The Transformation of Colorado's Developmental Education Program

Observations and Findings

Suzanne Michael Heather McKay

Released October 2015

RUTGERS
Education and Employment Research Center

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This workforce solution was funded by a grant awarded by the U.S. Department of Labor's Employment and Training Administration. The solution was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including information on linked sites and including, but not limited to, accuracy of the information or its completeness, timelines, usefulness, adequacy, continued availability, or ownership.

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THE TRANSFORMATION OF COLORADO'S DEVELOPMENTAL EDUCATION PROGRAM:[1] OBSERVATIONS AND FINDINGS

EXECUTIVE SUMMARY

Across the nation, community college students with poor English, reading, and math skills are assigned to developmental education courses. For these students, the rates of retention in college and the completion of a credential (certificate and/or associate degree) have been historically low. Over the past decade, to address this challenge, colleges in Colorado have experimented with pathways, curriculum, and pedagogy. These experiments have been funded by various grants from the Lumina foundation and Complete College America.

In 2012, Colorado Community College System (CCCS) received a three-year Trade Adjustment Assistance Community College Career Training (TAACCCT) grant from the US Department of Labor to: a) transform developmental education and b) transform energy programs within the state to online and hybrid formats. Concurrent with the TAACCCT grant, the state leadership established the Colorado Developmental Education Task Force (DETF). This task force included representatives from the 13 CCCS colleges as well as from three independent community colleges—Aims Community College, Colorado Mountain College, and Colorado Mesa University. In the spring of 2013, the DETF recommendations were passed by the board of CCCS. With the passage of the recommendations, Colorado transformed its developmental education in four critical ways:

- by reducing the developmental education (DE) requirement from a sequence of courses (e.g. 030, 060, 090, 099) to a single-semester long course;
- by integrating English and reading into a single discipline, College Composition and Reading (CCR);
- by creating two separate math pathways—quantitative literacy (Math 050) and pre-algebra (Math 055)—tailored to different academic and career interests; and
- by creating "soft-landing options" either on campus or in the community for students who do not meet the DE cut score based on state assessment tests.

The DETF recommendations were informed by the experiences of national leaders of DE programs, including the Community College of Baltimore County's Accelerated Learning

[1] This is one of two reports being issued by Rutgers' Education and Employment Research Center (EERC)[1] on the redesigns of developmental education across 15 community colleges in Colorado. The current report focuses on the process of transforming developmental education in Colorado between fall 2008 and fall 2014 and includes: a) an examination of strategies and models, and the work of Colorado's Developmental Education Task Force (DETF); b) challenges; and c) recommendations for next steps. A second EERC report will present student outcomes to date in respect to successful completion of DE courses and/or gateway/college-level courses in English and math.

Program (ALP)[2] and the Dana Center at the University of Texas at Austin's Mathways Project;[3] as well as by the results of diverse innovations—e.g., acceleration, compression, contextualization, learning communities, the use of modules, and the expansion of advising services for DE students—piloted within Colorado.

It was mandated that the redesign be fully implemented at all Colorado community colleges by fall 2014, but colleges had flexibility on the timing of their rollout. This report by the third party evaluator, Rutgers Education and Employment Research Center (EERC), reflects the results of qualitative research (interviews with faculty, students, administrators, and student-services staff; classroom observations; and documents review) on Colorado's experimentation prior to the DETF and on the process of implementing the redesigns. The report primarily focuses on faculty- and curriculum-related changes but also makes some references to changes and challenges related to student advisement and student services. Following are some of the major findings of EERC's analysis.

FINDINGS/OBSERVATIONS

Developmental Education Task Force (DETF)

Buy-in was strong for the DETF process and for its final recommendations. Four key factors contributed to DETF's success. First, it was led by faculty, administrators, and student-services staff and included representatives from each of the colleges. Second, it was a collaborative and transparent process. Third, it established multiple feedback loops to engage faculty, staff, and administrators in both the process of learning and making choices, and finally, colleges were encouraged to create campus mechanisms to disseminate information about DETF and to provide feedback as choices were being made.

Teaching and Pedagogy

The use of reverse design in developing new DE curriculum stimulated significant dialogue between DE and transfer faculty and reduced some of the historic bias towards DE students and faculty. One respondent noted that the design "*[rallied] a lot of people around an effort to help increase student success.*"

A shift toward a more collaborative model of teaching and learning was observable with increased faculty–student and student–student interaction in the classroom, and a decrease in lecturing.

[2] Accelerated learning programs. (n.d.). Accelerated learning program. Retrieved from http://alp-deved.org/
[3] Dana Center of the University of Texas at Austin (n.d.). New mathways project. Retrieved from http://www.utdanacenter.org/higher-education/new-mathways-project/

Critical thinking became more integrated into DE coursework, and interest in reading and writing skills was expanded across the curriculum—i.e., not just in designated English courses but in science and history classes as well.

Implementation of the Redesign

There is a "culture" of change. Colleges already involved in experimenting with math seemed to be more able and willing to move forward with redesigns prior to the mandated start date than were those who had been less engaged in experimentation.

Some colleges chose to straddle both formats, continuing to offer the old DE options along with the redesigns to accommodate students already in the DE pipeline. In retrospect, most faculty and administrators felt it would have been better to just "*rip off the Band-Aid*" and move ahead with the redesign exclusively.

There was overwhelming interest/participation in professional development to prepare for the redesigns. This included attention to student services, whose advisers now play a critical role in helping students decide which CCR options and/or math pathway best matches their academic and career interests.

CHALLENGES

A number of challenges emerged over the course of implementation—some have been resolved and others still need attention. The identification of these challenges, however, may help inform replication and scaling of the redesign both within and beyond Colorado.

Integration of English and Reading

In addition to reading faculty's concern about job security—in part related to the credentials required to teach college-level English courses—there were concerns about how reading skills would be taught and integrated into the new state redesigned College Composition and Reading (CCR) courses[4] and whether faculty possessed the "instructional expertise to teach the redesigned CCR courses."[5]

Math Pathways

Under the state redesign, two different math pathways were established – quantitative literacy (MAT 050) and pre-algebra (MAT 055).[6] Math faculty debated if and when to use a conceptual versus a procedural approach in MAT 050 and MAT 055. As of spring 2015, not all colleges

[4] See page 23 of the report for a full description of College Composition and Reading courses
[5] Cox, R. D. (2015). TAA Grant Evaluation—CCCS Developmental Education Redesign—Subject Matter Expert Review. Unpublished EERC Report. 7. Retrieved from http://smlr.rutgers.edu/eerc/coetc.
[6] See page 24 of the report for a full description of the two different math pathways.

offered the 025 option for Math 055 students, thus failing to provide DETF's recommended support for low-level students who want to pursue an algebra program of study. Concern also exists over whether students are receiving sufficient advising with respect to selecting the most appropriate math pathway given their academic and career interests. On implementation, it appears some colleges are sequencing the MAT 050 followed by the MAT 055 course. This is counter to the recommendations of the DETF, where the intent was for students to select the appropriate pathway for study and move from developmental coursework directly into the required college math course.

Faculty Jobs

The sequence of math and CCR DE courses has now been reduced to a single DE course or, in some cases, a corequisite course to a college class. In response to these changes, some faculty across the state, (especially reading faculty and those without the graduate credits to teach college-level courses), have worried about job security.

Student Advisement and Student Services

Helping students identify the best CCR option or math pathway is now a critical aspect of the redesign. The time and resources that are required to train the large number of existing student-services staff to properly assist students in these decisions is an ongoing concern. This is especially true for part-time students and those who have not declared a major—

Student Success versus Open Access

Post-DETF, colleges cannot allow students to use financial aid awards on course content that is not at least high school-level content. As a result, enrollment in college DE programs requires a higher score on state assessment tests. At the time of this study, not all colleges or communities had identified a soft-landing option for students who score too low; as a result, some faculty, staff, and administrators voiced significant concern about the community college becoming a gatekeeper versus a gateway for this population of students. Further, they wondered if funding under the state's 2014 "Adult Education and Literacy Act"[7] will be sufficient to meet the need of low-scoring students.

[7] In 2014, the Colorado legislature passed the Adult Education and Literacy Act of 2014, which established the Adult Workforce Partnership Program to be administered by the Colorado Department of Education. Under this Act the state will work in partnership with state-funded workforce centers to provide educational programs that include basic literacy and numeracy skills. See more at http://www.cde.state.co.us/cdeadult/colorado-adult-education-and-literacy-act#sthash.WkG3NpzD.dpuf.

Changes in Pedagogy

The Colorado Community College System's DE redesign implemented significant changes in course content—the creation of two parallel math pathways (quantitative literacy or pre-algebra) and the integration of reading and writing into the newly designed College Composition and Reading discipline. As faculty transform the content of their teaching, there is concern regarding whether pedagogy and student advising are also keeping up with those curricular changes. For example, are students being sufficiently advised so that MAT 050 and MAT 055 are independent or parallel pathways and not used as stepping stones—i.e., are students taking MAT 050 and then erroneously being advised to enroll in MAT 055 as well?

Details about the DETF process and redesign, further discussion of the findings and challenges listed above, and suggestions for future research and recommendations for action can be found within the following report.

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THE TRANSFORMATION OF COLORADO'S DEVELOPMENTAL EDUCATION PROGRAM

This is one of two reports being issued by Rutgers' Education and Employment Research Center (EERC) on the redesign of developmental education (DE) within the community colleges in Colorado. The current report focuses on the process of transforming DE in Colorado between fall 2008 and fall 2014 and includes an examination of strategies and models and the work of Colorado's Developmental Education Task Force (DETF); a discussion of challenges that arose during and after the redesign period; and recommendations for next steps. A second EERC report will present student outcomes to date with respect to successful completion of DE courses and/or gateway/college-level courses in English and math. Please note that this report primarily focuses on faculty- and curriculum-related changes but also makes some references to changes and challenges related to student advisement and student services. Also note that this report primarily focuses on the work of the colleges in the CCCS system. While three independent schools—Aims, Colorado Mountain College, and Colorado Mesa University—participated in some aspects of this redesign, they were not mandated to follow the change.

Both reports are the result of data collection and analysis undertaken by EERC as the third party evaluator contracted by the Colorado Community College System under a grant from the US Department of Labor's Trade Adjustment Assistance Act.

To provide context, the current report begins with a discussion of developmental education in Colorado and across the nation. This is followed by the research questions CCCS and EERC collaboratively developed, which will be the focus of the rest of the report.

Setting the Context

Across the nation, community colleges act not only as the first opportunity for many individuals to engage with higher education but in many areas they are also the only option for individuals seeking to further their education and/or prepare themselves for the job market. In Colorado, a largely rural state, the 13 colleges of the CCCS[8] and two independent colleges Aims, Colorado Mountain College, and Colorado Mesa University's community college arm Western Colorado Community College[9], offer a wide range of degree and certificate programs to help students develop critical skills for employment in the changing global economy and to provide the foundation for those students who wish to continue on to four-year academic institutions.[10]

[8] The 13 colleges under the Colorado Community College System are: Arapahoe Community College, Community College of Aurora, Colorado Northwestern Community College, Community College of Denver, Front Range Community College, Lamar Community College, Morgan Community College, Northeastern Junior College, Otero Junior College, Pikes Peak Community College, Pueblo Community College, Red Rocks Community College, and Trinidad State Junior College.

[9] Note that Western Colorado Community College is not a stand-alone community college but an extension of Colorado Mesa University; as such, no data from its DE experiences has been included in this study.

[10] Colorado Community College System. (2013a). Colorado's #1 source of higher education access and opportunity. Retrieved from http://www.cccs.edu/

During the 2013–14 academic year, Colorado's community colleges served close to 180,000[11] students, about 85 percent of whom were Colorado residents.[12] These students represent a broad cross section of the state in terms of race/ethnicity and age. Forty-eight percent of minority undergraduate students enrolled in higher education in Colorado attend one of the 13 CCCS colleges; additional minority students attend Colorado's two independent community colleges—Aims and Colorado Mountain.[13, 14] Close to half (46 percent) of students attending CCCS colleges are considered nontraditional (25 years and older).[15] Many of these students are working full or part time [16] as they pursue associate degrees and/or career and technical education (CTE) certificates.

In the 2012–13 academic year, close to 64 percent of first-time enrollees (recent high school graduates and nontraditional students) in a certificate or degree program at one of Colorado's community colleges required remediation in one or more subjects: math, reading, and/or English.[17] Almost 50 percent of these students required the successful completion of two or more remedial courses before enrollment in a gateway or college-level course.[18] The need for remediation in Colorado, while slightly lower than prior years, mirrors national trends of close to 60 percent of entering community college students requiring remediation.[19,20]

For many students, however, enrollment in a remedial course does not lead to a successful community college experience. In fact, only 62 percent of the remedial courses taken by the 2012 high school students were passed.[21] And of those students who did pass the required DE course, only 58 percent of these students enrolled in any classes the following academic year.[22] These percentages highlight two persistent concerns: *retention*, or students' successful

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[11] CCCS reports 134,300 undergraduates and an additional 17,000 through other non-degree programs (2014). Aims reports 8,000 students. (See www.aims.edu/about/faqs/89#78.) Colorado Mountain reports 20,000 students. (See http://coloradomtn.edu/about-cmc/.)

[12] This includes all community colleges in Colorado. Among CCCS colleges, close to 90 percent of students were residents of Colorado. See Colorado Community College System (2013b). Academic year 2012–13 fact book. Retrieved from http://www.cccs.edu/Docs/Research/Academic%20Year%202012%20Fact%20Book.pdf

[13] Colorado Community College System. (n.d.), Colorado community college fact sheet. Retrieved from https://www.cccs.edu/wp-content/uploads/2012/08/CCCS-Fact-Sheet1.pdf

[14] We could not locate data for the two independent community colleges, Aims and Colorado College.

[15] Colorado Community College System (2013b). op. cit.

[16] Ibid.

[17] Colorado Commission on Higher Education. (2014). The 2013 Legislative report on remedial education. Retrieved from http://highered.colorado.gov/Publications/Reports/Remedial/FY2013/2013_Remedial_relmay14_rev071614.pdf, 6

[18] Colorado Community College System. (2013c). Academic year 2012–13: Remedial enrollment and course completion rates. Retrieved from https://www.cccs.edu/wp-content/uploads/2012/09/AY2013RemedialReport.pdf

[19] Edgecombe, N., Cormier, M. S., Bickerstaff, S., & Barragan, M. (2013). Strengthening developmental education reforms: Evidence on implementation efforts framework of accountability (Working Paper No. 61). New York: CCRC.

[20] Bailey, T. (2009). Challenge and opportunity: Rethinking the role and function of developmental education in community college. *New Directions for Community Colleges, 145*, 11–30.

[21] Colorado Department of Higher Education (2014), op cit. 15.

[22] Ibid, 17.

completion of required DE courses and their continued enrollment in courses leading to a certificate or degree, and *completion*, their subsequent attainment of a certificate or degree.

A 2009 cohort study undertaken by Colorado Community College System (CCCS)[23] provides evidence of a sobering reality: Most students who enter college requiring remedial courses never actually earn a degree. The CCCS study tracked remedial students in math (recent high school and nontraditional students enrolled in Math 030, 060, and 090)[24] and found that only 44 percent of these students passed their required DE course(s) and only 60 percent of the ones who passed went onto enroll in a gateway college math course. While 70 percent of these continuing students successfully passed their gateway course, only half of those successful students ultimately graduated with an associates' degree within four years of entrance. In sum, at the end of this cycle only 8 percent of the all students who had started with remedial math graduated with a degree within four years.

The authors of the study note the actual percent of graduation might actually be larger. Some students transferred to four-year colleges and did not apply for an associate degree, and some part-time students may have been successful beyond the four years of observation.[25] Even so, the small fraction of students who start with remedial math and go on to earn a degree is alarming.

For community college students, the costs for non-completion of credit-bearing certificate and degree programs are significant in terms of time, missed opportunity to gain knowledge and skill, and lowered potential to increase earnings over the course of their work life. For instance, in their study of California community college students, Booth and Bahr found that many students in Career and Technical Education successfully complete coursework for a selected subfield but do not secure a credential (certificate or degree) or transfer to a four-year college.

Non-completion also results in psychological costs, including a sense of failure and lower self-worth, as well as student debt absent a credential.[26]

For society, state, and federal governments, the costs are also significant. A less skilled and less competitive workforce means lower incomes and a reduced tax base. A 2012 study by the conservative American Enterprise Institute illustrates the dramatic impact of completion rates on students and society. The Enterprise study reported that a 50 percent national increase in completion of community college programs would result in 160,000 additional graduates, who

[23] Nawrocki, K. K., Baker, E. D., & Corash, K. (2009). Success of remedial math students in the Colorado Community College System: A longitudinal study. 10. Retrieved from: https://www.cccs.edu/wp-content/uploads/2013/09/Success-of-Remedial-Math-Students.pdf

[24] Ibid, 8.

[25] Ibid, 15.

[26] Bailey, T. (2009). Challenge and opportunity: Rethinking the role and function of developmental education in community college (Working Paper No. 14). New York: CCRC.

in turn would increase their lifetime earnings by $30 billion and contribute an additional $5.3 billion to federal and state tax revenues.[27]

At the end of the first decade of the twenty-first century, a "perfect storm" of issues and challenges—both for students and for colleges—was recognized across the nation. College enrollments were growing significantly larger, in part a consequence of the stagnant economy, and increasing numbers of newly enrolled students were in need of remediation in math, reading, and/or English. At the same time, students were no longer able to get federal financial aid to pay for remedial education courses that did not teach at least high school-level content, so the lowest levels of developmental math (Math 030), reading (REA 030), and English (ENG 030) could no longer be covered by those funds.

Further, many of the students who enrolled in DE had to take a sequence of DE courses before they could enroll in college-level courses. Some students progressed, but many either did not pass or withdrew before completing the sequence and thus never made it to the college level. As one administrator commented, we are "*bleeding students through our current model.*"

In addition to academic problems, faculty, student-services staff, and administrators were also concerned about the expanding population of students who were balancing college studies, work, and family demands and the consequent nonacademic challenges many students faced, such as child care, work schedules, etc.[28, 29, 30] Many of these students were at additional risk for not completing a course of study or earning a credential. Mindful of the high costs of non-completion to students and society, colleges across the nation began to focus more intensely on addressing problems of attrition and completion.

Colorado began initiatives to improve retention and completion rates at the community college level. These initiatives received complete or partial funding from a number of foundations (e.g., Lumina, Ford)[31] and/or state and federal agencies (US Department of Education)[32] and often straddled and/or complemented one another. These initiatives have resulted in a number of innovative strategies that modified or transformed the structure, curriculum, and/or pedagogy of DE courses in math, reading, and composition, and many have involved expanding student-

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[27] Schneider, M., & Yin, M. (2012). Completion matters: The high cost of low community college graduation rates." *American Enterprise Institute for Public Policy Research Education Outlook*, 2 p.13.

[28] Bettinger, E., & Baker, R. (2011). "The effects of student coaching in college: An evaluation of a randomized experiment in student mentoring." Retrieved from https://ed.stanford.edu/sites/default/files/bettinger_baker_030711.pdf

[29] Bettinger, E. P., Long, B. T., Oreopoulos, P., & Sanbonmatsu, L. (2009). The role of simplification and information in college decisions: Results from the H&R Block FAFSA experiment (Working Paper No. 15361). Washington, DC: National Bureau of Economic Research.

[30] Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*, 89-125.; Tinto V. (1998). College as communities: Exploring the educational character of student persistence. *Journal of Higher Education, 68*, 599-623.

[31] Baker, E. D. (2012). The challenge of scaling successful policy innovations. (225–45). In A. P. Kelly & M. Schneider (eds.) *Getting to graduation: The completion agenda in higher education*. Baltimore: Johns Hopkins University Press.

[32] Ibid.

support services to address both the academic and nonacademic issues that can interfere with a student's ability to successfully complete his or her course of study, e.g., the wraparound student services of the FastStart program offered by the Community College of Denver.[33]

In 2010, building on work done to date, the CCCS formed a consortium that included its 13 colleges plus two of Colorado's independent community colleges, Aims and Colorado Mountain College, and applied for a US Department of Labor Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant. In October 2011, the consortium was awarded a three-year, $17.3 million grant—the Colorado Online Energy Training Consortium (COETC).This TAACCCT grant has two principal goals. The first is to enhance energy-related programming in the state through the transformation of curricula into more accessible formats using technology and mobile learning labs. The second is to

> *reduce time to completion . . . [by supporting] a redesign of developmental education, utilizing evidence based practices in modular, contextualized and accelerated curriculum and alternative assessments; along with career guidance to help students select the right careers and wrap-around services to promote retention.*[34]

As we will discuss below, under the TAACCCT grant, individual colleges initiated a range of DE experiments and pilots. Concurrent to these initiatives, and partially supported by the grant, the leadership of the CCCS established the Developmental Education Task Force (DETF) in the summer of 2011. DETF was given the charge to holistically examine the role that DE plays in overall student success, and then to make recommendations to the CCCS board with regard to curriculum revisions and changes in student services that could affect increased student success across all of Colorado's community colleges. In the sections below we will discuss the experimentation and pilots launched under the TAACCCT grant that helped to inform the work and recommendations of the DETF as well as the redesigns and services recommended by the DETF and then implemented across the state during the grant period.

The underlying question for CCCS, members of the DETF, and the colleges themselves was: *What works for whom and why? Which are the most effective models and strategies to improve rates of completion and retention, and how can they best be implemented?* The specific research questions for the consortium that structured the evaluation by Rutgers' EERC can be divided into *process* and *outcomes* questions. This report covers the following process questions. A second EERC report answers outcome questions.

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[33] Bragg, D. D., Baker, E. D., & Puryear, M. (2010, December). *2010 follow-up of Community College of Denver FastStart program.* Champaign: University of Illinois, Office of Community College Research and Leadership.
[34] CCCS (2010). COETC Technical Proposal. Denver

Process Questions

- What processes and resources facilitated the planning, development, and implementation of grant-funded pilots and statewide policy redesigns?
- What shifts occurred, if any, with respect to how faculty/staff perceive DE students and their potential to succeed in DE and with college-level studies?

- What changes have occured in concepts of teaching and pedagogy from pre-TAACCCT through the implementation of the redesigns?

- What were the challenges colleges, faculty, and staff experienced in the revision of DE and the implementation of the redesign mandates?

- What were the lessons learned from the process of creating and implementing the redesign of Colorado's DE curriculum?

Outcome Questions

- What percentage of DE students enrolled in TAACCCT- or DETF-redesigned CCR and math courses successfully completed those courses (statewide outcomes for TAACCCT pilots; statewide and by-college outcomes for the DETF redesigns)?

- What percentage of DE students enrolled in TAACCCT- or DETF-redesigned CCR and math courses enrolled in a 100-level college course (statewide outcomes for TAACCCT pilots; statewide and by-college outcomes for the DETF redesigns)?

- What percentage of DE students enrolled in TAACCCT- or DETF-redesigned CCR and math courses went on to successfully complete a 100-level college course (statewide outcomes for TAACCCT pilots; statewide and by-college outcomes for the DETF redesigns)?

- In comparing the historic cohort with the TAACCCT cohort, and the historic with the DETF redesigns cohort, are there any differences in the probability of a student passing DE courses, enrolling in 100-level courses, or passing 100-level courses? Moreover, if differences exist, do those same differences persist after taking into account student demographics and academic characteristics?

The report that follows has been divided into four main sections and several subsections.

PART I: Part I sets the stage for the report providing an overview of research literature on developmental education and a description of the qualitative evaluation methods used by EERC

PART II: Part II focuses on the process of developing and piloting developmental education initiatives in Colorado. It examines the history and process of piloting different DE models, the Developmental Education Task Force and the redesign models, professional development and rethinking teaching and pedagogy

PART III: Part III discusses the implementation of the redesigns and the challenges that emerged. It discusses the emergent patterns of English and math, the integration of DE a transfer-level faculty, the reconceptualization of DE math, and faculty jobs.

PART IV: Part IV addresses issues of sustainability and makes recommendations.

PART I

A. WHAT DO WE KNOW? RESEARCH ON DEVELOPMENTAL EDUCATION

Current research indicates that over 50% of students entering community colleges require remediation in one or more subjects.[35] In its review of the literature on developmental education (DE), EERC identified a multitude of studies that, taken together, suggest that a holistic, multipronged approach is required to increase the success rate of community college students. Such an approach would involve the alignment of state and institutional polices; improved K-12 preparation; college-wide institutional commitments, including resource allocation; changes in course structure and sequencing; shifts in pedagogy; and the provision of additional student supports.

Community colleges—even those that are relatively autonomous—are influenced, if not shaped, by state policies with respect to assessment, academic standards, institutional funding, and student financial aid. The Lumina-funded "Achieving the Dream Initiative," which has involved colleges in over 15 states, stresses the importance of examining, and, as needed, modifying state education policies as part of any initiative to transform DE and improve student outcomes.[36,37]

Researchers have also identified the importance of a college-wide commitment to assist students who may be at special risk, including nontraditional and first-generation students. This includes holding orientation sessions and the early assignment of advisers. Baily (2009) writes of the need for

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[35] Complete College America. (2012). Remediation: Higher Education's Bridge to Nowhere. Retrieved from https://www.insidehighered.com/sites/default/server_files/files/CCA%20Remediation%20ES%20FINAL.pdf.

[36] Collins, M. Setting up success in developmental education: How state policy can help community colleges to improve student outcomes (Achieving the Dream Policy Brief). Washington D.C.: Achieving the Dream. Retrieved from www.postsecondaryresearch.org/conference/PDF/NCPR_Panel 1_CollinsAtDPolicyBrief.pdf

[37] Biswas, R. (2007). Accelerating remedial math education: How institutional innovation and state policy interact (Achieving the Dream Policy Brief). Boston: Jobs for the Future. Retrieved from http://www.jff.org/sites/default/files/RemedialMath_3.pdf

a comprehensive approach to assessment, more rigorous research that explicitly tracks students with weak academic skills through their early experiences at community colleges.[38]

In addition, the literature identifies the need for professional development that fosters better understanding of the diverse academic and nonacademic issues challenges at- risk students face and how best to help them—both within and outside the classroom—through an array of student support services.[39]

Colleges across the nation have been experimenting with a variety of models to decrease attrition and improve the numbers of DE students who complete a Career and Technical Education (CTE) certificate and/or degree. While there are variations in structure and pedagogy, compression of two courses into one and the acceleration of students' progress are the most commonly used strategies to improve student outcomes.[40, 41]

For example, the Accelerated Learning Program (ALP) developed by Peter Adams at the Community College of Baltimore uses co-enrollment (developmental and gateway courses taken together with the same instructor). The ALP model has proven effective in terms of student retention and completion of both DE and college-level courses.[42, 43]

Contextualization of course content—using content related to workforce training and/or college-level courses[44]—has also been found to make a difference.[45, 46] Other studies indicate that

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[38] Bailey, T. (2009). Rethinking developmental education in community college (Working Paper No. 14). New York: Columbia University, Teachers College, Community College Research Center. Retrieved from ccrc.tc.columbia.edu/publications/challenge-and-opportunity.html#.UQ_92PKICSo

[39] Jacob, W. J., Xiong, W., Ye, H. (2015). Professional development programs at world-class universities. Palgrave Communications, 15002, 1-27.

[40] Hanover Research. (2013). Models of Accelerated Developmental Education. Retrieved from https://www.tccd.edu/documents/About%20TCC/Institutional%20Research/TCCD_Models_of_Accelerated_Developmental_Education_Oct2013.pdf

[41] Edgecombe, N. (2011) Accelerating the academic achievement of students referred to developmental education (CCRC Working Paper 30).. Retrieved from http://www.sjsu.edu/advising/docs/Edgecombe.pdf

[42] Cho, S., Kopko E., Jenkins, D., & Jaggars, S. (2012). New evidence of success for community college remedial English students: Tracking the outcomes of students in the accelerated learning program (ALP) (CCRC Working Paper No. 53). New York: Columbia University, Teachers College, Community College Research Center. Retrieved from ccrc.tc.columbia.edu/publications/ccbc-alp-student-outcomes-follow-up.html

[43] Wurtz, K. (2014) Effects of learning communities on community college students' success: A meta-analysis, Doctoral dissertation. Retrieved from http://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=1034&context=dissertations

[44] Rutschow, E., & Schneider, E. (2011). Unlocking the gate: What we know about improving developmental education. New York: MDRC.

[45] Perin, D. et. al. (2012). A contextualized intervention for community college developmental reading and writing students (CCRC Working Paper No. 38). New York: Columbia University, Teachers College, Community College Research Center. Retrieved from http://ccrc.tc.columbia.edu/Publication.asp?UID=1007

[46] Workforce Strategy Center. (2003). Building bridges to college and careers: Contextualized basic skills programs at community colleges. Retrieved from http://collegeforamerica.org/reports/Contextualized_basic_ed_report.pdf

shifts in pedagogy also result in improved student outcomes.[47] For example, faculty who use more student collaboration and interaction as well as problem solving in math courses[48] have found students to be more engaged—resulting in better students outcomes than the more traditional lecture formats tend to elicit.[49]

Finally, the provision of supplemental supports such as labs and enhanced student services have also been successful in improving student outcomes.[50, 51]

Despite the apparent successes of the above models and strategies,[52, 53, 54] the debate continues about the overall efficacy of DE and which specific model or intervention best serves the needs of students and should therefore be scaled and replicated. In fact, findings from many studies appear, at least on the surface, to contradict one another. Some report real gains for students who enroll in DE,[55] while others report either little or no positive change.[56, 57] Some studies have even found that enrollment in DE can have negative effects on student outcomes.[58]

The EERC report on student outcomes that complements this report will discuss research designs and methodological issues[59] that may have contributed to such different research findings about DE reforms. Here in the current report we focus on process, structure, culture, and resources—all factors that have received far less attention in the literature. As we examine these factors, we will attend to the policy and program challenges that might be critical for the

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[47] Miller, Herman. (2008). Rethinking the classroom: Spaces designed for active and engaged learning and teaching. Solution Essay. Retrieved from http://www.hermanmiller.com/research/solution-essays/rethinking-the-classroom.html

[48] Hodara, M. (2011). Reforming mathematics classroom pedagogy: Evidence-based findings and recommendations for the developmental math classroom (CCRC Working Paper No. 27, Assessment of Evidence Series). New York: Columbia University, Teachers College, Community College Research Center.

[49] Mohamed, A.R. (2008) Effects of active learning variations on student performance and learning perceptions. International Journal for Scholarship of Teaching and Learning. 2(2), Article 11. Retrieved from http://digitalcommons.georgiasouthern.edu/cgi/viewcontent.cgi?article=1105&context=ij-sotl

[50] Access and equity in the CA community colleges: What research tells us: Current status and possibilities. Fullerton College Career Ladders Project. Retrieved from www.careerladdersproject.org/docs/prerequisiteshearing.pdf

[51] Rutschow & Schneider (2011), op. cit.

[52] Bailey (2009), op. cit.

[53] Zachry, E.M., & Schneider, E. (2010). A Review of Rigorous Research and Promising Trends in Developmental Education. New York: The National Center for Postsecondary Education.

[54] Grubb, W. N. with Worthen, H., Byrd, B., Webb, E., Badway, N., Case, C., & Villeneuve, J. C. (1999). Honored but invisible: An inside look at teaching in community colleges. New York: Routledge.

[55] Bettinger, E. P., & Long, B. T. (2009). Addressing the needs of underprepared students in higher education: Does college remediation work? *Journal of Human Resources*, 44(3), 736-771.

[56] Hughes, K. L., & Scott-Clayton, J. (2011). Assessing development assessment in community colleges (Working Paper No. 19). New York: CCRC.

[57] Jaggars, S. S., & Stacey, G. W. (2014). What we know about developmental education outcomes. New York: CCRC.

[58] See Roksa, J., Jenkins, D., Jaggars, S. S., Zeidenberg, M., & Cho, S-W. (2009). Strategies for promoting gateway course success among students needing remediation: Research report for the Virginia Community College System. New York: CCRC

[59] Examples of methodological issues include the use of different population cohorts, use of different assessment measures and different outcome metrics, and the lack of clarity with regard to the specific intervention under study.

scaling and replication of any effective models and interventions, e.g., student advisement and professional development and student access versus maintaining academic standards.[60]

B. QUALITATIVE METHODOLOGY

EERC conducted phone and in-person interviews with project leads, DE faculty, instructional designers, data coordinators, senior college administrators, and students. EERC team members also observed class sessions and were participant-observers on TAACCCT project conference calls and webinars and at in-person meetings with project leads and career coaches. In addition, the evaluation team reviewed the colleges' quarterly reports and administered surveys to project leads and career coaches. When possible, interviews were taped and transcribed. These and the above documents and surveys were then analyzed using Nvivo software to identify themes and patterns. In addition, the qualitative team has worked closely with the quantitative team to triangulate data analysis.

PART II

A. HISTORY AND PROCESS OF REDESIGNS INCLUDING DIFFERENT DEVELOPMENTAL EDUCATION MODELS

In discussing developmental education (DE) innovations, reforms, and outcomes, we will refer to three principal phases during the study period 2007–14. In real time there is some overlap of initiatives (e.g., Complete College America and TAACCCT) and pilot redesigns during the three phases. This is especially true as it relates to the rollout of DETF redesigns beginning fall 2013. The phases as discussed below are as follows:

PHASE I: Historic	PHASE II: Pilots	PHASE III: State
Pre-TAACCCT	TAACCCT pilots and meetings of the DETF	Rollout of DETF redesigns
Fall 2007–Fall 2011[61]	Spring 2012–Fall 2013	Fall 2013–Spring 2014

Where specific dates are important we have so noted.

> **Phase I** refers to the period prior to the TAACCCT grant that serves as the baseline for the comparative cohort analysis that is discussed in EERC's Outcomes report. Note that for the comparative cohort study the period of study is the 2007–08 academic year. For this report we include all activities between fall 2007 and the beginning of the TAACCCT grant (fall 2011). In both EERC reports we will refer to this period as the "historic period."

[60] Jaggars, S. S., Hodara, M., & Stacey, G. W. (2013). Designing meaningful developmental reforms. New York: CCRC.
[61] In the Outcomes study, this period is defined to only include students from summer 2007 and spring 2008 whose progress was followed through summer 2009.

Phase II refers to the experimentation or pilot phase of DE redesigns that were initiated under the TAACCCT grant beginning spring 2012 including acceleration/compression, mainstreaming with contextualization, modularization, the emporium model, and learning communities. This phase also includes discussion of the work and recommendations of the Colorado State Developmental Education Task Force (DETF) that were informed by the innovations mentioned above. This phase may also be referred to as TAACCCT redesigns.

Phase III refers to the period beginning fall 2013 and includes the rollout of the DETF redesigns. This stage is also called redesigns in this report.

We begin with a brief summary of the strategies CCCS colleges developed prior to the TAACCCT grant. Those strategies helped set the context, if not the momentum, for the TAACCCT grant and for the DETF.

Phase I: The Historic Period

Over ten years ago, several of Colorado's community colleges, including the Community College of Denver (CCD), Colorado Northwestern Community College (CNCC), Front Range Community College (FRCC), and the Community College of Aurora (CCA), began to question the efficacy of existent remedial education courses. They looked at DE placement and observed increasing numbers of first-time students who lacked the knowledge and skills, especially in math, needed for college studies. It was not clear, however, if these students had ever actually acquired the skills or simply were not retaining what they previously learned. It was also not clear if the timing of and/or the assessments colleges used accurately measured students' knowledge and skills. Nevertheless, to meet growing student needs, the colleges significantly increased the number of 030 sections, the lowest level of DE they offered.

Observing fairly poor rates of retention and completion among DE students, the colleges also strengthened their tracking and analysis of students' academic progress. Confirming prior observations, they identified a large number of students who were taking three or four semesters to complete the DE sequence; as a result, it would take these students far longer than two years to complete their "two-year community college" programs. They also observed specific "ski slopes" (CCA's term)—levels and courses where students most frequently began to falter or fail.

In response to poor DE outcomes, the presidents of several colleges (e.g., CCA and FRCC) charged their faculty and student-services staff to "*rethink what was happening in developmental education*" and student-support services. At a number of other colleges, DE faculty gave themselves the challenge to develop new strategies and structures that would facilitate increased student success. As noted above, some of the innovations during this period were funded by the Lumina and Ford foundations and/or state or federal funds as well as by the

colleges' own institutional funds. Eleven colleges participated in the Complete College America initiative in 2011, which was funded by the Gates Foundation and included a variety of pilot projects to address observed issues in DE, e.g., open entry/exit, math labs, mainstreaming, accelerated and compressed courses, contextualization, and modularization.[62]
The breadth and depth of pre-TAACCCT experimentation were shaped by administrative support and funding resources, the college's student population—residential or non-residential, rural or urban location, the number of full-time faculty—as well as faculty's comfort with innovation. Some colleges began with a "shotgun approach," piloting a variety of strategies at the same time. Other colleges initiated pilots for only one or two alternative strategies.

Peter Adams of the Community College of Baltimore County (CCBC) succinctly defined one of the major challenges for DE: "*the longer the pipeline, the more chances for leakage.*"[63] As a result, despite different approaches, the focus of many Phase I innovations was on reducing the time it took students to complete DE requirements. At many colleges this resulted in compressing or combining two courses into a single course.

CCD's FastStart program was the most extensive pre-TAACCCT transformation of DE structure and curriculum. This multilayered program was begun in 2006 with funding from the Lumina Foundation. FastStart was an acceleration model that included learning communities and extensive student-support services. Students who tested into two or more developmental courses were invited to meet with a FastStart adviser. In this "screening" interview, the adviser discussed the student's academic needs along with his or her family and/or work responsibilities. The adviser then evaluated with the student his or her ability to commit to the work—to keep up with the demands of the intensive accelerated program.

> *. . . they would talk about the challenges. You have to be there on time, you've got to have your work on time and this kind of stuff so that the students were aware of what those challenges were.*

The FastStart model simultaneously piloted a number of different strategies to improve student outcomes. It provided ongoing student support and advisement, compressed two levels of DE math into a single course and integrated reading and English courses. Learning communities were established in which students were co-enrolled in remedial courses and a substantive course within or across disciplines. For example, as part of the English/reading redesign, CCD offered a nine-credit course unit that combined English and reading with a college-transfer-level course such as psychology or biology. CCD also combined remedial math and English courses with both instructors present during each class to create a true co-instruction model. CCD found that the paired classes created a strong sense of community in which students supported and learned from one another.

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[62] JVC, op. cit.
[63] Adams, P., Gearhart, S., Miller, R., & Roberts, A. (2009). The accelerated learning program: Throwing open the gates. *Journal of Basic Writing.*

[It gave] students a chance to showcase their different strengths. For example, a student weak in math might be a class leader in English, while a student with poor English might end up tutoring her classmates in math. This helps build student confidence along with their remedial skills.

By the spring of 2012, CCD's FastStart program had served over 2400 students,[64] with significant improvement in student outcomes, especially among students scoring at the higher levels of DE. For example, prior to FastStart only 48 percent of students in the highest remedial math course completed the remedial sequence, but subsequent to the introduction of FastStart, 85 percent had completed the sequence. And while we lack pre-FastStart data for the lower levels, post-FastStart lower-level students had a DE completion rate of 40 percent. [65, 66]

CCD's FastStart innovations have received national attention[67, 68] informing other initiatives around the country as well as the work of Colorado's DETF. We will return to a discussion of the learning-community model as well as the integration of English and reading later in this report.

FRCC, CNCC, Arapahoe Community College (ACC), and Pikes Peak Community College (PPCC) also experimented with learning communities and other acceleration strategies, as well as modularization and emporium models.

For example, in 2010, paralleling CCD's combination of English and reading, CCA began its own integration of DE reading and English courses, e.g., English/reading 060 or 090. The integration of the two traditionally separate courses at both CCD and CCA not only accelerated progress but reflected a significant shift in pedagogy with respect to teaching reading. The positive outcomes from these pilots subsequently informed the deliberations of the DETF and its recommendations (see Phase II evaluation, below).

Many colleges accelerated completion of courses by sequentially covering course material in the same semester, e.g. dedicating the first five weeks of a term to Math 030 content and the remainder of the term to Math 060 content. Others began to experiment with integrating content from two courses. Such integration became the basis for compressed courses under TAACCCT, e.g., math 045, which combined content from 030 and 060.

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[64] Baker, E. (2012). Challenge of Scaling Successful Policy Innovations. In Andrew P. Kelly, Mark Schneider (eds.) *Getting to graduation: The completion agenda in higher education.* Baltimore: Johns Hopkins Press.

[65] Bragg, Baker, & Puryear, op. cit. 10–11.

[66] Jacobs, J. (2010). On the remedial FastStart to success. *Community College Spotlight.* Retrieved from http://communitycollegespotlight.org/content/on-the-remedial-fast-track-to-success_3035/

[67] Edgecombe, N., Jaggars, S.S., Bake, E D., & Bailey, T. (2013). Acceleration Through a Holistic Support Model: An Implementation and Outcomes Analysis of FastStart@CCD. New York: CCRC

[68] Bragg, D. D., Baker, E. D., & Puryear, M. (2010, December). 2010 follow-up of Community College of Denver FastStart program. Champaign: University of Illinois, Office of Community College Research and Leadership

At PPCC, curriculum faculty modularized math content into segmented units for which students could earn academic credits as they progressed.

> *[A] student can just take and pay for the content that they need; that they're not required to sit through and pay for a 15-week class that's going at a predetermined pace.*

PPCC faculty also experimented with emporium courses that encouraged students to set goals and move at their own pace. Faculty mentors and tutors were available in these classrooms to support students in real time. At ACC, the math emporium was called Flex labs. Attendance was required, but students could schedule their lab time around their extra-college home and work responsibilities. Students could progress through two or more DE levels within a single semester, thereby accelerating their progress toward college gateway courses.

The use of emporium-like models at other colleges supported students' self-pacing, but students could only earn credits when they completed the entire course.

In addition to the above structural and pedagogical strategies, some colleges intensified their student services through expansion of tutoring services and/or student advising. For example, at Morgan Community College (MCC) the Student Support Center was enhanced and refocused to meet the needs of DE students:

> *[W]e know that those students often need a little more TLC. They're shy of college. Their attitudes, their self-concept may not be the best.*

Similarly, RRCC created a College Prep Zone specifically to meet the needs of DE students. Despite the relative successes of the above strategies, faculty and administrators shared with the Rutgers team some challenges they faced in implementing these pre-TAACCCT innovations.

Faculty and staff expressed concerns about students' investment in their studies; "*getting students to put in the effort that is required*" was not always easy. They especially worried about students who tested at the lower levels of the Accuplacer exam. Some wondered whether these students would be successful given the level of their skills and the other demands that often competed for their time. As one faculty member reflected:

> *I don't think [there's a] magic bullet or system or anything that's gonna make that challenge go away. That's gonna continue to be our challenge for the duration, I think.*

The above-cited innovations in curriculum and sequencing were welcomed by many, questioned by some, and outright resisted by others. At larger colleges such as CCD and PPCC it was possible to concurrently offer the old with the new, "satisfying" all perspectives. However, other colleges either did not have the capacity to run concurrent models or chose not to do so.

In listening to faculty and administration, it was clear that in the pre-TAACCCT phase the dynamics of change went beyond structural and pedagogical shifts in DE to actual shifts in culture. At some colleges, groups of faculty were engaged in a more conscious or disciplined approach to analyzing curriculum and teaching. They were utilizing "epistemological research" and questioning—and at times, rejecting—the deficit model of DE. This work continued into Phase II with the TAACCCT grant and provided the foundation for many of the decisions of the DETF.

While the above activities and pilots were all pre-TAACCCT and are important to note, the analysis of outcomes included in EERC's Outcomes study will use the data from this period as the base or "control" for the comparative cohort analysis

Phase II: The Pilot Phase

Phase II begins with the awarding of the TAACCCT grant in 2012. During Phase II, many of the strategies and models Colorado's community colleges developed and piloted under Phase I (e.g. compression, modularization, "open entry," and emporium models, embedded tutoring) were continued, expanded, and/or replicated by other colleges. This overlap makes it difficult to establish a clear demarcation between Phase I (Pre-TAACCCT) and Phase II (TAACCCT) innovations and experimentations. However, the TAACCCT grant provided the resources required to support the further development, implementation, and spread of these models by, for example, paying for faculty release time and summer salaries and/or sending faculty to in-state and out-of-state conferences. As one faculty member commented about the TAACCCT grant:

> *[W]e have dollars through the grant that will allow us to make these changes and to implement these changes. So we can get them rooted into our culture and into our processes without having [it] either on the backs of our faculty, or without having to expend other general-fund resources. So we're thankful that we're participating in the grant.*

Before we begin our discussion of the TAACCCT models, it is important to note that the Colorado Developmental Education Task Force (DETF) was established during the TAACCCT grant cycle, overlapping with it in real time, and faculty who attended DETF meetings were bringing back to their home campuses the ideas discussed at those meetings. This stimulated shifts in curriculum content and pedagogy in the classroom. This multilayered process—the experiments informed by discussions at the DETF meetings —no doubt affected the "purity" of some TAACCCT models. Nonetheless, our focus in Phase II is on the TAACCCT models as identified by the colleges and CCCS senior staff: accelerated/compressed,[69] mainstream,[70]

[69] In this model, two DE courses from the same curriculum are combined into one course—e.g., MAT 045—or a single term is split into two courses with one following the other, such as a 5-week English 030 course followed by English 060 for the remainder of the semester.

[70] In the mainstream model, a DE course is paired with a 100-level academic math or English course. Both courses are in the same curriculum

mainstream with contextualization,[71] emporium,[72] integrated,[73] modularized,[74] and learning communities.[75] In the following section we have separated the innovations as they relate to English and math.

TAACCCT English and Reading Pilots

The Community College of Denver (CCD) was one of Colorado's pioneer community colleges in the use of *learning communities*. The FastStart program as described above involved students taking a group of courses together. In 2010, CCD combined remedial math and English courses and had both instructors present during each class to create a true co-instructional model. This work continued during the TAACCCT phase. CCD found that the paired classes created a strong sense of community among students, as evidenced by these two comments from students:

> *I like that it got mixed in with the remedial, and again in my other classes, I don't speak to hardly any of the other students. I don't know most of them by their name, and here [in DE] I know everybody's first name. And if I see each other around the campus, 'Hey, what's up?'*
>
> *It's a real open environment. You really get to know each other.*

Front Range Community College (FRCC) faculty also successfully experimented with learning communities and the pairing of courses—in this case, an English course with a college-level course—under a Lumina grant that preceded and overlapped with TAACCCT.[76] Using the lessons learned in the pilot phase, under TAACCCT, FRCC's Larimer campus adopted a learning-community model for English 090/college-level classes. Students who took English 090 co-registered for classes like Philosophy 111, Literature 115, or English 121. This model enabled students to develop and maintain a sense of involvement and interaction with other students and to experience peer support as they mainstreamed into college classes.

The 090 course did not have a separate textbook (a cost saver for students), nor did it have separate assignments; rather, it provided students with opportunities to get assistance as they "brushed up" on the skills they needed to do the college-level subject's coursework.

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[71] In this model, a DE course is paired with a 100-level discipline course or CTE program of study in a way that enhances the connection between the student and the subject material being presented.
[72] In the emporium model, students have access to multiple levels of course content, work on their own and at their own pace, and complete course material often in module format. Faculty and tutorial support is a major component.
[73] In the integrated model, two DE courses in different subjects—such as English and Reading—are combined into one course.
[74] In this model, content is segmented into units. Students work on the specific units that they need to pass.
[75] In learning communities, students take a pair of courses together as a group. For example, under CCD's FastStart program, DE students took a DE English course along with a substantive subject matter course, e.g. history 101.
[76] Baker, (2012). op. cit. 231.

Red Rocks Community College (RRCC) and Otero Junior College (OJC) developed similar combinations by allowing students to concurrently register for English 090 and English 121. At OJC not all of its 121 students were enrolled in both classes; however, faculty observed a better rapport in the classrooms in which students were co-enrolled. Moving together as a group from class to class seemed to foster improved group dynamics as well as stronger personal relationships. Further, faculty reported to the EERC team that students in paired classes tended to participate more than students who only took a single class together. They ascribed increased participation to students' enhanced sense of comfort with one another—knowing one another diminished anxiety about speaking up. In addition to these benefits, the pairing of courses accelerated students' progress. They were able to complete their English DE requirements and also earn college credit for the 121 course. The pilot at RRCC met with similar success. In a study in which RRCC compared the outcomes for their fall 2013 students that co-enrolled in English 090 and 121 with those who enrolled just in 090, they found that the co-enrolled students had much higher passing rates for both 090 (86 percent vs. 68 percent) and 121 (81 percent vs. 32 percent).[77]

During TAACCCT Phase II experimentation, *contextualization* also emerged as a significant redesign strategy. The intent was to engage students in subject content that would be of interest while they learned foundation skills. The use of a variety of materials also prepared students to read, comprehend, and write on topics across a broad academic spectrum and across multiple formats, e.g., print media, books, journal articles, etc.

One strategy for contextualization was piloted at Colorado Northwestern Community College (CNCC); it allowed students to enroll in college-level courses that did not have a DE prerequisite, such as introduction to psychology, history, or chemistry. Then, in the students' DE English/reading course, they would be required to read and write about psychology, history, or chemistry. OJC developed a similar contextualized model in which a college-level mythology course was paired with a DE English course. OJC faculty reported that this pairing was a very popular option among OJC's DE students. This co-enrollment strategy—a DE English course and a subject matter course—was adopted by the state DETF and became College Composition and Reading option CCR 093 and will be discussed in more detail below.

Prior to the redesigns, Pikes Peak Community College (PPCC) took a different approach to contextualization. In their DE English courses they focused on the specific career goals of the student and then gave assignments that interwove substantive course material with content related to the identified career theme. In a class with many Career and Technical Education (CTE) students, students were given assignments that related to their CTE certificate program. For example, auto mechanic students worked on assignments related to auto mechanics. These included creating a business letter requesting a bank loan to open an auto shop. The instructor observed that such contextualizing "*lets the student embrace something that he or she is interested in, and that becomes the motivator*."

[77] Ohle, S. (2014). English developmental course sequence. RRCC Power Point.

Another redesign strategy was the *embedding of a tutor/adviser* in DE classes. OJC, for example, embedded a classroom tutor who also managed the reading labs. The tutor heard all lectures and instructions for assignments, which was very helpful when students came after class to work on those assignments. Getting to know the tutor seemed to reduce students' anxiety about seeking tutorial assistance outside of class. As a result, students in classes with embedded tutors made more use of tutoring outside of class than did students who were simply referred to a general tutoring center. At the Larimer campus of FRCC, an embedded adviser met with students in class about five times a semester. The adviser suggested ways for students to improve their study habits (e.g., time management) and encouraged students to discuss school and career goals as well as nonacademic concerns with her.

TAACCCT Math Pilots

Many of the pilots developed and instituted by developmental math faculty mirrored those instituted by developmental English faculty. These included learning communities, contextualization, and increased access to tutoring. Additionally, some math departments experimented with the emporium model.

Math faculty at Front Range Community College (FRCC), Pikes Peak Community College (PPCC), and Aims all experimented with the *emporium* model. By creating a modularized content-delivery system, students were able to test out of the modules they knew and proceed with the content for which they needed remediation, and they could do so at their own pace. Students who had a mix of skills in math, for example, could focus on the skills they lacked rather than sitting in a semester-long course that moved at a proscribed pace. This approach was especially helpful for nontraditional students eager to complete credentials that would increase their competitiveness in the labor market. This model was observed to work best when it was coupled with a Career and Technical Education (CTE) program or course. At the same time, some faculty worried that the emporium structure, given its multiple exit points, might slow down a student's progress.

PPCC developed an "*open entry*" format for their math emporium. This format allowed students to enter the course at the first, fifth, and tenth week of the semester to complete the modules they needed to meet their DE requirements.

Faculty at Aims used MyFoundationsLab,[78] a Pearson product that allows customization of online curriculum and the use of specific lab activities. Students could either work on campus or at home. The opportunity for students to work on their own schedule without the structure of a classroom enabled them to set their own pace. The flexibility of such an online asynchronous curriculum was especially helpful to nontraditional students balancing work and family responsibilities.

[78] Pearson (n.d.). MyFoundations Lab. Retrieved from www.pearsonmylabandmastering.com/northamerica/myfoundationslab/

Math faculty at a number of colleges established *learning communities* in which students took several courses together. For example, at Lamar Community College (LCC), students in a DE math course also were required to take corequisite labs. At Red Rocks Community College (RRCC), DE math students had the option to co-enroll in a subject-matter course, such as astronomy, for which they could workshop related math problems, resulting in a combination of the contextualization and learning community models. Faculty from these colleges echoed what EERC had heard at the Community College of Denver (CCD): Paired math courses were seen to benefit most students because getting to know classmates better fostered more interactive class discussions and higher levels of student engagement in learning.

The power of student relationships to enhance learning was also harnessed by colleges in the creation of *group-tutoring models*. For example, Otero Junior College (OJC) created group-tutoring classes called "Plus Sessions" for students at the 099 level. Faculty chose the name of the class in a direct effort to reduce the negative stigma many students experience with regard to tutoring services. Participation in the Plus Sessions helped some students move more rapidly through 099 and directly into credit-bearing college math courses.

Morgan Community College (MCC) expanded tutoring staff and hours and located the tutoring lab near math classrooms to facilitate students' access. They observed that this made a difference; students were able to move immediately from the classroom to the tutoring lab to get help with the concepts and problems covered that day in class. The lab provided one-on-one assistance as well as settings in which groups of two or three students could work together on the same concepts.

Contextualization was also a pedagogical model colleges experimented with in their career-based CTE programs. RRCC faculty designed a contextualized course that combined Math 090 with Water Quality Management (WQM) 100-level courses. The curriculum was collaboratively developed by math and WQM faculty so that students could apply developmental math knowledge directly to the WQM content they were learning. The goal was to reinforce the integration of course concepts and to help WQM students move more quickly and successfully into the program's required college algebra course. However, when no one enrolled in the course, RRCC created contextualized WQM–math tutorials that were linked to each class in Desire2Learn (D2L), an online learning platform and available to students on the WQM website.

Aims redesigned a "Contextual Math for the Trades" (Math 075) for students with developmental math needs interested in one of the college's energy programs. The course included content from Math 030 and 060 and was offered alongside Energy 101. Unlike RRCC's experience, this course attracted students for both the Fall 2013 and Spring 2014 semesters.

B. THE DEVELOPMENTAL EDUCATION TASK FORCE AND THE REDESIGN MODELS

In this section we discuss the work of the Developmental Education Task Force (DETF) and the redesigns in math and English that emerged from its work paired with the TAACCCT grant resources. In Part III we will discuss the rollout of the redesigns, faculty and college administrators' observations about the redesigns and their implementation, and the challenges the colleges experienced along the way.

The DETF was established in 2011 by Nancy McCallin, the president of the Colorado Community College System (CCCS), "*to revive developmental education practices throughout the Colorado Community College System and make recommendations to the System.*"[79] Faculty and members of student-services units from CCCS colleges were charged to examine the role developmental education (DE) plays in a student's educational career, research DE practices and methods to improve student's success, and present to the CCCS board of directors their recommendations for restructuring DE in ways that would lead to improved student learning and success outcomes. In February 2013, the DE redesigns recommended by the DETF were accepted by the CCCS board.[80] Colleges were given latitude for the rollout of the redesign models, but all Colorado community colleges were required to have full implementation of the new models by the fall of 2014.

Funding for the Developmental Education Task Force

Over the past decade, external funding has been an essential ingredient to Colorado's efforts to develop and transform DE policies and programs. As mentioned above, prior to the TAACCCT grant, colleges had used Complete College America ($1 million) and Lumina funds to pilot projects. Significant and critical additional funds were provided by the TAACCCT grant ($17.2 million), which funded the development of energy programs at seven colleges as well as the expansion of DE experimentation at all 13 system colleges and at the two independent colleges. Funds from the TAACCCT grant were also used to support the activities of the DETF, including paying for faculty release time and summer salaries, hiring subject-matter experts from around the country who came to DETF meetings and shared information on redesign innovations, supporting a variety of DETF activities including supplemental faculty and staff workshops and staff travel, and commissioning the EERC evaluation.

Without this influx of dollars from the federal government and foundations, Colorado would not have had sufficient resources to create new faculty-led DE policy and then to develop and implement such significant changes in DE pathways and courses.

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[79] Colorado Department of Higher Education. (n.d.). Policies and procedures, Section i, Part e. Statewide remedial education policy. Retrieved from http://highered.colorado.gov/Publications/Policies/Current/i-parte.pdf

[80] The Chronicle of Higher Education (2013, September 13). Colorado's Community Colleges Reform Developmental Education. Retrieved from:http://chronicle.com/blogs/letters/colorados-community-colleges-reform-developmental-education/

Activities of the Developmental Education Task Force

The DETF met monthly for 18 months to research, discuss, collaborate, and create a new DE policy for Colorado. The members of the DETF included representatives from each of the thirteen CCCS colleges; the three non-system community colleges (Aims; Colorado Mountain College; and Colorado Mesa University's community college arm, Western Colorado Community College[81]); and CCCOnline, the online extension of all 13 CCCS campuses. There were also representatives from the CCCS central office, the Colorado Department of Higher Education, and the Denver Scholarship Foundation. Half the task force's members were faculty and department chairs from the three subjects that have traditionally been the foundation of DE—English, reading, and math. The other half of the task force was composed of student-service staff and administrative representatives such as deans and vice presidents.

The composition of the task force was an important factor in its ability to meet its charge. Faculty and chairs were the individuals who would be most affected by the forthcoming policy changes. They were also the ones who would be called upon to implement the new DE practices and policies. The significant engagement of faculty to both change and enforce policy positioned them to be "street-level bureaucrats". Lipsky, who developed the notion of street-level bureaucracy in the 1980s, argued that the soundest policies are shaped and developed by those who enact it, the "street-level workers," rather than by legislatures or administrators.[82]

The critical importance of faculty involvement in policy development and implementation has been cited in the community college literature. For instance, in the Assessment of Evidence Series, Jenkins argues that engagement of faculty should be the foundation for policies and practices that increase student success. Jenkins bases this idea on organizational-effectiveness literature, which states that organizational change and improvement requires employee involvement. In his work, Jenkins examines the structure of community colleges and argues that colleges, like other organizations, must involve employees in the process of substantive change in order for that change to be implemented properly and effectively.[83] While Jenkins and others often specifically focus on faculty, the inclusion and engagement of student-service providers—the office of the registrar and other administrative staff—are also critical to effect change, as was seen over the course of EERC's evaluation.

Colorado's DETF was an interesting and somewhat unique illustration of this idea. The directive to make change and the time frame for that change came from an administrative directive, but the actual policy emerged out of the work of faculty and staff, many of whom had already been involved in DE experiments or would now be called to implement it. The structure and membership of the DETF provided a critical context in which Colorado's DE policy

[81] See note 7 for an explanation of why data from WCCC was not included in this study
[82] Lipsky, M. (1980). *Street level bureaucracy*. New York: Russell Sage Foundation.
[83] Bailey, T., Jaggars, S., & Jenkins, D. (2011). Introduction to the CCRC. (Assessment evidence series.) 6.

decisions were made and set the stage for their implementation. Thus, from the start, DETF was an experiment in policy development that used frontline workers as change agents.

The Policy-Making Process

In its first eleven months, DETF members focused on gathering information about innovative DE approaches that were being used across the nation. Experts were brought in to share information on their work. Models discussed during this phase included Washington's Integrated Basic Education and Skills training (IBEST),[84] the emporium model of Tennessee Developmental Studies' redesign,[85] the Community College of Baltimore County's Accelerated Learning Program (ALP),[86] the California Acceleration Project (CAP) of Los Medanos Community College and Chabot College,[87] Jackson State Community College's SMART (Survive, Master, Achieve, Review, Transfer) program,[88] Chabot College's Acceleration in Context,[89] and the Dana Center at the University of Texas at Austin's Mathways project.[90]

Task force members also exchanged experiences and information about some "home-grown" innovations in Colorado. For example, Community College of Aurora discussed its integrated curriculum in reading and writing; the Community College of Denver shared its FastStart program; and Front Range Community College talked about its learning communities and accelerated projects.

Presentations about models and pilots typically occurred in the mornings, and in the afternoons the DETF members would break up into three teams to discuss what they learned and how it might apply to Colorado. There was a student-services team, a math team, and a combined English and reading team that would eventually become the College Composition and Reading (CCR) team.

After each DETF meeting, college representatives returned to their campuses, where they would share and discuss the ideas that were emerging and gain feedback from their colleagues. Colleges differed in the structure and process of this exchange of ideas, and who was at the table varied. However, the feedback loop was an important practice; it disseminated

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[84] Washington State Board for Community and Technical Colleges (n.d.). I-best: Integrated basic education and skills training. Retrieved from http://www.sbctc.ctc.edu/college/e_integratedbasiceducationandskillstraining.aspx.
[85] Mills, K. (2010). Redesigning the basics. National Cross Talk, Retrieved from http://www.highereducation.org/crosstalk/ct0510/news0510-tenn.shtml.
[86] Accelerated Learning Programs. (n.d.). Accelerated learning program. Retrieved from http://alp-deved.org/.
[87] California Community College Success Network. (n.d). California Acceleration Project. Retrieved from http://3csn.org/developmental-sequences/.
[88] Jackson State Community College. (n.d). Smart Math. Retrieved from http://www.jscc.edu/smart-math.
[89] Acceleration in Context. (n.d.). The Initiative. Retrieved from http://the-initiative.accelerationincontext.net/wp-content/uploads/2010/12/Acceleration-in-Context-Newsletter.pdf/.
[90] Dana Center of the University of Texas at Austin (n.d.). New mathways project. Retrieved from http://www.utdanacenter.org/higher-education/new-mathways-project/.

information, allowed for the collection of input beyond the college representatives, and even facilitated buy-in when the time came to implement changes (see below).

As members of the DETF and college faculty reviewed and discussed models from around the country, there was attention not just to the model but also to the institutional and cultural context of their respective colleges. As a result, and in view of the diversity of institutions and student populations across the state, DETF members decided that a single model could not be lifted and replanted across Colorado. Instead, the full DETF and the subject-area teams decided to create a policy that would adopt pieces from other program models that could be tailored to meet the needs of each of the colleges. To that end, the DETF focused on key aspects of the models they had investigated: acceleration, contextualization, mainstreaming, learning communities, and pathways. In selecting a pathway structure for all of DE, DETF members made sure that colleges would have some flexibility in choosing a delivery method that would work for them. The absence of uniformity in the rollout and implementation of these pathways no doubt maximized the potential for a good fit, but it also created new challenges with regard to the evaluation of outcomes.

The DETF decided to use a reverse-design process for curriculum revisions. This meant that faculty began their work by analyzing the competencies and knowledge required by college-level gateway courses. They then translated this information into DE coursework to better prepare students for success in the college-level courses. In addition, faculty worked to design course models that would encourage active and experiential learning opportunities for students. Finally, they discussed the importance of using contextualization where possible as a tool to make learning relevant to students' larger educational and career goals.

The resultant achievement of DETF's work was the transformation of the content, structure, and pathway of Colorado's DE courses (see graphic templates for CCR and math). A description of each course developed by DETF follows.

College Composition and Reading

The DETF integrated DE English and reading into a single subject—College Composition and Reading (CCR)—and created three principal options for students.

CCR 092 (5 credits): Reading and writing is integrated, and students work on content from multiple disciplines (contextualization).

CCR 092 (5 credits) + Lab - CCR 091 (1 credit): Reading and writing is integrated, and students work on content from multiple disciplines (contextualization). In addition to taking CCR 092, students testing into the lowest remedial level must enroll in a corequisite complementary lab to further prepare them for college-level coursework.

CCR 093 Studio D (3 credits): College composition and reading for students who need only modest remediation is taken concurrently with a 100-level predetermined discipline strand. The discipline-specific content in these concurrent courses is designated GT, or "Guaranteed to Transfer." The discipline strands include Communication, Arts & Humanities, Social Science, Science, and Career and Technical Education. CCR 093 is offered in a number of ways: from team taught learning communities to linked classes offered jointly to a cohort, but taught by different instructors.

CCR 094 Studio (4 credits) with English 121: A reading and writing course taken concurrently with English 121 is a learning community format for students requiring modest remediation.

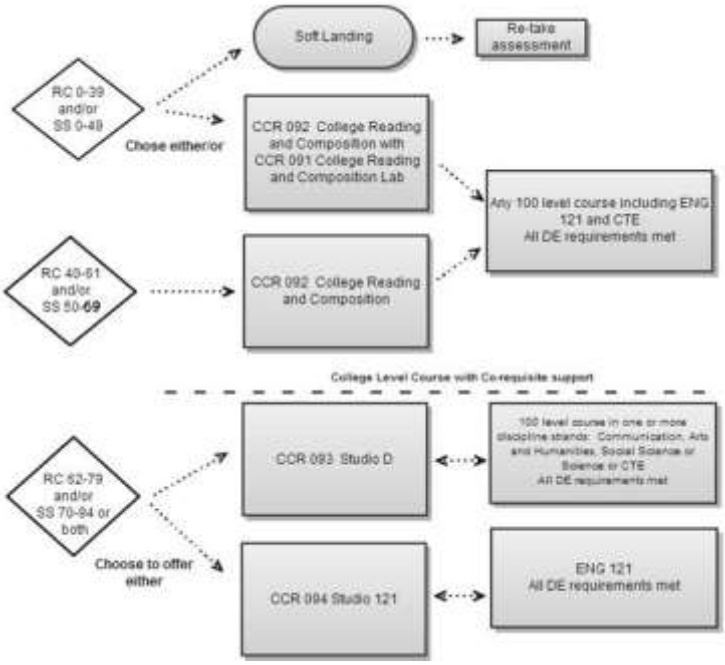

Figure 1. Developmental Education Redesign: College Composition and Reading (CCR) [91]

Math Pathways

In math, the DETF created two separate pathways.

Quantitative Literacy - MAT 050 (4 credits): This course is intended for students testing at the medium and high levels of remedial math who express an interest in enrolling in a 100-level non-algebra or non-transfer math course. Passing this course allows a student to continue on an academic pathway for non-algebra Career and Technical Education (CTE), associate degree and transfer courses.

[91] Colorado Community College System. (n.d.). CCCS Developmental Education Task Force. Retrieved from https://resources.cccs.edu/education-services/developmental-education-task-force/

Algebraic Literacy - MAT 055 (4 credits): This course is intended for students testing at the medium and high levels of remedial math and who express interest in taking a 100-level algebra course and/or those interested in STEM careers and possible transfer to four-year institutions. The curriculum for this course involves content necessary to prepare for MAT 121 and MAT 122.

Note that the state intended the single-course math pathways outlined above to be mutually exclusive. However, EERC has found that some students are moving from MAT 050 to MAT 055, using MAT 050 as a first step towards possible STEM career pathways. This was not the intention of the DETF. It is unclear whether this is an issue related to student advising or to students simply changing their minds with regard to their academic and/or career goals in the course of taking MAT 050. Further, there have been cases in which students who did not successfully complete MAT 055 subsequently registered for MAT 050 in order to progress out of DE math. Again, this was not the intention of the DETF. Sequential enrollment or double-back enrollment need to be examined further to better understand the factors contributing to the use of two rather than one of the math pathways.

Algebraic Literacy Lab - MAT 025 (1 credit): A support lab to be taken as a corequisite with MAT 055 for students who test below the Algebraic Literacy placement score.

Applied Quant Lab - MAT 091 (1 credit): A support lab to be taken as a corequisite for students who test at the high end of the remedial scale and enroll in MAT 103, 107, 108, 109, or 112.

Quant Lab - MAT 092 (1 credit): A support lab taken as a corequisite for students who test at the high end of the remedial scale and want to enroll in MAT 120, 135, 155, or 156.

Algebra Lab - MAT 093 1 credit): A support lab taken as a corequisite for students who test at the high end of the remedial scale and want to enroll in MAT 121 or 123.

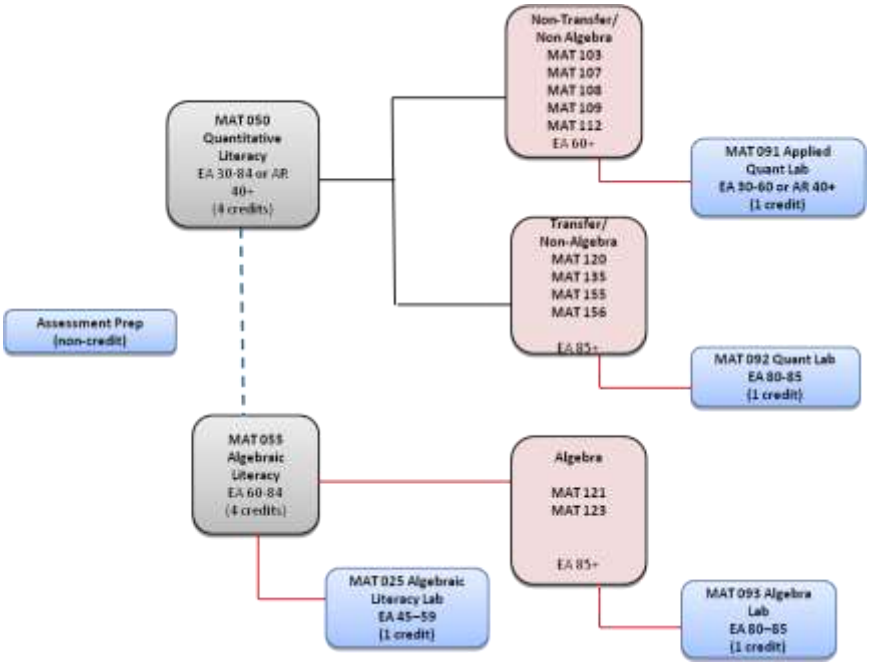

Figure 2. Developmental Education Redesign: Math[92]

Soft Landing

The DETF determined that students who test below the cut scores for CCR 092 and/or Math 050 would have to raise their scores before being admitted into any of the above credit-bearing courses. The colleges were given the flexibility to offer a variety of options for these students and/or to refer these students to community resources such as Adult Basic Ed (ABE) courses in high schools, community organizations, or at workforce centers.

These *soft-landing options* are still evolving at the colleges—options are being added, substituted and/or cancelled. The following examples therefore may not reflect currently available options at the colleges under study.

Five colleges (CNCC, FRCC, LCC, MCC, and NJC) developed a CCR 091/092 combination as a soft landing for students requiring remediation in English and reading. Several of these colleges also expanded supports through which students could access intensive services in addition to the lab and classroom time. For example, Lamar Community College (LCC) decided to use FastForward,[93] an online reading-assistance program from Scientific Learning. Colorado Northwestern Community College (CNCC) is referring their potential students to the Read Right[94] program. Pearson's MyFoundationsLab[95] has been identified as another option for English, reading, and math at institutions including Arapahoe Community College (ACC,)

[92] Ibid.
[93] Scientific Learning. (n.d.). Fast Forward. Retrieved from www.scilearn.com/company/about-us/ourfounders-story
[94] Read Right. (n.d.). Right read. Retrieved from www.readright.com/.
[95] Pearson (n.d.) op. cit.

Community College of Aurora (CCA), and Trinidad State Junior College (TSJC). In addition, ACC and Northeastern Junior College (NJC) are using Desire2Learn, CCCOnline's Massive Open Online Course (MOOC), for students who want to brush up on their math skills.[96]

Accuplacer preparation labs and boot camps, which use a variety of programs and methods of instruction, have also become options at some colleges. Community College of Denver (CCD) offers Accuplacer prep through the National Repository of Online Courses[97] along with tutoring sessions for students who plan to retake the assessment. The college also offers a 10-hour refresher boot camp for math. NJC refers students to its tutoring center, where they work with instructors four days a week for a three-week period to refresh their skills. Otero Junior College (OJC) has offered Smart Start Sessions each summer to prepare students for the Accuplacer. Math students are also assigned to an academic coach during the semester. Students at Pueblo Community College (PCC) also receive one-on-one tutoring as part of their I-GRAD (I Gain Relevant Academic Development) Prep Lab. TSJC students are offered a lecture-style Assessment Prep course for 3 hours per semester

Colleges have also worked with community education resources to appropriately refer students requiring soft-landing services. NJC is referring students to community-based ABE or GED programs for math. Pikes Peak Community College (PPCC) has been working with both ABE and their local workforce center. Front Range Community College (FRCC) has turned to its Center for Adult Learning and/or Continuing Education to assist students. TSJC is working with ABE for CCR placement. Morgan Community College (MCC) is also referring students to the ABE program for English and reading. CNCC is offering the ALEKS Basic Math program as a community education course. At Red Rocks Community College (RRCC), students scoring below CCR 092 and MAT 050 are referred to The Learning Source, [98] a community-based organization with which RRCC has an MOU. This program provides a range of services that address career, college, academic, and personal readiness as well as basic skills instruction in reading, writing, and math. Transition workshops are also provided as students begin programs of study.

Perceptions of the Developmental Education Task Force

During site visits and phone interviews, the Rutgers evaluation team spoke to faculty, administrators, and staff about their perceptions of, and reaction to, the process and work of the Developmental Education Task Force (DETF). Interviews included both faculty and staff who sat on the task force and those on campus affected by the final set of DETF polices approved by the State Board for Community Colleges and Occupational Education.

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[96] Desire2Learn Open Courses. (n.d.). Math assessment preparation. Retrieved from https://opencourses.desire2learn.com/cat/course/math-assessment-preparation-6919/

[97] For more information, see the National Repository of Online Courses (NROC) Project website at http://www.thenrocproject.org/#/.

[98] **T**he learning source for adults and families. (n.d.). College and workplace transition programs. Retrieved from http://coloradoliteracy.org/

The majority of faculty and staff with whom we spoke talked about the process of the task force in a positive light. As one task force member said, "*I thought the whole experience was amazing*."

The basis for this positive regard varied to some extent by discipline and functional position, but a pattern nevertheless emerged. EERC repeatedly heard that DETF gave respondents multiple opportunities to share information and to learn from other colleges. They spoke of the different benefits of meeting together and of how much they valued the formal and informal opportunities to interact with their colleagues from across the state. The process allowed them not only to discuss ideas, best practices, and challenges but also to foster relationships. As one faculty member stated,

> *. . . I've learned a lot working, just seeing how other campuses do things. We kind of get silo-ed, I think, often, in our institutions. And so, that's been really useful to be able to work with colleagues on other campuses*.

DETF members, and the nonmembers who attended meetings, also appreciated the time that had been set aside for them to learn about various DE models being used by colleges across the United States.

> *I thought the design of it [worked] in bringing the national speakers and successful models in . . . then we had the afternoon to think about . . . 'Could that work here in Colorado?' and 'What would be the challenges for us*?'

A faculty member described the opportunity for discussion in a similar manner, noting that after the experts left, the DETF members would,

> *. . . just kind of talk about it and just say, 'hey, do we think that would work for us? Do we think that would work for our students? What do we think about this?'*

Faculty described DETF meetings as places for intense learning, discussion, and debate. Faculty noted that there were some task force members with very strong opinions about the direction that Colorado should take, but that despite heated discussions, DETF felt like a welcoming forum for conversation, exploration, and problem solving.

In EERC's interviews, individuals reported that recognition of the differences between institutions permeated the meetings and helped shape discussions about the need for flexible designs that could fit different colleges. This was important to the policymaking process because it made task members aware that, as one faculty member stated, "*each school has a different environment and that we needed flexibility in design*." For example, faculty mentioned long discussions about the differences between rural and metro campuses, those with residential students, and those with nontraditional and commuter students.

As noted above, representatives returned to their campuses and shared the ideas discussed at the DETF meetings. The feedback they got, in turn, was shared at the next DETF meeting. As a result there were shifts and changes in direction or decisions from meeting to meeting. As one faculty member said,

> *You'd sometimes think that you had agreed on one thing and then something would happen and people would go back to their counterparts and then it could come back and it was like, 'Whoa. Math wants to change this.'*

In general, faculty reported to the EERC team that during deliberations about the models for English/reading and math, they felt that their viewpoints and concerns had been heard, even if they were not always accepted.

In terms of the English/reading team, faculty described the challenges of combining two disciplines into one. Some reading faculty spoke about working to get a stronger voice at the table, but in the end, most seemed happy with the process that had taken place.
One faculty representative commented:

> *I mean really I thought it was a very good process. Not everyone in the end got what they wanted, but that is kind of how it goes*.

In planning its work, the DETF had attempted to create multiple feedback loops to engage faculty and staff in both the process of learning and in the process of making choices about the direction of DE. This included DETF representatives acting as an active link between their campus and DETF sessions. Reps and colleges, however, varied in how they realized this function, i.e., if and how they established DETF-related work groups at their colleges. To some extent, variations reflected differences in college enrollments, urban/rural location, and residential/nonresidential status. Some colleges, including CCA, established faculty committees to review curriculum and the ideas being generated by the DETF. Other colleges, such as FRCC, RRCC, and ACC, established interdepartmental committees instead. Those committees varied in composition but frequently included representatives from faculty, student services, financial aid, the registrar, and institutional research.

The EERC team, however, also heard from faculty and staff at a number of colleges who were less positive about DETF and its work. These individuals felt they had not been adequately informed about what was taking place at the DETF and/or felt that there had been few opportunities to express their reactions or concerns. The absence or gaps in bidirectional communication varied by college and even, at times, by departments within the same institution. A variety of explanations emerged: the college or department had not had a representative on a specific committee; the college or its representative had not set up a formal method of communication to discuss the activities of the DETF; and/or the college had multiple campuses or large departments, making communication difficult. As one faculty member observed: "*So I think there was a little bit of a void there [in] just getting communication . . . .*"

Communication problems at few colleges were improved if not resolved once a campus-based TAACCCT project lead began work on the grant. Once in place, the project lead facilitated communication about the TAACCCT grant, sharing information about DETF redesigns with relevant faculty and staff.

It is clear that when an interactive dialogue existed on campus, and between the campus and DETF through the college representative, the work of the DETF was viewed more positively and the sense of ownership in the process increased. As one faculty member who had only participated in her campus DETF work groups commented,

> *I've always felt there's strength in the system. And I've always felt that when you can share, you know, its' synergy. The results will be so much bigger than the sum of all the individuals.*

In addition to discussions about the more formal process of DETF, EERC asked faculty and staff about non-DETF state- or region-wide meetings during which discussions had also taken place about the work of the DETF and the resultant redesigns. Most felt these meetings had been critically important to the overall process of change, specifically mentioning the value of the 2:2 Conference, the CCCS faculty's annual professional development event. In this regard, EERC repeatedly heard from faculty and staff an interest in ongoing opportunities to meet and discuss experiences with their rollout after the implementation of the redesigns. For many faculty and staff, maintaining connections and continuing to engage in peer learning were important goals for the future.

In the end, despite a range of reactions about the specific policies and models that came out of the DETF, the faculty and staff expressed to the EERC team considerable appreciation about the DETF process, repeatedly adding praise for the fact that it was led by faculty and staff. At the same time, many pointed out that the call for change had come from the top. As one faculty member stated,

> *They [the DETF] knew that our provost at the time had bought us some time with the legislature*[99] *. . . [T]hey all knew that if you don't do this, somebody higher than any of us is [going to].*

The Colleges' Responses to the Developmental Education Task Force

The Rutgers team observed an association between colleges' establishment of formal campus planning and feedback mechanisms related to the work of the DETF and the colleges' implementation of DETF models and pathways. The earlier the college engaged both faculty

[99] Across the colleges, a number of faculty and staff thought that the legislature was actively involved – and worried about top-down mandates. DETF participants were told that if they didn't come up with a plan, the plan would be mandated by the State Board for Community Colleges. Even though the legislature was not involved, the sense of urgency to revise DE was palpable.

and staff, and the greater the specificity of its plans, the smoother was its adoption of the new DE model. Early inclusion of student services and IT helped these colleges identify if not anticipate some of the challenges to implementation, including listing learning communities as co-requisites. These challenges and their resolutions will be discussed in Part III of this report.

While DETF was still meeting, Front Range Community College (FRCC) brought together faculty from its multiple campuses to work together. Given its size and its three campus locations, the college brought in a consultant to help develop a project management charter that mirrored a business model. In developing this plan, a series of questions were asked:

- *How are we going to do (this) in the most efficient manner at our college so that it impacts our students in a positive manner?*
- *Who are the stakeholders?*
- *Who do we need communication plans with?*
- *How are we going to form subgroups?*
- *Who's going to be in charge of those?*

The resultant plan identified deliverables, tasks, and the individuals who would be responsible, as well as time tables. This plan became FRCC's blueprint to respond to the mandates that emerged from the DETF.

Not surprising, across Colorado the structures for implementation generally reflected the active involvement of senior college leadership and the colleges' tradition or culture of innovation. For example, as noted above, prior to the DETF, FRCC's president and the Community College of Aurora's (CCA) former president had each charged their faculties to develop new ways to deliver DE. As a result, these colleges had a cross section of both staff and faculty already working together on DE reform before the DETF was in place. This is not to say that each of these colleges ended up with the same timetable for implementation, but rather that these colleges more quickly launched at least one of the new DE models (see timeline below) by fall 2013.

> *[We benefitted from] the support we've been given from our administration financially and just in terms of time and structure—you know, the whole steering committee that was set up, all the stuff that was underneath the steering committee and just realizing that we can't just snap our fingers and it's ready to go. That we were given the time, the support, and money that we needed to figure out how to roll this out well, because it wasn't a haphazard thing.*

In contrast to colleges that seemed "ready (and able) to act"[100] were the ones that could be located along a continuum of change as either "ambivalent" or "reluctant to change." These colleges often had a "wait and see" approach with regard to implementation. They wanted to

[100] Bickerstaff, S. (2014). Faculty orientations toward instructional reform. *Inside Out: A publication of the CCRC Scaling Innovation Project*, *1*(45).

see what others were doing and "*to learn from the experiences*" before launching their own redesigns (e.g., NJC and RRCC).

Colleges faced three specific issues in their implementation of DETF models: first, the integration of reading and English faculties; second, the reconceptualization of DE math; and third, the need for adjustments to student advisement. These will be discussed following a section on professional development and another on changes in pedagogy.

Professional Development

In Phases II and III, formal and informal professional development were critical elements of Colorado's transformation of DE. This included forums hosted by CCCS, by the colleges themselves, and/or by faculty and staff within specific departments.

Early on in the process, to help get the word out about the work of the DETF and respond to concerns about the implementation of the new DE policy and pathways, CCCS hosted a series of informational forums at colleges around the state. In these forums, CCCS staff walked faculty through the new pathways and how the committees developed them. They also talked about the anticipated effects of these changes. Faculty asked a variety of questions at these forums and, at times, expressed their concerns. Two common discussion points at these meetings were student success and faculty retention (see below under Challenges).

Later in the DETF process, CCCS held sessions with faculty to discuss pedagogy and implementation of the new pathways. Although CCCS gathered the groups together, many of the workshops were actually developed and led by faculty at the individual colleges. EERC was told that these working forums resulted in a great deal of sharing and creativity and were energized by the excitement many faculty felt about the upcoming changes.

CCCS also held a number of workshops for student-services staff to discuss the very significant changes that were going to take place for them. During these workshops administrators and advisers talked about the logistics of the CCCS data system, Banner, and changes in prerequisites. But the major focus of these meetings was on the expanded role of advisers, which would now include helping students decide on which math or CCR pathway would best suit their capacities and future goals. Discussions also took place about the anticipated and added workload that student-services and advising staff would experience, especially at the beginning of each term, and the best strategies for informing incoming students about the changes in DE. To that end, workshop participants representing different colleges facilitated an exchange of ideas and promising practices as well as engaged in collective problem solving. Colleges also sponsored a variety of conferences, forums, and workshops using foundation, TAACCCT, or their own institutional funds. These professional development meetings were not always focused specifically on DE but, at times, also addressed issues related to understanding and engaging students—especially adult learners—and working across class and race/ethnicity groups. For example, Pikes Peak Community College (PPCC) hosted a

campus-wide symposium, "Students speak. Are we listening?," led by faculty from the University of Texas's Center for Community College Student Engagement.[101]

Morgan Community College (MCC) held an all-staff professional development day with a team from "Bridges Out of Poverty."[102] One hundred and thirty faculty and staff participated. Sixty-four attendees signed up for certificate credits.

> *. . . the credits required them not only to attend the workshop but also then to go back and reflect on what they had learned and how it could apply to their job, regardless of what their role was here at the college.*

MCC faculty felt the training had been very successful and that it benefitted the college as a whole, not just those who were actively involved in the transformation of DE.

> *. . . [It helped] the total college campus [learn to see] our students from their perspective, and to see the rules that we establish within our college from their perspective. And better understand the conflicts that might be there between the students' world and our world and the lack of understanding . . .*

In spring 2014 EERC conducted on-site interviews at 6 community colleges. During these interviews, faculty shared how helpful substantive and pedagogical college-based workshops, including cross-disciplinary advisory groups, had been for them.

> *. . . probably one of the best things we did was getting that advisory committee from across the departments across campus.*

The forums, many meeting several times during a semester, facilitated an exchange of perspectives, a sharing of concerns, problem solving, learning from one another, and identifying promising practices. At many colleges these forums helped reduce initial anxieties and fostered a new collaborative atmosphere

Red Rocks Community College (RRCC) held a series of faculty trainings, including a three-day workshop that was then followed by one-day workshops to help both full-time and adjunct faculty understand the new pedagogy and curriculum of the redesign. The Community College of Denver (CCD) brought in an external consultant who established "learning walks"[103] to help faculty prepare for teaching across DE and transfer levels.

> *It involves dropping into classrooms totally planned and looking at what people are doing, talking to the students in the classes, and then getting back together as a team to talk about how to work on the curriculum.*

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[101] For more information, see the CCCSE website at http://www.ccsse.org/center/institutes_workshops/.

[102] For more information, see the Bridges Out of Poverty page on the aha! Process website at http://www.ahaprocess.com/solutions/community/.

[103] Fisher, D., & Frey, N. (2014). Using teacher learning walks to improve instruction. *Principal Leadership*, 58-61.

At Front Range Community College (FRCC) English and math faculty developed peer-training opportunities in which faculty would attend each other's courses and/or discuss content and pedagogical issues as they emerged in pilot courses that were built on the new DETF course models. Individuals from Community College of Aurora (CCA), Colorado Northwestern Community College (CNCC), and Arapahoe Community College (ACC) also spoke to the EERC team about faculty working with and learning from one another as they developed new curriculum and began to use new pedagogies. This included the use of more senior faculty as mentors for newer faculty.

Ongoing professional development was seen as critical for both new faculty coming aboard as well as existing faculty. But some concern was raised as to how colleges would be able to maintain the same level of faculty development with the end of the DETF and the sunset of TAACCCT. This was especially true at some colleges that rely on a changing stream of adjuncts.

Faculty's interest in continuing an active agenda of professional development perhaps is best captured by the following comment by a member of one college's math faculty

> *The greatest thing is to keep the faculty motivated enough to have your professional development or [talk] through creative ideas. . . . I don't think we're at the end point of saying 'Well, we're satisfied with where it is.' I think we need to continually keep collecting data, looking at students' success, and saying 'What else can we do?' Because I don't think we have it totally figured out. So my recommendation is that we continually look at that student success and how we might affect it in a positive way. And then always, professional development systems . . .*

As evaluators, we agree that it is of the utmost importance for faculty, student-service staff, and administrators to have further professional development opportunities to exchange their experiences with the rollout of the redesigns and to learn about classroom pedagogy as it relates to the redesigns. Such opportunities would build on the feedback loops that worked so well during the work of the DETF and the development of the redesigns. Ongoing discussions about lessons and/or promising practices learned administratively and in the classroom, as well as about student outcomes, would be a valuable means to ensure that the redesigns are being implemented as intended as well as to inform any statewide program changes that may become necessary in the future. Such discussions could also identify areas for future professional development workshops. Further, such formalized opportunities would reflect the state's ongoing commitment to a culture of growth, learning, and support by nurturing a feedback system that is already working.

Rethinking Teaching and Pedagogy

The transformation of Colorado's DE programs involved significant changes in structure, curriculum content, and pedagogy. It "[*rallied] a lot of people around an effort to help increase*

student success." It opened up dialogues between DE and transfer faculty and in the process, some believe, it reduced some of the historic bias toward DE faculty and students.

As one faculty member commented, the DETF

> *. . . forced the barrier between dev ed and transfer to come down, which in turn has led to rethinking DE as part of the whole. . . . I think the way we just sort of work together and sort of embrace being a larger more integrated operation is positive.*

And another reflected,

> *. . . everybody has to see that these are students—Dev Ed or not Dev Ed, these are still students, and they've got to be treated the same.*

For many it was collaboration for change.

> *So I'm just thrilled at the way that these groups have worked together, but also how the deans have embraced this change and invited the leaders in math and CCR to come into a department meeting, to talk to the faculty members, to really talk about the change. So it's not just about a change in English and math, but it's the change in the way we look at students and helping them succeed.*

Echoing the comments by Peter Adams regarding the historic length of DE sequences, faculty spoke of the value of one-semester DE courses under the DETF redesigns.

> *I think the benefits to the student who tests into any of the ranges for these classes—to be able to see the light at the end of the Dev Ed tunnel—I think is very valuable.*

They also talked to the EERC team about their belief that mainstreaming would have a positive effect on students' sense of their own capacities and their ability to engage in college-level work.

> *Having them mainstream and getting them that college credit within their first semester, I think that's really motivational for them. And I think we'll see long-term persistence rate increase because we're showing them that they can get through a college-level course as opposed to getting them ready for college-level course and having it be really difficult and them still being apprehensive that they can get through one. We've shown them that they can get through one. So I think we'll see a big change there.*

While these were structural changes for DE students, in conversations with faculty over the past three years it seems that the process of rethinking pedagogy generated the most faculty excitement.

For me it's the conversation about curriculum and how that's changed now, and then how that is also changing teaching. I think people notice this as another long mindset shift or longitudinal, but I think that has been really exciting for me . . . And now that we're close again, we keep exchanging those ideas. Even though we did do that before, but now it's really—it ramps that up.

It has spurred [more interaction]. It's one of those unintended consequences where it's the water-cooler conversations . . . there is so much talk about instruction and 'Oh well come to my class and see how I do it,' or 'Can I come to your class and see how you do it?,' and that part is very exciting.

One of the major shifts was a **"***move away from lecture into a more student-centered, active-learning kind of classroom."*

One senior administrator talked about a cultural change that has occurred in rethinking students' experiences prior to their walking into a college classroom.

Our traditional students have been plugged in since the day they were born, and it's not their fault. Everything has been instant, and their minds are wired differently because of that. And so we need to tap into that to say, whether it's critical thinking or just, 'How do these students think?' I think there is something about that. We're in this electronic day and age, whether we like it or not, but that's all these students know. So, it's difficult to have the old traditional way of doing things because they're sleeping, honestly, if it's not active, they have a difficult time because they're used to all of that plugged-in time.

Finding ways to engage this "new" student was front-and-center as faculty rethought their approach and activities within the classroom.

We're gonna try to meet them at least halfway so that we can keep them engaged. Ten years ago, 15 years ago, we didn't talk about what we could do to engage students. It was like, if they didn't wanna—if they didn't come and they weren't attentive, and they didn't pay attention—it was college. You know, we didn't—there was not a concerted effort by the faculty or the college to figure out how to capture students' attention. I mean you just did what you did and if they wanted it they got it and if they didn't, we really didn't care—we just said good-bye.

As one faculty member shared with us,

Going back to knowing that we're not just saying 'Sit here for an hour and 50 minutes, listen to this person lecture, and you should have it.' I think that we are making great, just great strides in moving forward into our teaching methods and the way that we are approaching these classes as professors in front of these students, and we're not walking in as the all-end expert,'Listen to me and you will know.'

. . . to see just the degree to which you can let the students be in charge and lead, you can really facilitate. And you can accomplish a lot more learning a lot more efficiently. You feel like you're not—that you have this expectation that you need to sort of be in front performing, when you really can get fully let go.

The focus on student interaction and the shift to a collaborative model of teaching and learning within the classroom were also evident in discussions about embedding tutors during Phases I and II and also with regard to CCR and the new math pathway under the DETF redesigns.

I have to say there's something about sitting in his class, and then turning right around and being in our own class when the students say 'So now what did he mean by this?,' and then we can have that really rich conversation. 'Well I heard this,' 'Well I heard that,' 'Well I heard this.' And instead of being that, sort of the top-down talker-to, we are the equal 'Well' sharing of what we've heard.

Attention to the collaborative enterprise was also evident in faculty comments about the need to include students in the mapping of their learning. This involved explicitly framing students' work as an integrated progression in which skills were being built on top of one another to develop their capacities, and not just as a series of discrete content areas and skills. One instructor talked about how he had become more conscious about needing to build a "*tiered structure to get folks to the outcomes in (English) 121*" and to help students be aware of the progression of their studies.

The need for early and continuous weaving of critical thinking into coursework was another common thread in faculty's discussions with EERC. For example, faculty at CCA shared with us their discovery that around the midpoint of the fall 2013 semester, students began "hitting a wall" when they started what had previously been 090-level course content: research writing and critical reading.

At that point in the course where that shift takes place, that's where students are hitting the wall. They, some of them, stopped coming—some for good, some for a week, a week and a half—they disappeared for a little while or they were coming but they weren't handing in their homework as consistently as they used to. And so something about that stage where they had to make that leap from comprehension to critical thinking was really taxing for them.

In response they began to build students' critical thinking skills early in the semester through a series of small assignments.

For example, they might be writing a personal essay early in the class, but it has to incorporate things from what they read in the course, and they have to bring in direct quotes, and they have to cite them so that it's a little less overwhelming for them on that side of it.

Faculty at ACC developed

> *. . . concepts to consider with every reading [that we] hand out so the students go through and we start conditioning a pattern of thinking a little bit that experienced readers go through. 'What's the main idea? What's – can you locate the argument? What's the tone?' And then even the rhetorical stuff, 'Is the text logically effective or appealing?' So we wanted to—so for every reading they have to go through [this process], and that helps them not only get at the understanding, but also maybe engage in a little more critical reading,*

They utilized similar concepts for students' writing.

> *So just like they think about audience and purpose when they're breaking down a reading or deconstructing a reading, they're doing the very same considerations when they're constructing it. We felt like that would help students see the connection between reading and writing and how you should be reading more as a writer and writing more with reader in mind and vice versa.*

Faculty also spoke of the expansion of this integration to students' entire college experience.

> *I think we've been thinking of reading and writing as activities that only occur in these classes (DE). And we forgot about writing and reading across the curriculum. I think that by revamping this, it's really going to open that door again and help us teach kids to read in science class, in history class, and not just read in English from an English text.*

In EERC's discussion with math faculty, the pedagogical focus was about teaching math conceptually or procedurally. A faculty member from FRCC reflected on the significant shift from procedural to conceptual teaching styles in K–12 education, especially following the introduction of the Common Core curriculum. She worried that there was a major disconnect now between pre-college math teaching and college-level pedagogy, especially at community colleges.

> *Well, the whole idea is that at the K–12 level, they're focusing much more on conceptual versus procedural. And then they get to colleges [and] like, 'Yeah, you don't know how to do this, this and this, clearly you're not educated.' And that's what an Accuplacer-type test is testing for. Each skill is narrowed down to the various smallest skill it can be, and it is tested there.*

Some math faculty teaching algebra and transfer courses expressed concern about training DE students to work conceptually if these students were later to enroll in STEM courses and/or transfer to four year colleges, where they would be called to work procedurally. Other faculty, however, felt excited about using conceptual pedagogy, especially in Math 050 classes. At the colleges the EERC team visited in spring 2014, we found that both approaches were being used in 050 and 055. Faculty expressed an interest in tracking student outcomes for both pedagogies and in seeing how each approach affected student outcomes into subsequent 100-level college

math courses. Faculty also spoke about their expanded use of contextualization, especially in Math 050, and observed that it was helping students learn.

In fact, across the colleges, EERC heard that faculty were extremely interested in tracking outcomes over time for all the changes under DETF. One faculty member pointed out that we are "*moving towards more of an evidence-based culture*" but wondered "*How do we really collect more data on what we're doing?*" Overall, faculty members were excited about the redesigns, but their bottom line was finding out if the changes were, in fact, making a difference to their students' long-term success.

PART III

The DETF's development of the redesigns was a major undertaking, involving many people over an 18-month period. However, the implementation of those redesigns, the actual transformation of DE in Colorado, was an enormous and even more complex undertaking that requires analysis on its own. Part III of this report thus seeks to achieve a better understanding of the rollout of the redesigns, of how organizational history and context may have facilitated or inhibited their implementation, and the challenges that emerged.

EERC asked, w*hat, if any, patterns can be identified given similar contexts? Did prior innovation make a difference with respect to when and how a college implemented redesigns?* These are not just process questions but ones that might provide some insight into differences in student outcomes by college as well as between historic, TAACCCT, and state models. Our analysis may also help inform other statewide multi-institution transformations and educational policy development.

A. ROLLING OUT THE REDESIGNS

In the above sections, we discussed some of the models and strategies (e.g. compressed, mainstream, mainstream with contextualization, and integrated) that were piloted during Phase II prior to the redesigns, then we identified the models developed by the DETF, which became the mandated redesigns. While we recognize that colleges and individual faculty may have defined Phase II pilot models differently, we believe, after discussion with CCCS, that there was sufficient commonality to use them here and in the EERC Outcomes report as units of analysis. They therefore serve as the context for the following timeline.

Table 1 identifies the colleges that piloted Phase II DE models and the semester in which they began offering one or more of the redesigned DE courses.

Table 1: Summary of Phase II Pilots and Rollout of the Redesigns by College and Subject Area

	Yes English Phase II Pilot	Fall 2013 CCR Offered	Spring 2014 CCR Offered	Yes Math Phase II Pilot	Fall 2013 Math Pathway Offered	Spring 2014 Math Pathway Offered
ACC	X		92, 93, 94	X		55, 25
Aims						
CCA	X	92, 94	92, 94	X		50, 55
CCD	X	92, 93, 94	92, 93, 94	X	50, 55, 25	50, 55, 25
CMC	X	92, 93, 94	91, 92, 94			50, 55, 25
CNCC		91, 92, 94	91, 92, 94		50, 55	50, 55
FRCC	X		92, 93, 94	X		50, 55, 25
LCC		91, 92, 94	91, 92, 94	X	50, 55, 25	50, 55, 25
MCC	X		91, 92, 93, 94	X		50, 55
NJC			94	X		50
OJC	X	92, 94	91, 92, 94		50, 55, 25	50, 55, 25
PCC	X	91, 92, 94	91, 92, 94	X	50, 55, 25	50, 55, 25
PPCC	X	91[104]	92, 94	X		55, 25
RRCC	X		92, 94			
TSJC		91, 92, 93, 94	91, 92, 94	X	50, 55, 25	50, 55, 25
TOTAL	10	9	14	10	6	13

In the first semesters of implementation, a few colleges only offered a single redesign, such as CCR 091 (PPCC) or math 050 (NJC), while most offered the full array of redesigns in College Composition and English and/or math. Given differences in how and when colleges rolled out math and English/reading, our discussion is separated into the two subject areas.

Emergent Patterns: English

In looking at the launch of TAACCCT and at the redesigns during Phase II and Phase III, we see four patterns.

- No Phase II TAACCCT DE pilots but the inauguration of at least one CCR course in fall 2013 (CNCC, LCC, TSJC)
- No Phase II TAACCCT DE pilots and the inauguration of at least one CCR course in spring 2014 (NJC)
- Phase II pilots and the inauguration of one or more CCR courses in fall 2013 (CCA, CCD, CMC, OJC, PCC, PPCC)

[104] In Fall 2013, PPCC began its transformation to the redesigns by offering a 4-credit course, ENG 077, that became the CCR 092 course in spring 2014. For fall 2013, students in ENG 077 who needed additional assistance were coenrolled in a one-credit CCR 091 course.

- Phase II pilots and the inauguration of one or more CCR courses in spring 2014 (ACC, FRCC, MCC, RRCC)

Aims was the only college that did not offer a TAACCCT redesign as defined here and also did not launch any of the state-designed CCR courses in fall 2013 or spring 2014.

Previous experimentation with DE models did not seem to matter when it came to colleges' ability to launch new CCR courses in fall 2013. New CCR courses appeared in 6 of the 10 colleges that had Phase II pilots and 3 of the 5 that did not. Further, colleges that launched CCR courses in fall 2013 all offered multiple CCR courses, e.g. CCR 092 and 094. This pattern is also seen among colleges that first launched CCR redesigns in spring 2014 (with the single exception of NJC, which only launched CCR 094).

In interviews with faculty and administrators, EERC was told that CCR 092 and 094 were easier to launch than CCR 093. CCR 092 and 094 were similar to existent Phase II pilot designs that included compression and mainstreaming (e.g. CCD, FRCC) and/or the integration of reading and English as offered at CCA. CCR 093 was far more challenging to launch – coordinating English and subject-matter transfer faculty was cited as a main issue (e.g. CCA). In fact, some faculty wondered if CCR 093 expected too much.

> *Let's really focus on getting what is going to be the foundation of all of the classes, moving from 121. Let's get those done . . . and then once we get that moving, then we can look at seeing how we are going to begin offering 093.*

The size of the DE student body to be served was also a factor. Small colleges (NJC, LCC) stated that their DE student numbers were just too small to sustain CCR 093, so they eliminated it as an option. In two cases (CMC and TSJC), CCR 093 was offered in fall 2013 but was not offered again in spring 2014.

In response to concerns about the integration of reading and English, a number of colleges established curriculum committees that included reading and English faculty along with DE faculty. In some cases, faculty were pleasantly surprised by the active engagement of their colleagues in the process of curriculum review and in the development of the new math pathways and the CCR courses.

> *To be honest with you, it almost surprised me because I really wasn't expecting that. I thought there would maybe be a little bit, but I wasn't expecting as much as we got from that.*

Some colleges expanded their CCR work groups to include subject-matter faculty—not only to prepare for possible CCR 093 courses but also to integrate into CCR 092 and 094 curriculum the content and skills that college-level faculty saw as critical to student success. This occurred at ACC.

> *So we just started . . . this conversation to get going a little bit about what's valued around campus in terms of our transfer level classes? What are they seeing that their students need? We asked for, 'Can we have sample assignments? What do your writing assignments look like? What kind of rubrics do you use? How much reading do you do? How much critical thinking is emphasized in your course?' We really tried to just get a feel for what is it our students are doing on this campus?*

ACC also used faculty surveys to gather *"the kinds of skills and strategies that you want to see . . . out of your students*."

Thus, despite some early hiccups, most of the faculty with whom EERC spoke felt that in the end they were able to work out the curriculum issues that emerged with the new pathways and prepare the new courses for their respective launches.

One of the biggest differences across the colleges related to their decision whether to plunge in and only offer the state models or to overlap Phase I and II models with the state models. At times those decisions were based on the size of a college's DE student population. Thus, colleges like LCC decided to jump in and only offer the redesigned courses in fall 2013. Other colleges (e.g., CCD, NJC, ACC, and RRCC), concerned about students already in the DE pipeline, decided to overlap the different phases so students could either complete their DE requirements under the old system or via the new state options.

The perceived capacity of advisers to help students negotiate the new Phase III CCR options and the need for faculty preparation were both factors that shaped a college's launch timeframe.

> *[We had concerns] in terms of training the faculty members so they felt comfortable in this change, because if they're not successful, our students are not gonna be successful. So I think that was a big part of why we kind of did that in phases.*

In EERC's spring 2014 interviews with faculty and administrators, the overwhelming majority rued that they had straddled different DE options, as well as different models for advising, feeling as though they had "*a foot in two worlds*" or, as another faculty member, they'd only "*put our toes in the water*." Many felt it might have been better to

> *. . . just rip off the Band-Aid and do it, because it's caused a lot of confusion with offering classes, the same classes, continuing to offer the old classes and the new classes together. It's better when it all comes [at once].*

Emergent Patterns: Math

In tracking Phase II pilots and Phase III redesigns in math, five patterns emerge. These patterns are similar to those observed above with the English redesigns, but the distribution is somewhat different.

- No Phase II TAACCCT DE pilots but inauguration of at least one redesigned math course in fall 2013 (OJC, CNCC)
- No Phase II TAACCCT DE pilots and inauguration of at least one redesigned math course spring in 2014 (CMC)
- Phase II pilots and the inauguration of one or more math courses in fall 2013 (CCD, LCC, PCC, TSJC)
- Phase II pilots and the inauguration of one or more redesigned math courses spring 2014 (ACC, FRCC, MC, NJC, PPCC)
- Phase II pilot courses but no Phase III redesigned math courses offered either fall 2013 or spring 2014 (Aims, RRCC).

Fewer colleges launched one or more of the math redesigns in fall 2013 than we saw above with the CCR options. Further, we see that in the case of math, previous experience with DE experimentation did make a difference in terms of timeline: More of the colleges involved in TAACCCT pilots prior to the DETF implementation offered one or more redesigns in fall 2013 than did colleges that had not been engaged in DE experimentation (Four colleges that had experimented with pilots launched fall 2013 courses compared with only two that had not.)

Faculty observed that engaging in reverse-design curriculum development for the math pathways required a significant amount of dialogue between DE and transfer faculties. At some colleges, such as CCD and CCA, there had been a historic separation and/or general lack of interaction between these faculties. The development of curriculum for the new pathways courses thus forced them to find new and effective ways to collaborate.

> *The transfer-level folks in math seemed to have the hardest time. I think they felt like they weren't brought in quickly enough. I think they felt like there wasn't enough communication between the two centers—although from my perspective it looked like there was, and if you ask the chairs they say there was, but something happened there. I'm not sure what it was. Reading and English, we've always worked really closely with transfer.*

At some colleges, faculty broke into separate groups to work on the curriculum for MAT 050 and 055. Some worked better than others—as one member of a college's math faculty observed,

> *We ended up with a really strong 050 group, and . . . weak people that were working in silos in the 055. And so, we had some—those was (sic) one of our hiccups.*

Of note was that once the math pathway courses were ready, faculty from both traditional DE and transfer faculties nevertheless seemed to prefer to teach the MAT 055 course over the MAT 050 course. Many of the faculty interviewed by EERC stated that they felt more comfortable teaching MAT 055 because the content of that course was similar to courses they had previously taught, e.g. 095, 099. With fewer faculty interested in teaching MAT 050, some chairs had to spend extra time recruiting and training faculty to teach those sections. This may account for

some of the delays in implementing either DETF math courses and/or in offering multiple sections.

However, regardless of when a college first launched DETF math courses, all but ACC, NJC, and PPCC offered both MAT 050 and 055 in the semester of DETF inauguration. This may reflect faculty's recognition that the two math courses served rather different cohorts of students—in contrast to CCR options, which had more to do with choices about pedagogy or strategy. At the same time it is of interest, given the greater similarity of MAT 055 to 099, that of the three colleges offering a single redesign as their inaugural course, two began with MAT 055 (PPCC and ACC), and one offered MAT 050 (NJC).

NJC administrators and faculty shared with EERC that their decision was two-fold. They wanted to see what other colleges were doing with MAT 055 before they launched it at NJC. They also perceived that MAT 050 was a better transition course—a good option for students testing at the lower levels. In retrospect, NJC remains comfortable with its original decision.

On the other hand, ACC decided to begin with MAT 055, offered along with the MAT 025 lab. In retrospect, ACC observed that it might have been better to "*do the reverse*"—to start with MAT 050 and rely on MAT 055 to serve students headed towards STEM and transfer math.

The DETF gave colleges the freedom to choose the structure or format of the new math pathways courses, e.g. flipped classes or emporium models, or conceptual versus procedural approaches. Some colleges also gave faculty the freedom to choose how they wanted to teach—as one instructor said, "*to be allowed to teach to their strengths*." For example, at FRCC the college-wide math chair gave her faculty a choice of how they wanted to teach MAT 050. Thus, within and across FRCC's three campuses, math faculty chose their own formats.

FRCC math faculty told the EERC team that they had identified two different types of DE students: those who need just a brush-up and those who are learning the material for the first time. In addition, students vary in their different learning styles, and some formats or pedagogical approaches benefit some and not others. In recognition of students' different needs, FRCC math faculty had worked closely with academic advisers to develop a simple questionnaire that could help students decide which course and format best suited their needs.

> *. . . a list of three or four or five questions that, once the student answers those questions, they'll probably know which one is better for them, like 'Are you an independent learner?' If you are, (emporium) mods would be a good choice for you. If you're not an independent learner at all, then you probably would want the conceptual teacher-led class. 'Do you enjoy working with other students?' If you say 'Absolutely not, I hate group work, I don't like to learn with other students,' then you would probably want to go to the (emporium) mods and not the conceptual*.

Limited resources to develop new curriculum and train faculty caused several colleges to decide to launch only one of the DETF math courses. Other colleges may have encountered

similar limitations but explained their decision to stagger the launch of the math DETF models in terms of a desire to focus their efforts and first understand what was working and why before launching the other course.

Across the continuum, both faculty and administrators were concerned about students already in the DE pipeline. What services should be offered? How should they be advised? How quickly could they finish their sequence of required courses?

In contrast to the rollout of the CCR options, we found that colleges more frequently straddled the launch of the math redesigns with pre-existing math pilots and models. When asked about the reasons for straddling the old and the new, colleges varied in their explanations but often stated that the math pathways were a more radical change than the CCR options and required more faculty training. Colleges (e.g., PPCC, ACC, NJC) also stated that the new math pathways created new advising challenges, so they wanted the opportunity to respond to the needs both of the students already in the pipeline and those just beginning with DE.

At NJC, DE math classes were offered in the summer of 2013 to help pipeline students complete their DE requirements.

> *We essentially paid for the entire class. We paid tuition, fees, and books. One thing we didn't pay them was to come and their gas.*

More often colleges relied on faculty and advisers to help students figure out what they should do—finish the old sequence or register for one of the new courses.

> *[The advisers]'ve done a fantastic job, but I think looking back on it, if we had just gone with the new, we would have had less choices almost. There were almost too many options for a student, and then it gets confusing because the students don't know. 'Should I go to the new courses? Should I stay in the old courses? What do I do?'*

In retrospect, mirroring English faculty, math faculty at the colleges that overlapped the Phase I and II models with Phase III DETF models stated that they "*wish(ed) that we would have gone only (with the) new . . . .*"

In summary, colleges already involved in experimenting with math pilots appear to have been more able to and/or willing to move forward with both math courses prior to the mandated start date than those who were less engaged in Phase II pilots. This may suggest the importance of historical context and culture to the pace of change. It also appears colleges, in hindsight, agree that it is better to jump in than to straddle between old and the new program designs.

To what degree did the process of implementation actually affect student outcomes by college? Given the diverse timetables of the colleges, it may be difficult to know for sure. However, in addition to the above mentioned preliminary outcomes report, EERC is preparing an analysis

that will look at outcomes—both across the consortium and by individual college—that reflect four terms of redesigns spanning from fall 2013 through spring 2015. These additional analyses will further clarify the above observations and, in the process, contribute insights about "natural" experiments involving multiple institutions.

B. CHALLENGES

Despite widespread positive regard, and in some cases real enthusiasm, about the work of the DETF and the resultant statewide DE redesigns, challenges emerged. In the discussion that follows, the sequence of challenges does not represent a hierarchy of importance, nor the sequence with which they were addressed. In fact, often faculty and administrators were concurrently grappling with one or more issues, and deliberations over one issue at times informed decisions regarding other challenges.

Integration of DE and Transfer-Level Faculty

Many colleges historically had separated DE and transfer-level faculty (e.g., CCD, CCA, FRCC, NJC, ACC, PPCC, and PCC). Several colleges, such as CCD and CCA, had multifaceted service units in place to support DE students – these units provided dedicated advisers, tutors, study labs, and student success courses/workshops. After the DETF period, these organizational structures and many of the specialized courses were dismantled, and the cultures that lay underneath their formation had to be addressed, if not transformed.

Many colleges also had different faculties to teach DE and transfer-level courses, and as mentioned above, at some colleges, not much collaboration or even communication had existed between these faculties prior to the redesign process.

The integration of writing and reading, and the pairing of College Comprehension and Reading with college courses (CCR 093 and CCR 094), were met with some mixed emotions. For many the redesigns "*made sense,*" but for some there was, "*quite a bit of fear*" and/or anxiety: How would the new redesigns affect employment, teaching assignments and teaching loads? And would the teaching of reading be lost?

First there was the concern about job security. Dedicated reading faculty often had master's degrees in education with a specialization in reading but lacked either a master's in English or at least 18 graduate credits in English, the Colorado Higher Education requirement to teach college-level English courses. As a consequence, faculty who lacked either credential would be unable to teach CCR 093 or 094, as both courses are now paired with a college-level course. While reading faculty could be assigned to teach some sections of 093, 092, and soft landings or labs—if they are offered by their college—faculty without additional English credits were worried that their contracts would not be renewed.

Reading faculty also had significant concerns about the place reading would have under the new DETF curriculum and about whether English and composition faculty fully understood the pedagogy of reading.

> *There are people who have master's degrees in reading theory. I think they really want—they're professionals, and they really take what they do very seriously. And I think they're a minority, and so they feel—you know, they're just afraid. And so, no matter how much we say "We don't want to subsume you, we want to integrate with you. Let's even change the prefix from ENG to something completely neutral. Let's collaborate to come up with a curriculum that everybody feels comfortable with . . . ." It's still really presenting a lot of challenges.*

As a result of the above issues, faculty tensions were high on some campuses. In fact, tensions at some colleges progressed to "*fighting in anger*" about the content and pedagogy to be used in the new sequence of courses.

> *[Reading faculty said] 'You're just gonna skip everything we're doing in reading, and you don't know how to do this, and you don't want to listen to what we're saying' and that kind of the thing. And the English people pretty much saying 'You guys don't understand, we already know how to do this stuff.'*

These concerns were echoed in part by the subject-matter expert[105] who was consulted by EERC to review the new redesign curriculum in math and English/Reading. In her report, Dr. Cox raised concerns about "the extent to which each course reflects an *integrated* instructional approach, as well as the instructional expertise required to teach the redesigned courses." Dr Cox recognized that a review of curriculum materials without the opportunity for extensive classroom observations limited her ability to assess the extent of integration. Nevertheless, she questioned the new integrative strategies:

> *By definition, an integrated instructional approach does not connect reading and writing in a unidirectional way, but rather guides students towards using processes and strategies in reading to inform their writing, and vice versa.*[106]

It will be important to continue to review the ways faculty integrate reading into the curriculum and also how attention to reading and writing across the curriculum becomes an integral part of the college's education strategy.

The identification and assignment of faculty to teach the new courses, however, emerged for some colleges as a special challenge. As noted above, during Phase II, a number of colleges had begun to hire only individuals credentialed to teach both DE and transfer courses (e.g., CCA and ACC), but others now were forced to find new faculty credentialed to teach CCR 093 and/or

[105] As part of the TAACCCT evaluation grant, a subject-matter expert in DE was contracted to review the redesigned curriculum and related Online Educational Resource materials.
[106] Cox, op. cit. 8–9.

094 or to get people who previously only taught college-level courses engaged in teaching these DE courses. As expected, urban colleges had many more options to identify new faculty than those, e.g. NJC, located in rural areas. As one administrator struggling to launch both CCR courses and sections of 121 observed: "*I don't have 40 people with master's degrees in English sitting in the community I can tap into . . . or even four*."

Re-conceptualizing Developmental Education Math

Although many colleges had to rethink the structure of their math departments, the redesigns did not appear to present the same degree of challenge with regard to faculty credentials as occurred with reading faculty. Nevertheless, some colleges, e.g. CCD, required their math faculty to have additional graduate credits in math. In addition, many colleges had to integrate DE and transfer faculty, and a few (e.g., PPCC, CCA, and CCD) had to shift from having separate DE departments or divisions to having a single integrated math department.

Conversations with math faculty revealed that, unlike many of their English/reading colleagues, many had been actively involved with experimenting with math curriculum prior to and during TAACCCT. At different colleges, math faculty had developed courses that used modularization (PPCC), the emporium model (FRCC and PCC), or math contextualization (PPCC and CCD) or had established different pathways to college algebra versus math for liberal arts (LCC and ACC). Some faculty at CCD had been working on reverse design. Within this context, despite the significant changes mandated by DETF regarding math pathways, it appears fewer structural issues emerged among math faculty than had emerged among English and reading faculty.

> *We were just prepared to do it a lot faster. They had already been doing trainings because this was the way they wanted to go anyway.*

That said, there were two areas of concern amongst some math faculty: one logistical and the other pedagogical. Faculty who had been involved with modularized, open-entry courses were upset that post-DETF students would no longer be able to earn credits as they worked through modules but would only earn credits for completion of a whole course; in other words, they could only earn the pathway-mandated course credits rather than module credits.

A bigger issue was pedagogical. What is the best way to teach math—procedurally or conceptually? Faculty at times had strong feelings about this. But DETF and their respective math department chairs gave them the flexibility to decide what they wanted to do in their own classrooms. For instance, LCC implemented a conceptual approach similar to the Dana model for 055,[107] while some of FRCC's faculty chose a procedural one.

[107] See New Mathway Project of the Charles A. Dana Center at http://www.utdanacenter.org/higher-education/new-mathways-project/.

At the same time, some math faculty felt strongly that Math 050 and Math 055 should be taught differently. A conceptual approach worked best for 050—including the use of contextualization—but a procedural approach was better for MAT 055. Their argument was that MAT 055 prepared students for STEM courses and careers, which would require students to know how to work procedurally.

> *We decided to keep procedural because the goal of that course is to get a student ready for college algebra. That's really the only reason why a student would be in that class would be if they're taking college algebra. Where our college algebra class is extremely procedural, it's extremely lecture-based, and so we thought the best way to get them ready for procedural college algebra would be to have a procedural 055.*

In addition to the pedagogical issues raised by faculty, the subject-matter expert raised concern that not all colleges are offering MAT 025 along with MAT 055. Because of this, the colleges were not, from the initial launch, "providing the recommended one-semester developmental math option" that had been designed to provide additional support to DE students "who wish to pursue the algebra pathway." Further, Dr. Cox questioned whether advisers were "accurately assessing students' educational goals" to effectively guide students to the most appropriate DE math pathway.[108]

Faculty Jobs

Full- and part-time faculty job security was a concern from the beginning of the DE redesigns. At its meetings with faculty and staff around the state, CCCS projections indicated that there would be no significant loss of positions from the redesign, but rather shifts in assignments.[109] While there were to be fewer classes in the DE sequence due to the creation of CCR and the acceleration of the curriculum, faculty would be needed for the new math and CCR labs. Furthermore, as more students completed the single required DE course, these students would move into college-level courses, thus increasing the number of transfer-level sections. In these discussions with faculty, CCCS staff talked about an initial drop in full-time positions, but noted that, over time, this would likely not continue.

Despite CCCS projections about job loss, fears about job security continued, and as one faculty member observed, "*the system came out pretty clearly up front and said we are not gonna lose any sections, and I don't think that rang true for people.*"

In our interviews with faculty members in the spring of 2014—especially with those who were adjunct, contractual, and/or reading faculty, EERC heard concerns about ongoing job security. Given far fewer sections of CCR courses versus DE courses, reading faculty without a master's degree in English worried they would not have full time work. Adjuncts and contractual faculty also worried that the new single term of DE (CCR 091, 092, 093 and 094) would result in

[108] Ibid, 7.

[109] There already had been a cutback in classes subsequent to the elimination of 030 level courses.

a substantial reduction in the courses and sections, thereby reducing the number of faculty needed. Further, few colleges had confirmed any plans for on-campus soft-landing options, causing additional concerns.

EERC also heard that faculty who were not fully on board with the DETF mandates felt particularly nervous. These faculty members noted that if someone was to be cut, they felt they would be the first ones to go.

During the course of EERC's fall 2014 interviews, cutbacks were reported at one school—CCD. Ironically, many of the individuals without contract renewals were ones who had been very active in DETF and/or sat on the CCD campus workgroups established to facilitate the development of curriculum and the initial implementation of the DETF mandates. As news spread of the CCD cutbacks, faculty at other colleges voiced some concerns about their own future security and told the EERC team that their initial skepticism had been justified. What faculty feared and was told would not happen had now happened, at least on one campus. While the perception at the time of the interviews was that the cutbacks at CCD were a result of the DETF, there were other factors at the college, including very high faculty/student ratios that influenced and may have been bigger causes of this change. However, these factors are beyond the scope of this report.

Nevertheless, regardless of the actual factors that contributed to the layoffs at CCD, the perception of many of the faculty with whom we spoke was that the layoffs were the result of the redesigns. And so, to use the Thomas theorem—*what is perceived as real is real in its consequences*—a good deal of anxiety across the colleges related to job security. Over the next few years, it will be important to track faculty gains and losses, including the ratio of full-time to adjunct faculty, to understand if and how the transformation of DE in Colorado has affected full- and part-time faculty in math and English/reading.

There is no doubt that the fairly pervasive sense that the DE transformation was, in fact, faculty-led reduced the erosion of trust in relation to CCCS and respective college administrators that occurred among some faculty. In hindsight, the trust that eroded for some might have been lessened or eliminated had CCCS' shown greater sensitivity to faculty fears and a more willingness to discuss concurrent factors. Such responsiveness might have been far more helpful than what faculty reported CCCS had told them: unequivocal statements that "no jobs will be lost from the redesign."

Student Services[110]

During EERC's site visits, faculty, student-service staff, and TAACCCT career coaches as well as senior administrators spoke about the significant challenge, post-DETF, to advise new students about the most appropriate math pathway and/or CCR course for them. Advisers needed to be

[110] Note, we were not able to get information about each of the 15 colleges within the consortium – thus some colleges who have similar programs and services to the ones discussed here are not identified within the text.

trained about the new options, and often colleges had to develop different structures or processes, if not resources, to serve incoming students.

To respond to the first challenge, some schools instituted cross-training between academic advisers and other departments, such as financial aid, to inform advisers about the changes brought on by the redesign as well as to enhance the alignment of the multiple services a student might need.

> *I am seeing a lot more collaboration between student services and our academic side of the house. I definitely think, I definitely see that as a success.*

Some colleges initiated an orientation for new students. Despite the large numbers of part-time students across the colleges, the few that mandate orientations (e.g. CCD, CNCC) only require the participation of full-time students.

Orientations have been designed for in-person contact (e.g., OJC) and/or online interaction (e.g., RRCC and CNCC). Some colleges have developed their websites to include materials about the new DE courses; some (e.g., CNCC) have developed packets that describe CCR options and math pathways. Of note, however, is that CCD no longer "distinguishes between DE and college-level courses" and thus has removed DE as an entity from its website and registration materials.

As indicated above, OJC offers new students (not just DE students) a "Smart Start" camp for two weeks prior to fall registration. This camp, funded by the Office of Science, Technology, Engineering, and Math, offers preparation sessions for the Accuplacer exam as well as provides students with information and advisement about the DE math pathways and CCR options.

Separate from orientations, some colleges (e.g., OJC) assign entering students who have identified their major area of study to an academic adviser linked to that specific department or field. At NJC, students are actually assigned to their subject-matter faculty for advisement. At most colleges, students without a major interest are assigned to general advisers. These students are perhaps the most in need of assistance to select the most appropriate math pathway—quantitative literacy or pre –algebra (transfer/STEM)—yet they may lack sufficient access to advisers.

Some colleges (e.g., ACC) provide advisement immediately after a student sits for the Accuplacer. A few colleges (e.g. OJC) mandate DE students to meet with an adviser prior to registration. And some colleges are still developing their advisement services for DE students. Still, given the implications of the new state math pathways for future academic choices and career opportunities, college staff expressed concerns that there might not be sufficient structure in place to serve the needs of DE students, especially those who attend school part time.

I think these students need a lot of support, and we need to just continually think about—a lot of them have just turned education off because they didn't get it, and so they're frustrated, and they feel bad about themselves. So I think we just have to continually give them that individual support because I think it is an individual thing, and I don't think that we can just say, 'This is what's happening,' and it would cover all of them because they all have different stories themselves. And that's an expensive—because that's high maintenance on the front end, but I think we'll see success in the long term if we dedicate resources to making sure students have a good foundation here.

Further, given the implications of the math pathways, it is important that advisers are well informed about the linkage between academic and career pathway—a linkage that, studies suggest, impacts student retention and completion rates.[111, 112] This implies that the traditional bifurcation in advising between academic supports and career counseling needs to be changed. Under TAACCCT, such a combination was achieved at many colleges through the role of the TAACCCT career coach. However, as of fall 2014, most career coaches had left their positions or had been reassigned to other programs. (For example, RRCC's and FRCC's coaches are now career navigators under the TAACCCT Round III CHAMP Project.) In most cases, the career coach roles and functions have not been replaced; if they were replaced, those replacements generally only lasted until September 2015, the end of the grant period.

An additional advisement issue raised by some faculty and administrators concerns students who test into the lowest range of the Accuplacer. This group "*is hardest to serve and most in need of clear and effective advising about possible options, including referral to adult basic education [ABE] programs*"[113] and/or on-campus options. It is not clear how the colleges are serving these students now, if and how student referrals, participation, and outcomes are being tracked – and what additional resources will be provided to them as soft-landing options are developed by the colleges and/or community organizations.

Student-services staff were involved in DETF sessions and committees and participated in campus planning groups at their respective campuses. As such, they played a key role in identifying the services and resources that colleges need to establish in order to respond to the changes in DE. Further, CCCS included student-services staff in informational sessions prior to the official rollout of the redesigns. However, as discussed above, despite CCCS' sessions and in-house training sessions at some colleges, it remains unclear to EERC the breadth and the depth of adviser training—and how prepared advisers are to play the critical role of guiding DE students as they select their math pathway and/or their CCR option. In fact, across the colleges, faculty and staff shared with EERC their concern that there has been insufficient attention,

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[111] Jenkins, D., & Cho, S-W. (2014). Get with the program...and finish it: Building guided pathways to accelerate student completion. New York: Columbia Community College Research Center.

[112] Karp, M. M. (2013). Entering a program: Helping students make academic and career decisions. New York: Columbia Community College Research Center.

[113] Cox, R. D. (2015). TAACCCT Grant Evaluation – CCCS Developmental Education Redesign - Subject Matter Expert Review. Unpublished EERC Report. 6.

training, and resources directed to advising—especially to training the advisers who work with potential students and DE students who have not yet decided on their academic major.

Separate from advising are student-support services or "student success" activities and resources. All colleges have subject-specific tutoring available on campus. Some colleges also have developed online services. In fall 2014, under the supervision of the Office of Retention and Enrollment Management, OJC launched a one-credit AAA 101 Student Experience course as a requirement for all DE students. However, by spring 2015, enrollment in that course was encouraged rather than required. Other colleges (e.g., NJC and RRCC) have enhanced or added AAA Student Success courses that include academic planning and career development in addition to study skills, but the logistical issues that accompany these classes and questions about the effectiveness of stand alone student success courses are causing some colleges to consider alternative delivery options. These include integrating student success/academic and other soft skills into both DE and college-level courses, aligning skill sets with real-time course activities and academic course demands and eliminating the need to take additional courses.

Student Success versus Open Access

Faculty discussed with EERC the emergence of a post-DETF paradigm shift. They observed that historically the central function of community colleges was to serve their communities and to provide "open admissions." They now worry that the door to college is not as open as it has been in the past, and that student performance and success frame the new paradigm. The reality is a more nuanced. The colleges still remain open in terms of attending many of its educational programs, but in credit bearing pathways leading to academic credentials, the bar has been raised higher.

As mentioned above, students who test at the 030 level are now directed post the state redesigns to soft-landing options either at the college and/or in the community. Previously these students began the DE sequence at the very bottom. The elimination of the 030 level was the result of a number of factors and in some ways predated the rollout of the redesigns, e.g. the federal financial aid rule that Pell dollars can only be used for courses that are at least high school level content[114].

In addition to the financial considerations, DETF was attentive to a growing body of educational research about the overall success of students who test into the 030 level. Studies have found that most students who enter at the 030 level neither successfully complete DE requirements nor successfully progress through college-level certificate or academic degree

[114] Federal regulations prohibit financial aid funds from covering any course that is not at least high school level; in the past this regulation had not been taken seriously. As the new state redesigns were being developed faculty and staff wanted to be sure that the new designs did not conflict with financial aid regulations. As a result, 030 courses were removed from the conversation. See http://www.rrcc.edu/financial-aid/regulation-and-policy-updates.

programs.[115,116] [117] This was discussed by the DETF. On this issue, a faculty member meeting with the EERC team stated, "*Why take their tuition money, why give them hope that this is going to work for them?*" Another felt that playing a "*gatekeeper*" role is "*a service to them . . . .*"

Colleges are also responding to new state and national policies that require the demonstration of student success.[118, 119, 120] Some think establishing alternatives for the 030-level students will enable colleges to focus on meeting the needs of those students who have a greater chance for success. In fact, while the data is somewhat contradictory with regard to the impact of different levels of students on one another,[121] one faculty member observed, "*very low students really hold back the average and above-average student*."

Some of the administrators and faculty EERC interviewed voiced serious concerns about the community college becoming a gatekeeper versus a gateway for this population of students. They wondered if funding under the recent state legislatures' "Adult Education and Literacy Act of 2014"[122] would be sufficient to meet the need, or would be sufficiently aligned to college standards to support successful transitions for students from ABE to college. Others wondered if the colleges had a historic responsibility to "make-up" for what students did not get in their K–12 education or to find other paths for them that did not have reading, writing, and math requirements. These concerns were discussed particularly in the context of decreased state funding and over the last decade coupled with the high needs of this population.

It is too early to tell if, and how, new or expanded ABE programs and/or college-based soft-landing programs will be utilized by potential students with low skills in English and/or math and how program participants will then matriculate into the DETF courses and/or actual college-level courses. But little will happen if, as indicated above, there are not formalized or sufficient advisement resources to attend to their special needs. Or the colleges and the system

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[115] Dowd, A. C. (2007). Community colleges as gateways and gatekeepers: Moving beyond the access "saga" toward outcome equity. *Harvard Educational Review.*

[116] Goldrick-Rab, S. (2010). Challenges and opportunities for improving community college student success. *Review of Educational Research.* Vol. 80, No. 3, 437–69.

[117] Scott-Clayton & Rodriguez (2012) op. cit.

[118] Bragg, D.D., & Durham, B. (2012). Perspectives on access and equity in the era of (community) college completion. *Community College Review*, 40(2) 106–25.

[119] Bahr, P. R. (2013). The Deconstructive Approach to Understanding Community College Students' Pathways and Outcomes. *Community College Review.*

[120] Pretlow, III, J., & Wathington, H. D. (2011). Cost of Developmental Education: An Update of Breneman and Haarlow. *Journal of Developmental Education.*

[121] Petrilli, M. (2011). All together now: Educating high and low achievers in the same classroom. 11(1), 48–54. Retrieved from Education Next website: http://educationnext.org/all-together-now/

[122] In 2014, the Colorado legislature passed the Adult Education and Literacy Act of 2014, which established the Adult Workforce Partnership Program to be administered by the Colorado Department of Education. Under this Act the state will work in partnership with workforce centers to provide educational programs that include basic literacy and numeracy skills. See more at http://www.cde.state.co.us/cdeadult/colorado-adult-education-and-literacy-act#sthash.WkG3NpzD.dpuf

[122] Cox, op cit. 7.

do not tracking student outcomes over time. This tracking might include: the number of students who are referred to, enroll in and complete these programs, and the number of students who subsequently enroll and succeed in higher education. Such tracking will help to identify best practices to meeting the needs of these students, and defining and providing pathways to success for academically underprepared students.

PART IV

A. CONCLUSIONS

Colorado, in a relatively short amount of time, has totally restructured its developmental education programs. Data from the first semesters of implementation indicate that the redesigns have facilitated more rapid progress out of DE courses into college-level courses without significantly affecting students' success in those college-level courses. This is especially true for students taking one of the new CCR options.[123]

The success of Colorado's transformation seems related to its strategy of engaging critical stakeholders in the process of identifying potential models and making decisions about which models to adapt or adopt for use. This bottom-up process allowed for wide participation of individuals, including those not on the DETF, and resulted in widespread ownership and buy-in of the final redesigns.

While much work has been done, the need for additional resources—especially for student advisement and for professional development—remains almost a year after formal implementation. This is of particular a concern given the changing stream of adjuncts on which so many colleges rely to teach DE courses. As such, they will need to be addressed as the TAACCCT grant sunsets in September 2015.

Further, given the flexibility allowed by DETF, with variations in the actual classroom implementation of the redesigned courses, it will be important to engage in further evaluation research to drill down and better understand which CCR options are most successful and which pedagogies work best with which courses. To that end, we close this report with suggestions for future research.

[123] See EERC's Outcomes Report

B. FUTURE RESEARCH

- Track what happens with students who test at the lower levels of the Accuplacer or its replacement.
- Identify and track the development of soft-landing options and their use by potential students as well as students' matriculation into DE course**s** or college-level courses.
- Engage in deeper exploration of advising services: the who, when, and how.
- Examine differences in the pedagogy used for state courses—for example, the types of learning communities being used (e.g., sequential team, co-teaching in the classroom, different faculty member, multiple sections), the use of modular units for math, and conceptual vs. procedural math courses.
- Examine how CCR 094 and CCR 093 are being offered and the challenges and successes that emerge throughout this process.
- Track the nature and extent of ongoing professional development and other activities around the redesign implementation.

C. RECOMMENDATIONS

- Establish post-DETF forums for faculty to share experiences and share lessons learned.
- Conduct a three-year follow-up study for DETF

APPENDIX A: LIST OF ACRONYMS

AAA	Advancing Academic Achievement
AAC	Arapahoe Community College
ABE	Adult Basic Education
Aims	Aims Community College
ALP	Accelerated Learning Program
CAP	California Acceleration Project
CCC	Colorado Community College
CCCS	Colorado Community College System
CCD	Community College of Denver
CCR	College Composition and Reading
CMC	Colorado Mountain College
CNCC	Colorado Northwestern Community College
COETC	Colorado Online Energy Training Consortium
CUNY	City University Of New York
CTE	Career and Technical Education
DE	Developmental Education
DETF	Developmental Education Task Force
EERC	Education and Employment Research Center
GED	General Educational Development
FRCC	Front Range Community College
IBEST	Integrated Basic Education and Skills Training
LCC	Lamar Community College
MCC	Morgan Community College
MOOC	Massive Open Online Course
MOU	Memorandum of Understanding
NJC	Northeastern Junior College

OJC	Otero Junior College
PCC	Pueblo Community College
PPCC	Pikes Peak Community College
RRCC	Red Rocks Community College
SMART	Survive, Master, Achieve, Review, Transfer
STEM	Science, Technology, Engineering and Math
TAACCCT	Trade Adjustment Assistance Community College and Career Training
TSJC	Trinidad State Junior College
WQM	Water Quality Management