Remediation. *Educational Evaluation and Policy Analysis*, 36(3), 371-393.

² Both New York State Regents Exams and the SAT have been redesigned to align with the Common Core State Standards. As of June 2016, new Regents examinations have been introduced in Algebra 1, Geometry, Algebra 2 and English Language Arts. The Compass placement tests will be discontinued by their publisher, ACT, effective December 2016. CUNY has adopted the College Board ACCUPLACER tests in their place.

³ Jaggars, S. S. & Stacey, G. W. (2014). What We Know About Developmental Education Outcomes. *New York, NY: Columbia University, Teachers College, Community College Research Center*.

⁴ In fall 2015, 70.1 percent of black and Hispanic first-time freshmen across the University were assigned to developmental education, compared to 36.4 percent of Asian and white freshmen.

offering developmental instruction and two from senior colleges, and members of the central Office of Academic Affairs (See Appendix 1 for a complete list of members). In her invitation to serve, Provost Rabinowitz charged the Task Force with addressing the following four questions:

1. How should we be placing students into developmental education and determining readiness for exit from it?
2. How can we best tailor developmental curricula and instruction to the course of study our students intend to pursue?
3. Which instructional formats best serve the various developmental needs of our students? What forms of developmental education are most successful, and for whom? How can the innovative new scholarship emerging across the nation and across CUNY and its colleges inform our policy and practice?
4. What are the most promising strategies for gaining support for and implementing the changes we think are desirable?

The Task Force met monthly throughout the 2015-16 academic year for a total of eight meetings to consider these questions. Necessarily, most of the deliberations were centered on the complex issues pertaining to placement, curriculum, and exit. Because the great majority of CUNY's developmental students place into math, where success rates are lowest, much of the discussion of the Task Force focused on that discipline. Nevertheless, the Task Force did address all four questions during the course of the year.⁵

The Task Force was fully cognizant of the principled differences of opinion among its own members and among the wider faculty on certain critical issues related to developmental policy and practice. Throughout its deliberations, the Task Force took great care to hear testimony from representatives of opposing viewpoints, a practice that led to full and spirited discussions. One issue was especially salient: the place of Elementary Algebra in CUNY's current definition of college readiness. Members of the Task Force and invited guests offered divergent views on the question of how much algebra every student should be expected to master as a prerequisite to any credit-bearing course work in math. A second point of conflicting opinion had to do with CUNY's current practice of relying primarily on high-stakes tests to determine readiness for college-level courses in all three skill areas. Students must pass separate standardized tests in order to exit developmental education in mathematics, reading and writing. The Task Force heard testimony for and against this practice in the course of crafting its recommendations, balancing the need to certify learning outcomes against the limitations of tests as indicators of mastery.

The work of the Task Force was shaped by several principles and assumptions. Some of these were stated explicitly at the outset while others emerged as the result of research and consultations.

1. Policy and practice at CUNY must be informed by the rapidly growing body of research on developmental education generated here at CUNY and across the nation.
2. Research has shown that college readiness cannot be measured adequately on the basis of tests alone. There is not a clear line, measurable by any single indicator, above which students are

⁵ The Task Force will continue to meet during the 2016-17 academic year to refine and extend CUNY's policies on developmental education. The Task Force will be expanded to include representatives of the ESL Discipline Council.

clearly ready to succeed in any course of study and below which they are not. Consequently CUNY, in line with national trends, should limit the use of high-stakes tests to place students into and out of developmental education.

3. Given the demonstrated problems with the predictive value of both high stakes tests and traditional developmental education, CUNY should err on the side of giving students access to credit courses, with academic support adequate to maximize their chances for success.
4. For students who are assigned to developmental education, CUNY should deliver developmental instruction as effectively and efficiently as possible, maintaining rigorous academic standards, so as to reduce costs to the student.
5. Consistent with new approaches nation-wide, mathematics sequences at CUNY should be better tailored to the student's intended course of study. A mastery of elementary algebra is an essential pre-requisite to college algebra and the advanced mathematics required by many majors. For other disciplines, however, rigorous mathematics preparation in other topics may be appropriate. Mathematics pre-requisites should be discussed and decided by faculty from all of the relevant disciplines.
6. Because developmental options differ in terms of effectiveness, the commitment required by the student, and the degree of alignment with the student's intended major, CUNY should provide timely advisement to assist students in choosing an intervention.
7. CUNY should work closely with the New York City public schools and other feeder schools to communicate standards of readiness clearly and to encourage students to complete a rigorous college preparatory curriculum. Many students today enter CUNY wanting to pursue a STEM field. There is no question that students considering such courses of study should pursue mastery in algebra.

This report sets forth broad directions for reform across the University as well as specific policy changes, but it does not detail all of the actions that will be required to implement these recommendations. To bring them to fruition, the reforms outlined below will depend upon close collaboration among the central Office of Academic Affairs, college leadership, faculty, and special program administrators—both within and across the colleges.

Recommendations of the Task Force

The deliberations of the Task Force can be grouped into three broad topics: placement into developmental course work, developmental instruction and supports for students, and the criteria for determining readiness to exit from developmental instruction. The recommendations presented below have been grouped into these three topic areas.

Placement into Developmental Education

Since the implementation of its open admission policy in the early 1970s, CUNY has been setting standards of academic readiness for college and evaluating students based on these standards. Students who on admission to the University have not been able to demonstrate basic skill proficiency in reading,

writing, and mathematics have been placed into non-credit developmental instruction. The financial cost of such a placement has been high: developmental course sequences typically range from one to three courses, which are expensive for the student and the taxpayer. And the costs are academic as well as financial. Table 1 (Appendix 2) shows that just under one-half of an entering cohort of developmental students still had not emerged from developmental education one year after matriculation, although some progress has been made on this indicator in recent years. And despite the intended benefits of developmental instruction, students who place into it are much less likely than other students to complete an associate degree in a timely manner. Table 2 (Appendix 2) reports the results of an analysis showing that students taking developmental instruction in reading, writing, or math are about half as likely as non-developmental students to graduate in three years. Research conducted on CUNY's developmental courses did not identify an academic benefit from the instruction for students who scored relatively close to the University's cut points on the placement exams.⁶ Since 1999, the stakes for these students have been high in still another respect. In that year, the CUNY Board of Trustees voted to bar developmental students from admission to all of CUNY's bachelor's programs.

Given the potential consequences of these policies for the academic careers of our students, placement criteria must be set carefully so as to determine as accurately as possible which students are prepared for entry-level credit courses and which students need additional preparation before they are likely to succeed. Board policy has delegated responsibility for defining system-wide markers of readiness to the chancellor. To its credit, CUNY has long employed multiple indicators of readiness, including the SAT or ACT, the New York State Regents examinations in English language arts and mathematics, and placement tests. CUNY students are placed into developmental education in a skill area at CUNY only if they fail to meet or exceed the University cut points on all three sets of tests in the subject. Nevertheless, as we will show in greater detail below, precision in placement is very difficult to achieve.

In its quest to establish appropriate standards during the past decade and a half, CUNY has frequently adjusted its markers of proficiency, particularly in math. The history of math standards is summarized in Table 3, Appendix 2. Note that beginning in 2011 CUNY initiated a series of upward adjustments to its math standards that resulted in a large increase in the percentage of students being placed into math developmental education. As shown in Figure 1 (Appendix 2), this percentage rose from 43.3 percent of all first-year students to 52.9 percent, a trend affecting thousands of students, and a matter of great concern to the Task Force.

In the course of its discussions, the Task Force considered evidence regarding the predictive validity of test scores and the growing adoption of multiple measures of readiness including high school grades in other systems. It noted the changes in most of the placement tools that CUNY has been using, including the SAT, the New York State Regents, and the placement tests in reading and math. It also noted that many students sit for CUNY's placement tests without adequate information about the tests and opportunities to prepare for them. Finally, the Task Force discussed the special situation of adult

⁶ Scott-Clayton, J. E. and Rodriguez, O., (2012). Development, Discouragement, or Diversion? New Evidence on the Effects of College Remediation. *NBER Working Paper #18328*.

students, whose measured abilities in basic skills may under-estimate their true potential, given their time away from the classroom. Consideration of these issues led to the following recommendations:

1. **Make the passage of the Algebra 2 course an additional option for demonstrating skill proficiency in mathematics rather than a requirement. Consider students who pass the Algebra 2 course to be math proficient. Retain cut points on the New York State Regents examinations in mathematics as markers of proficiency, but revise the Regents math exemption criteria to require a score of 70 or higher on the Common Core Algebra 1 or Geometry exams or a passing score of 65 or better on the Common Core Algebra 2.**⁷

Rationale

- a. CUNY wishes to encourage students to take advanced math courses in high school, but we must balance the benefits of rewarding advanced course-taking against the costs of setting a developmental education standard that is higher than students actually need in preparation for gateway college courses and placing many students into developmental education unnecessarily.
- b. Requiring students to pass Algebra 2 in high school before taking College Algebra is not justified based on course content. Regents exam-aligned Algebra 2 courses cover more content (algebra and otherwise) than do typical credit-bearing College/Intermediate Algebra courses offered at CUNY. Requiring a student to pass Algebra 2 before being given an opportunity to take College/ Intermediate Algebra suggests that at the beginning of the course, a student must already have the knowledge and skills desired at the end of the course.
- c. Removing the course passage requirement would allow additional students each year to be exempt from developmental education at the time of their application and be considered for admission to a baccalaureate program.⁸
- d. CUNY's research shows that students who score 65 on the traditional Algebra 2 Regents exam have as high a probability of passing a College Algebra course as students who score 80 on the Integrated Algebra exam (equivalent to a 70 on the new Common Core Algebra 1 Exam). This finding supports our recommendation to exempt students if they merely pass the Algebra 2 exam, rather than requiring a score of 70, as we do on the common core Algebra 1 exam.
- e. Our colleagues at the New York City Department of Education have reported that many students who have passed the Integrated Algebra or Algebra 1 exams but scored below

⁷ Because the NYSED will be rescaling the Algebra 1 exam starting in June 2016, it may be necessary to alter the college-ready cut point on this exam.

⁸ At this time most baccalaureate programs at CUNY do not allow students to take placement tests to demonstrate proficiency. Consequently, only students who are exempt from developmental education based on the SAT, ACT or Regents test scores plus Algebra 2 at the time of application are considered for admission to baccalaureate programs. CUNY's admission process only considers coursework passed through the end of the junior year of high school. Many of the students who have not completed Algebra 2 by the end of their junior year will complete the course in their senior year.

- CUNY's higher proficiency cut points have been re-taking the exams repeatedly in the hopes of meeting the CUNY standard, possibly diverting their attention from more advanced courses. By creating a new means of demonstrating proficiency based on passing the Algebra 2 exam or passing Algebra 2, we create a new incentive for students to move further into the math curriculum rather than retake the earlier test.
- f. Our current policy is not consistent in its treatment of the Regents exams and the math SAT. We do not require students who are exempt from developmental education based on SAT scores to also pass Algebra 2, although research has shown that SAT scores and Regents exams have similar power to predict students' performance in their first math course or their freshman year GPA.⁹

2. Continue to use multiple measures of proficiency (Regents Exams, SAT and ACT, placement test scores) in reading, writing, and math to determine eligibility for enrollment in credit-bearing courses, but plan to incorporate high school grades into placement algorithms.¹⁰

Rationale

- a. Placement schema that use multiple measures of college readiness more accurately predict success in college courses than those that rely on a single measure, especially a test. Grades are more highly correlated with success in credit-bearing course work than are test scores, including the SAT, NYS Regents Exams, and placement tests.¹¹
- 3. Revisit placement criteria and support services for adult students who have been away from their studies for some time, especially in math. At a minimum, make placement policies for all such students consistent with the placement policies for students pursuing the bachelor's degree in a worker education program. One important consideration is how to define this population appropriately based on prior learning and time spent away from the classroom.**

Rationale

- a. Because of extended time away from school, older students' knowledge of some skills at the time of entry may not be good indicators of their ability to succeed in college courses.

⁹ Based on internal research by CUNY's Office of Policy Research and Koretz, D., Yu, C., Langi, M., & Braslow, D. (2014). Predicting Freshman Grade -Point Average from High -School Test Scores: Are There Indications of Score Inflation? *Cambridge, MA: Harvard Graduate School of Education Research.*

¹⁰ It will not be feasible to incorporate grades into our placement algorithms until after CUNY has successfully launched the new CUNYfirst admissions and testing system using current placement criteria.

¹¹ The correlation between college admissions average (CAA) and passing a student's first credit-bearing math course for freshmen taking courses in 2014 was 0.25, compared to 0.19 for the Compass M2 score, 0.11 for the SAT math test, and 0.18 for Integrated Algebra Regents exam. Research by Dan Koretz and Meredith Langi (2015) found that CAA had a correlation of 0.50 with freshman year GPA at CUNY, compared to 0.36 for Regents Math scores, and 0.34 for SAT Math scores. See also research by Scott-Clayton (2012), Tang and Truelsch (2014), USC Rossier School (2014).

- b. Current policy allows older students pursuing the bachelor’s degree in a worker education program to qualify as proficient at lower math cut points than other students, and requires these students to achieve proficiency by the 24th credit, either by retaking the placement tests and meeting the same standards as other students, or by successfully completing a credit course in math. Because many older students do not enroll in worker education programs, CUNY should broaden this policy to all older students entering or re-entering degree programs.

4. Improve support for students prior to taking CUNY’s placement tests.

- i. **Provide applicants with more information about placement tests and their consequences as early as possible so that prospective students may prepare for them. Students should have information about the content and format of the tests and should have access to practice exams at a minimum several weeks before they sit for the tests and preferably while they are still in high school.**
- ii. **Provide more resources for test preparation, especially in coordination with the transition from Compass placement tests to ACCUPLACER tests in fall 2016 and spring 2017. Test preparation can take the form of online instructional materials as well as workshops offered by the college.**
- iii. **Learn from CUNY’s planned experiment with “mindset” exercises about how messages associated with the exams can influence students’ performance.**¹²

Rationale

- a. Even after the recommendations of the Task Force have been put in place, most students will continue to take a math placement test to determine their level of preparation for courses in the credit-bearing sequence. In addition, many students will continue to take placement tests in reading and writing.
- b. The College Board, which publishes ACCUPLACER, encourages students to prepare for the exams, noting “sharpening your academic skills by answering sample test questions in reading, writing, and math can lead you to improve and can help boost your confidence when you take the actual tests.”¹³
- c. The Community College Research Center identified four interconnected reasons why students tend not to prepare for placement exams:¹⁴
 - i. Misperceptions about the stakes of the assessment and placement process
 - ii. Lack of knowledge about preparation materials
 - iii. Misunderstandings about why and how to prepare for a college placement exam, and

¹² In the spring of 2016 CUNY and ideas42 have collaborated to administer a 10-minute exercise to students just before they sit for the CUNY placement exam. This priming exercise is designed to set expectations appropriately and instill resilience in facing challenges on the test.

¹³ ACCUPLACER website: <https://accuplacer.collegeboard.org/students/prepare-for-accuplacer>

¹⁴ Fay, M. P., Bickerstaff, S. E., & Hodara, M. (2013). Why Students do not Prepare for Math Placement Exams: Student Perspectives. *New York, NY: Columbia University, Teachers College, Community College Research Center.*

- iv. Deep lack of math confidence.

Researchers concluded that improved placement policies need to be accompanied by practices that build students' awareness of the implications of placement exams and appropriate preparation measures.

- d. Currently, only about one-third of students sitting for CUNY placement tests have looked at the test preparation materials available on the CUNY website.¹⁵

5. Allow students who score just below the cut point on our placement tests to complete a short intervention and take the test again before making a final placement decision. For students who need to retake ACCUPLACER tests in math or reading, the MyFoundationsLab online learning tools are one option.

Rationale

- a. National research consistently finds that students who score just below passing cut points and are assigned to developmental instruction do not benefit from the developmental courses and would have done as well or better in subsequent credit courses and credit accumulation if they had been assigned directly to credit-bearing courses.¹⁶ Rather than require students who are near to achieving a passing score to complete full-scale interventions, we should give them opportunities to quickly gain the additional skills and knowledge they need to pass the tests and take a credit-bearing course.
- b. Experimental research conducted by Logue, Watanabe-Rose, and Douglas (2016) finds that CUNY students who are assigned to developmental education but instead are allowed to take a credit-bearing statistics course with extra support pass at higher rates than students who are placed into conventional Elementary Algebra courses.¹⁷
- c. The College Board partnered with Pearson to develop MyFoundationsLab to prepare students for re-testing. The system is entirely online and allows students to work at their own pace, starting with diagnostic assessments and recommending specific tutorials and practice tasks based on students' diagnostic results. Online learning tools may be the most accessible intervention option for applicants who are not yet enrolled on CUNY campuses. Research conducted by Pearson found that between 32% and 92% of participants in a pilot study using the MyFoundationsLab improved their proficiency level, course placement level, or scores, depending on the structure of the intervention and additional supports offered.¹⁸

¹⁵CUNY's test appointment letters advise students that the tests are high-stakes and that preparation is important, but students receive these letters about a week before their test appointment, affording too little time to prepare.

¹⁶For an overview of these findings, see Jaggars, S. S. & Stacey, G. W. (2014). *What We Know About Developmental Education Outcomes*. New York, NY: Columbia University, Teachers College, Community College Research Center.

¹⁷Logue, A. W., Watanabe-Rose, M., & Douglas, D. (in press). Should Students Assessed as Needing Remedial Mathematics Take College-Level Quantitative Courses Instead?: A Randomized Controlled Trial. *Educational Evaluation and Policy Analysis*.

¹⁸CollegeBoard. (2014). Targeted Intervention Produces Gains in Student Achievement: Results from the

Developmental Instruction and Academic Supports

Much of the discussion of the Task Force was devoted to the way in which mathematics developmental education has been and still is conducted at CUNY. Students who cannot demonstrate proficiency in mathematics are placed into a course sequence that for many begins with arithmetic and ends with elementary algebra. The starting point depends on the student's performance on the pre-algebra and elementary algebra modules of the Compass placement exam. In order to qualify for any introductory credit courses in mathematics, a student has been required to demonstrate a basic mastery of elementary algebra by passing the required exit exam—the CUNY Elementary Algebra Final Exam (CEAFE)—and by passing the course. The Task Force heard testimony for and against this algebra-for-all approach and considered experience with alternative approaches both within CUNY and elsewhere. The Task Force heard evidence that failure rates in elementary algebra are high and have not improved. In fall 2012, the semester in which elementary algebra was standardized around the CEAFE exam, 63% of students who initially registered for the course either withdrew or failed it. Three years later, the percentage was 64%. Although basic competence in elementary algebra is a clear necessity for students considering an algebra-intensive major, the Task Force concluded that other students should have options that include preparation for quantitative reasoning or statistics.

Despite the traditional nature of much of its developmental education practice, CUNY is nationally known for its innovations. Rigorous evaluation has demonstrated the effectiveness of CUNY Start preparing students in all skill areas, and a new program, Math Start, shows great promise. Summer immersion is still another effective program of longstanding at CUNY. And ASAP has proved effective at assisting its students to achieve skill proficiency in a timely manner.¹⁹ In addition, several CUNY colleges have had success with other alternatives to the conventional approach to mathematics developmental education, including accelerated models combining developmental and college-level instruction and developmental instruction designed to prepare students for quantitative reasoning rather than intermediate or college algebra. In fact, new matriculating students have a plethora of options for addressing developmental needs. As the Task Force recognized, these students need better advisement in order to make the best choice.

ACCUPLACER//MyFoundationsLab Pilots. Retrieved April 28, 2016, from http://media.collegeboard.com/digitalServices/pdf/accuplacer/accuplacer_targeted_intervention_brochure.pdf. Some evidence suggests, however, that student-centered, self-paced instruction can pose challenges for students in modularized math curricula (Bickerstaff, S., Fay, M. and Trimble, J. (2016). Modularization in Developmental Mathematics in Two States: Implementation and Early Outcomes. CCRC Working Paper No. 87.

¹⁹ Additional information on CUNY Start, Math Start, and ASAP may be found at <http://www2.cuny.edu/academics/academic-programs/model-programs/cuny-college-transition-programs/cuny-start/>, <http://www2.cuny.edu/academics/academic-programs/model-programs/cuny-college-transition-programs/cuny-start/math-start/>, and www.cuny.edu/sites/asap.

The recommendations below reflect the conclusion by the Task Force that CUNY should make available to its students rigorous developmental instruction that is tailored to their specific academic plans, that developmental instruction can be combined effectively with college-level content, and that students can benefit from stronger support in the form of advisement and academic support throughout the mathematics curriculum, from developmental instruction to calculus.

- 1. Encourage colleges to incorporate corequisite developmental education for associate degree students who need additional support. Credit from these courses will be recognized across the University, so that students who achieve proficiency by successfully completing such a course are considered proficient in the subject if they transfer to another CUNY college.**

Rationale

- Currently, most CUNY colleges offer the bulk of developmental instruction through prerequisite developmental courses, which students must successfully complete before they can attempt a credit-bearing course in the subject. Around the country and at CUNY, many colleges have demonstrated that corequisite or accelerated models of instruction can help students succeed in credit-bearing courses and reduce the amount of time and money spent on developmental instruction.²⁰
- Accelerated, corequisite math education models have been implemented successfully at LaGuardia (Statway)²¹ and Guttman Community Colleges. Some CUNY colleges have also adopted the corequisite model for reading and writing.
- A random assignment study recently conducted at three CUNY community colleges showed that the majority of students assigned to developmental math courses could pass credit-bearing statistics courses when offered supplemental workshops.²²
- A system-wide redesign of developmental education in Tennessee demonstrated the academic benefits of a corequisite model at a large scale²³ and the Community College Research Center found that Tennessee’s corequisite developmental education was also cost-effective.²⁴

²⁰ See Complete College America’s report “Corequisite Developmental Education: Spanning the Completion Divide” for an overview of the topic and examples of successful programs. For descriptions of an accelerated, combined approach to English and academic literacy, see <http://alp-deved.org/> and Edgecombe, N. D., Jaggars, S., Xu, D., & Barragan, M. (2014). *Accelerating the Integrated Instruction of Developmental Reading and Writing at Chabot College*. New York, NY: Columbia University, Teachers College, Community College Research Center.

²¹ LaGuardia CC reports that between 67 and 83 percent of the Statway students have passed the course in one semester (hence earned college-level credits for the course) since its inception in Fall 2013, while between 17 and 21 percent of students who enrolled in their traditional Elementary Algebra passed a credit-bearing math course by the end of their second semester.

²² Logue, A. W., Watanabe-Rose, M., & Douglas, D. (in press).

²³ Tennessee Board of Regents, Office of the Vice Chancellor for Academic Affairs. (n.d.). Co-requisite Remediation Pilot Study — Fall 2014 and Spring 2015 and Full Implementation Fall 2015. Retrieved April 28, 2016, from https://www.insidehighered.com/sites/default/server_files/files/TBR%20CoRequisite%20Study%20-%20Update%20Spring%202016%20%281%29.pdf.

²⁴ Belfield, C., Jenkins, D., & Lahr, H. (2016). Is Corequisite Remediation Cost-Effective? Early Findings from Tennessee. New York, NY: Columbia University, Teachers College, Community College Research Center.

2. **For all students who intend to pursue a major that does not require a substantial amount of algebra and who place into developmental math, colleges will offer at least one rigorous alternative to elementary algebra.**²⁵ **The alternatives may be another developmental course better aligned with the student’s major, or a credit-bearing course such as quantitative reasoning or statistics with corequisite support.**²⁶
 - i. **The CEAFE will not be administered and count as part of the grade in the alternative developmental math courses described above. (The CEAFE is specifically designed to certify a level of mastery of the topics taught in Elementary Algebra.) Instead, each math department will administer a rigorous common departmental final for these courses.**
 - ii. **Students must be proficient in arithmetic in order to qualify for placement in a credit course with corequisite support.**
 - iii. **Students who achieve proficiency in math by successfully completing an alternative to elementary algebra will be considered proficient in math at all CUNY colleges.**
 - iv. **The effectiveness of these alternative pathways to math proficiency will be evaluated after they have been in place long enough to assess the performance of students in their subsequent mathematics course work at CUNY.**

Rationale

- a. CUNY’s general education requirement for Mathematical and Quantitative Reasoning defines the basic learning outcomes in mathematics for all undergraduate students. It does not require all students to complete a College Algebra course, and instead allows them to meet the learning outcomes through any number of other quantitative courses. Many CUNY students never take College Algebra, particularly students who wish to major in the social sciences, arts and humanities. These students might be better-served by taking quantitative coursework that prepares them for statistics or quantitative reasoning than by taking algebra courses covering all of the topics tested by the CEAFE.²⁷
- b. The correlation between Elementary Algebra proficiency (as measured by scores on the CEAFE) and grades in a subsequent math course varies significantly depending on the content of the next course (weaker correlation with non-algebra-intensive courses compared to algebra-intensive courses).²⁸ This finding suggests that Elementary Algebra is not an equally appropriate preparation for every course of study.

²⁵ Non-algebra intensive majors are those for which college algebra or higher level math is not a pre-requisite.

²⁶ Non-course based interventions such as CUNYStart and USIP that follow the Elementary Algebra curriculum do not satisfy this requirement.

²⁷ The Dana Center has detailed the limited set of algebraic skills needed for success in introductory statistics. See http://www.utdanacenter.org/wp-content/uploads/math_prerequisites_for_success_in_intro_statistics.pdf

²⁸ Office of Policy Research data analysis shows, among students who took the CEAFE in fall 2013 and took a subsequent math course within the next year, the CEAFE scores had a correlation of 0.27 with grades in College Algebra courses, but only 0.18 with grades in alternative math credit courses, such as Quantitative Reasoning and Social Science Math.

- c. BMCC has developed and implemented an alternative developmental quantitative reasoning course (Quantway), evaluation of which demonstrates higher pass rates than elementary algebra and effective preparation for subsequent credit-bearing math course work.²⁹
 - d. One argument for requiring all developmental students to complete Elementary Algebra has been that students who opt for an alternative course will foreclose their option to pursue some majors. However, only about 5 percent of CUNY students who initially major in a non-algebra-intensive program subsequently change to an algebra-intensive major. These few students will be required to complete Elementary Algebra or an alternative bridge course designed to impart the math required by the new major.
3. **Encourage colleges to implement accelerated instruction models that combine content from two currently separate courses, such as developmental arithmetic and Elementary Algebra. Colleges should not penalize students who fail to pass these courses by later requiring them to complete the lower-level course separately. For example, CUNY Start students who are unsuccessful passing the combined Elementary Algebra and Arithmetic course should be allowed to enroll in Elementary Algebra with extra support or an Elementary Algebra combination course.**

Rationale

- a. Some CUNY colleges and programs already offer combined arithmetic and Elementary Algebra courses. Because of the combined course structure, students in these courses are not afforded an opportunity to demonstrate arithmetic proficiency separate from Elementary Algebra proficiency. Students who fail such a course with a grade of R (“repeat”) should be allowed to enroll in the upper-level developmental course or another combined course with extra support.³⁰
4. **Encourage colleges to improve advisement for students to help them choose among developmental instruction options and encourage them to begin developmental instruction as soon as possible. Students who place into developmental education in all three subjects (reading, writing, and math) should be strongly encouraged to enroll in CUNY Start.**

Rationale

- a. As mentioned earlier, CUNY has developed effective alternatives to traditional developmental courses, including CUNY Start, Math Start (formerly Summer Start), and USIP (University Skills Immersion Program), which rigorous evaluations have demonstrated are better than conventional developmental education in helping students achieve proficiency

²⁹ BMCC reports Quantway has a higher pass rates than their traditional Elementary Algebra (59% and 36%, respectively); the pass rates of the next level math courses are comparable between the two groups (66% and 68%).

³⁰Students who earn a W or WU grade, suggesting they did not complete significant Elementary Algebra instruction, are not included in this policy.

in a timely manner.³¹ But it may be difficult for new students to understand all their options. Students assigned to developmental education should be advised before making enrollment decisions so that they understand the best option for their particular circumstances and needs.

- b. The choice between CUNY Start and/or USIP can have significant implications for student's access to and use of financial aid, which they may need help understanding.
- c. Students who are considering registering for an alternative to elementary algebra will benefit from good advisement regarding the potential implications for their intended major and for transfer to a bachelor's program.

5. Support colleges in their efforts to improve student outcomes in algebra and STEM courses.

Rationale

- a. Many students require elementary algebra in order to qualify for the major they wish to pursue. Currently, more than 60 percent of students who register for this course fail or withdraw from it, consuming valuable resources of time, tuition and financial aid. Improving success rates in this course will not only raise graduation rates but also enable more students to enroll in STEM and other algebra-intensive disciplines.

6. Improve academic support for students beyond developmental education, for example by increasing access to workshops, tutoring, active and collaborative learning and other learning opportunities designed to support students in credit courses.

Rationale

- a. The need for developmental support does not end when students have met basic proficiency standards. Students can benefit from comprehensive supports, such as tutoring, co-requisite workshops, and USIP programs, across the credit-bearing spectrum in all subject areas.
- b. Greater support while students are in credit-bearing courses can reduce the need for students to take separate developmental interventions to prepare for these courses.
- c. Extra supports may be especially useful in the near future as CUNY's developmental placement standards have to be adjusted to accommodate new high school exams and placement tests, and we will have less historical data to draw on when making placement decisions. Ensuring that academic supports are in place for credit-bearing courses will make it less risky to assign students to those courses.

³¹ Douglas, D., & Attewell, P. (2014). The bridge and the troll underneath: Summer bridge programs and degree completion. *American Journal of Education*, 121, 87-109. Also, a propensity score matching study conducted by CUNY's Office of Research, Evaluation, and Program Support (REPS) showed that CUNY Start is more effective than traditional developmental education in moving students through developmental instruction and into credit-bearing math courses, and is associated with higher student retention.

Exit from Developmental Education

Increasingly, colleges and universities across the nation are eschewing the reliance on high stakes tests alone for placement into developmental education. If we accept the evidence that tests are poor predictors of later performance in courses, and that grades are better predictors, it follows that we should not require students to pass high stakes tests to exit developmental education. In fact the practice of requiring high stakes exit exams seems to be rare in higher education: CUNY is an outlier. The Task Force considered the pros and cons of common final exams and recommends that CUNY continue to use common final exams, tailored to developmental coursework, as a significant part of final course grades in developmental courses and important indicators of student learning. However, the Task Force also calls for an end to the practice of requiring all students to pass common tests in algebra, writing and reading to exit developmental education. The Task Force also recommends increasing the availability of short post-semester developmental interventions so that students who come close to passing elementary algebra can address the topics with which they struggled without having to repeat the whole course.

1. **Eliminate high-stakes exit testing for developmental education in all subjects by making a passing grade in the course sufficient to demonstrate that a student has met basic proficiency. CUNY will retain common CUNY-wide final exams for Elementary Algebra, top-level developmental writing courses, and top-level developmental reading courses. In these courses, the common CUNY-wide final exam will count as a significant part of the student's course average, but no more than 35 percent.**
 - i. **For Elementary Algebra, the current requirement for students to earn a 60 percent on the CEAFE will be eliminated. The only requirement to earn a passing grade in the course is for the student to earn a 70 percent course average. The CEAFE will count as 35 percent of the course average.**
 - ii. **For developmental alternatives to Elementary Algebra, departments will develop common departmental finals to include in course grades. The CEAFE will not be required for these courses.**
 - iii. **For top-level developmental writing courses, the current requirement for students to pass the CAT-W will be eliminated. The CAT-W will be included in course grades and will count no more than 35 percent.**
 - iv. **For top-level developmental reading courses, the current requirement for students to pass the reading placement exam will be eliminated. Either a CUNY developed reading exam or an ACCUPLACER Reading exam will be included in course grades and will count no more than 35 percent.**
 - v. **For non-course based interventions, such as CUNY Start, USIP, and CLIP, CUNY will develop new guidelines regarding the most appropriate markers of proficiency, whether tests or course grades.**

Rationale

- a. Single tests are not reliable predictors of performance in credit courses,³² and high-stakes testing puts undue emphasis on a single performance.³³ Combining the exam with faculty expertise and professional judgment (based on a semester-long experience of their students) will make for a more accurate indicator of students' readiness to advance beyond developmental work.
 - b. Nonetheless, CUNY-wide final exams are valuable for determining a common set of learning outcomes. Using a common assessment instrument is helpful in a system in which many students transfer among colleges. A shared final exam also encourages some uniformity across sections within a course and provides valuable feedback to faculty and department chairs.
2. **Colleges will offer short post-semester interventions to all Elementary Algebra students who nearly pass the course. Which students are deemed to have nearly passed the course will be determined by the college, but they must include students whose CEAFE score suggests significant progress toward proficiency.**
- i) **There is no minimum contact hour requirement for interventions, and they may consist of any mode of instruction, including online learning.**
 - ii) **Interventions must come at no additional cost to students, and colleges must offer sufficient seats for all students who wish to enroll.**
 - iii) **In keeping with the principle that the CEAFE is only one part of the determination of proficiency, all interventions must include additional graded components, for example quizzes, tests, or homework. Students who complete an intervention will take the CEAFE again. The new CEAFE grade will count for 35 percent of the student's intervention grade; the remaining 65 percent will be based on the student's work during the intervention. A student must earn a 70 percent average during the intervention to receive a passing grade.**

Rationale

- a. Students who come close to passing a developmental course should not be required to re-take the entire course in order to have another opportunity to demonstrate proficiency. Re-taking developmental courses puts students at risk of losing academic momentum and exhausting financial aid resources before completing a degree.
- b. Short term post-semester interventions to achieve proficiency are allowed under current University policy, but they are not widely available to students. In fall 2014, 724 students who failed the Elementary Algebra course earned passing scores on the CEAFE, demonstrating that they had made significant progress toward proficiency, but only 89 (12

³² Scott-Clayton, J. E. (2012). Do High-Stakes Placement Exams Predict College Success? *New York, NY: Columbia University, Teachers College, Community College Research Center.*

³³ Hughes, K. L., & Scott-Clayton, J. (2011). Assessing Developmental Assessment in Community Colleges. *Community College Review, 39*(4), 327-351.

percent) completed a post-semester intervention and re-took the CEAFE. Many hundreds of additional students earned scores that were just below the passing score on the exam and also did not complete interventions. (See completion trend and score distribution in Appendix 2.)

- c. This recommendation is consistent with the recommendation that students who fall just short of passing the test used to determine placement into developmental education or credit-bearing courses be allowed to take the test again after completing a short intervention.

7. Allow students to use calculators on the CEAFE, including scientific calculators.

Rationale

- a. From grade 6 onward, the New York State Education Department exams require calculator use.
- b. Almost all collegiate elementary algebra textbooks and instructional materials were created with the expectation that calculators would be permitted. These textbooks often require computations that are tedious without a calculator.
- c. Credit-bearing math and quantitative courses at CUNY almost always require the use of a calculator. Including instruction on the proper use of calculators would better prepare students for these courses.

Consistent with its commitment to evidence-based practice and policy, CUNY will assess the impact of all of these recommendations after they have been implemented and make the appropriate adjustments. Like other academic policies, those pertaining to developmental education benefit from full consultation and feedback. The Office of Academic Affairs is committed to this practice, so that our students can have the benefit of our collective thinking and experience.

References

- Belfield, C., Jenkins, D., & Lahr, H. (2016). Is Corequisite Remediation Cost-Effective? Early Findings from Tennessee. *New York, NY: Columbia University, Teachers College, Community College Research Center.*
- Bickerstaff, S., Fay, M. and Trimble, J. (2016). Modularization in Developmental Mathematics in Two States: Implementation and Early Outcomes. Community College Research Center Working Paper No. 87.
- Charles A. Dana Center. (n.d.). Mathematics Prerequisites for Success in Introductory Statistics. Retrieved April 28, 2016, from http://www.utdanacenter.org/wpcontent/uploads/math_prerequisites_for_success_in_intro_statistics.pdf.
- College Board. (2014). Targeted Intervention Produces Gains in Student Achievement: Results from the ACCUPLACER//MyFoundationsLab Pilots. Retrieved April 28, 2016, from http://media.collegeboard.com/digitalServices/pdf/accuplacer/accuplacer_targeted_intervention_brochure.pdf.
- Douglas, D., & Attewell, P. (2014). The Bridge and the Troll Underneath: Summer Bridge Programs and Degree Completion. *American Journal of Education, 121*(1), 87-109.
- Edgecombe, N. D., Jaggars, S., Xu, D., & Barragan, M. (2014). Accelerating the Integrated Instruction of Developmental Reading and Writing at Chabot College. *New York, NY: Columbia University, Teachers College, Community College Research Center.*
- Fay, M. P., Bickerstaff, S. E., & Hodara, M. (2013). Why Students do not Prepare for Math Placement Exams: Student Perspectives. *New York, NY: Columbia University, Teachers College, Community College Research Center.*
- Hughes, K. L., & Scott-Clayton, J. (2011). Assessing Developmental Assessment in Community Colleges. *Community College Review, 39*(4), 327-351.
- Jaggars, S. S. & Stacey, G. W. (2014). What We Know About Developmental Education Outcomes. *New York, NY: Columbia University, Teachers College, Community College Research Center.*
- Koretz, D., Yu, C., Langi, M., & Braslow, D. (2014). Predicting Freshman Grade -Point Average from High - School Test Scores: are There Indications of Score Inflation? *Cambridge, MA: Harvard Graduate School of Education.*
- Logue, A. W., Watanabe-Rose, M., & Douglas, D. (in press). Should Students Assessed as Needing Remedial Mathematics Take College-Level Quantitative Courses Instead?: A Randomized Controlled Trial. *Educational Evaluation and Policy Analysis.*
- Ngo, F., Kwon, W., Melguizo, T., Prather, G., & Bos, J. M. (2013). Course Placement in Developmental Mathematics: Do Multiple Measures Work. *Los Angeles, CA: The University of Southern California.*
- Scott-Clayton, J. E. (2012). Do High-Stakes Placement Exams Predict College Success? *New York, NY: Columbia University, Teachers College, Community College Research Center.*

Scott-Clayton, J. E. and Rodriguez, O. (2012). Development, Discouragement, or Diversion? New Evidence on the Effects of College Remediation. *NBER Working Paper #18328*.

Scott-Clayton, J. E., Crosta, P. M., & Belfield, C. R. (2014). Improving the Targeting of Treatment Evidence From College Remediation. *Educational Evaluation and Policy Analysis, 36*(3), 371-393.

Tang, Z. & Truelsch, S. (2013). Remedial Screening Tests, High School Grades, and College Success. Presentation at the Annual Fall Research Conference of the Association for Public Policy Analysis and Management, Washington, DC, November 7-9.

Tennessee Board of Regents, Office of the Vice Chancellor for Academic Affairs. (n.d.). Co-requisite Remediation Pilot Study — Fall 2014 and Spring 2015 and Full Implementation Fall 2015. Retrieved April 28, 2016, from https://www.insidehighered.com/sites/default/server_files/files/TBR%20CoRequisite%20Study%20-%20Update%20Spring%202016%20%281%29.pdf.

Appendix 1: Members of the Developmental Education Task Force

Vita Rabinowitz, Executive Vice Chancellor for Academic Affairs and University Provost (Chair of the Task Force)

David Crook, University Dean for Institutional Research and Assessment (Co-Chair of the Task Force)

Paul Arcario, Provost and Senior Vice President for Academic Affairs, LaGuardia Community College

Bonne August, Provost and Vice President for Academic Affairs, New York City College of Technology

Jane Bowers, Provost and Senior Vice President for Academic Affairs, John Jay College

David Christy, Provost and Senior Vice President for Academic Affairs, Baruch College

Eileen Ferretti, Associate Professor and Chair of English, Kingsborough Community College and Co-Chair of the English Discipline Council

Richard Fox, Interim Vice President for Academic Affairs and Provost, Kingsborough Community College

Warren Gordon, Professor and Chairman, Department of Mathematics, Baruch College; Chair of the Mathematics Discipline Council

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Lucinda Zoe, University Dean for Undergraduate Studies, Office of Academic Affairs

Appendix 2: Charts and Tables

Table 1: Trends in Percentage of Students Fully Proficient by the End of First Year
(of those initially needing any developmental education)

Less than half of students assigned to developmental education have finished developmental courses by the end of their first year.

College	Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013
	%	%	%	%	%
Medgar Evers	38.9	36.1	36.5	41.7	46.3
NYCCT	54.5	62.9	69.4	66.9	58.1
Staten Island	62.7	72.5	70.9	67.9	71.7
Comprehensive College Average	53.8	59.7	62.9	62.3	60.9
BMCC	33.2	30.2	40.0	41.4	46.5
Bronx	26.8	27.5	28.5	33.3	36.4
Guttman	--	--	--	50.0	53.2
Hostos	32.1	35.0	35.4	44.8	47.0
Kingsborough	24.8	23.1	26.5	30.9	33.8
LaGuardia	39.7	42.4	44.4	44.0	45.8
Queensborough	36.7	42.2	34.2	45.3	56.8
Community College Average	35.2	33.3	36.2	40.5	45.4
University Average	38.2	39.0	42.0	45.2	49.2

Table 2: Three-Year Associate Graduation Rates by Developmental Assignment and College: Fall 2011
Full-time, First-Time Freshmen

Students assigned to developmental education have much lower chances of graduating in three years than students not assigned to developmental education.

College	Not Assigned to Developmental Education		Assigned to Math		Assigned to Reading		Assigned to Writing	
	Count	3-year Graduation Rate	Count	3-year Graduation Rate	Count	3-year Graduation Rate	Count	3-year Graduation Rate
	N	%	N	%	N	%	N	%
Medgar Evers	121	8.3	783	3.8	271	3.7	374	4.3
NYCCT	851	12.1	1,459	5.6	299	6.4	487	5.7
Staten Island	362	3.0	985	3.1	177	2.3	259	3.1
Comprehensive Total	1,334	9.3	3,227	4.4	747	4.4	1,120	4.6
BMCC	814	23.2	3,349	13.4	1,239	10.0	1,948	11.9
Bronx	152	23.0	1,342	9.1	602	6.3	773	7.2
Hostos	93	19.4	861	11.1	404	8.2	507	7.9
Kingsborough	508	36.2	1,542	18.5	666	13.5	924	14.2
LaGuardia	409	26.4	1,732	12.9	720	10.0	828	9.9
Queensborough	795	28.9	2,005	12.8	675	11.6	756	13.0
Community Total	2,771	27.6	10,831	13.2	4,306	10.1	5,736	11.1
Total University	4,105	21.6	14,058	11.2	5,053	9.3	6,856	10.1

Table 3: History of CUNY Math Developmental Exemption Criteria

Effective Date	Applicable School Tier*	SAT Scores	Regents Scores and Course Completion	Compass Placement Test	
				Elementary Algebra	Arithmetic
March 2015	All	500	70 on Common Core-aligned regents + Algebra 2	40**	45**
March 2014	All	500	80 + Algebra 2	40**	45**
March 2012	1	510	80 + Algebra 2	45	45
	2	500	80 + Algebra 2	40	35
	3	480	80 + Algebra 2	40	35
March 2011	1	510	75 +Algebra 2	45	45
	2	500	75 +Algebra 2	40	35
	3	480	75 +Algebra 2	40	35
October 2008	1	510	75	45	45
	2	500	75	30	35
	3	480	75	30	30
October 2007	All	480	75	30	30
March 2004	All	480	75	27	27
March 2000	All	480	75	CMAT	25

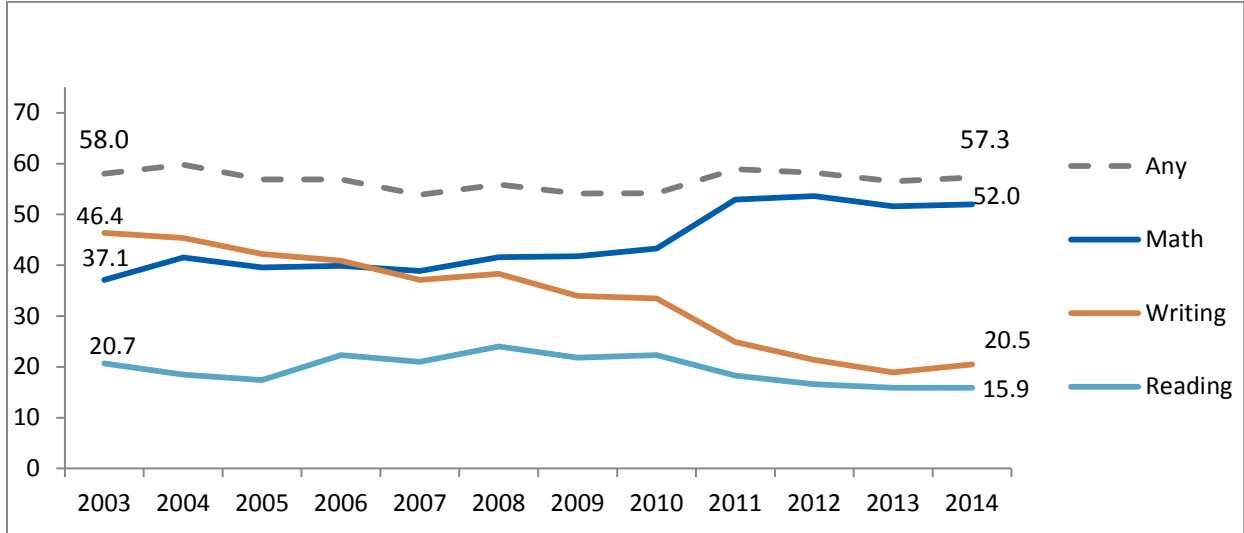
*Tier 1: Baruch, Brooklyn, City, Hunter, Lehman, Queens, and York (as of Fall 2012)

Tier 2: John Jay, Medgar Evers, NYCCT, Staten Island and York (until 2012)

Tier 3: BMCC, Bronx, Hostos, Kingsborough, LaGuardia, and Queensborough

Figure 1: Trends in the Percentage of Freshmen Assigned to Developmental Education, by Subject: All Colleges

The percentage of students assigned to developmental education in math increased starkly after higher exemption criteria were introduced in 2011. The trends in assignment to reading and writing developmental education have gone in the opposite direction, especially after the CAT-W was introduced in 2010.

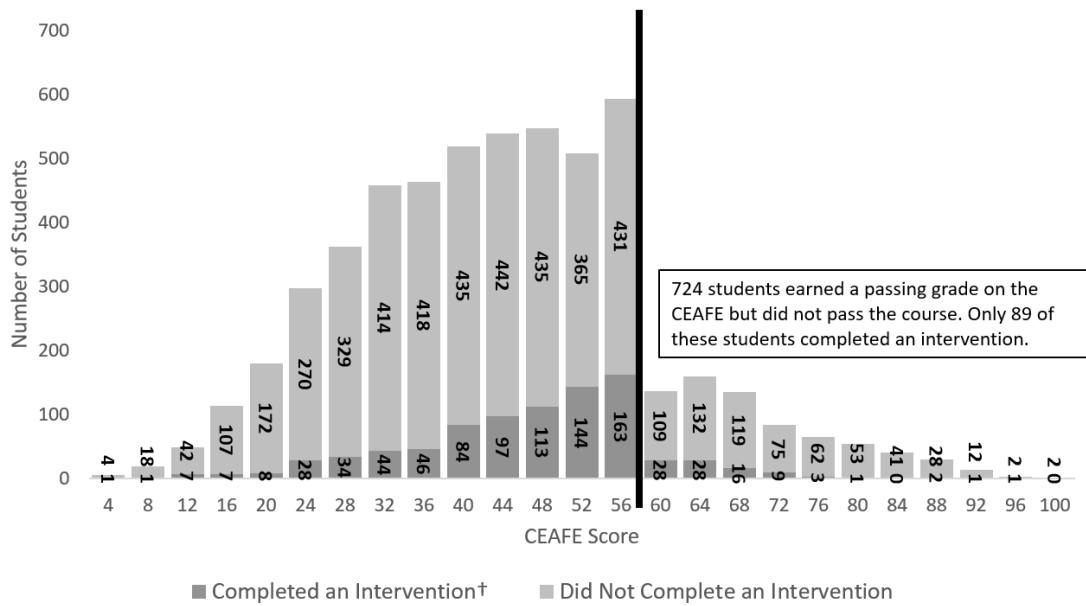


Appendix 3: Post-Semester Math Interventions

Short-term post-semester interventions to achieve proficiency are allowed under current University policy, but they are not widely available to students. In fall 2014, 724 students who failed the Elementary Algebra course earned passing scores on the CEAFE, demonstrating that they had made significant progress toward proficiency, but only 89 (12 percent) completed a post-semester intervention and re-took the CEAFE. Many hundreds of additional students earned scores that were just below the passing score on the exam and also did not complete interventions.

CEAFE Score Distribution, Fall 2014

Students who did not pass the course



Trends in Elementary Algebra Intervention Completers and CEAFE Pass Rates³⁴

Term	Intervention Completers	Passed CEAFE
Fall 2013	649	73%
Fall 2014	866	76%
Fall 2015	582	72%

³⁴ Note: Intervention completion is inferred from a student taking the CEAFE twice in a short time period. For LaGuardia and Kingsborough, this method may also capture session 2 repeaters.