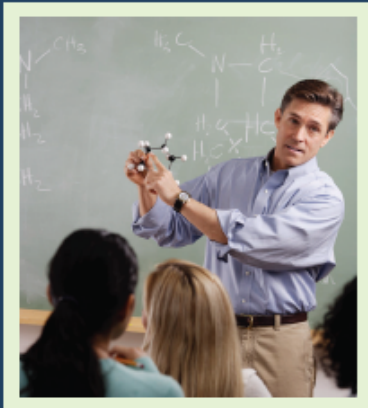


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# Models of Contextualization in Developmental and Adult Basic Education



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# INTRODUCTION

The following report describes contextualized Adult Basic Education (ABE) and Developmental Education models in use across the country, other recognized ABE and Developmental Education models that can integrate contextualization into their programs, and two models of professional development for teaching in contextualized environments. These models were selected to inform the contextualized curriculum development work of the Massachusetts Community College Workforce and Development Transformation Agenda (MCCWDTA). The report is organized as follows:

- The Breaking Through model appears first because it was selected as the base model for the MCCWDTA, other models are discussed in alphabetical order.
- Each section contains information pulled from documents, websites, and/or interviews with leaders or implementers, although interviews of leaders and implementers have not yet been conducted for all the models.
- Also included are considerations on how the model could be useful in developing the MCCWDTA's Breaking Through model. These considerations are pulled from an overall review of the material, interviews, and presentations from the 2012 Massachusetts Community Colleges Developmental Education Math Conference.
- Where possible, but not in all models, information on instructional preparation and whole program design are included.
- References for each model are included at the end of the model section. Citations in the text refer to the reference list included, with page numbers provided to allow the reader to gain additional information directly from the texts. However, for readability and because a large number of the websites and documents referenced do not have publication dates, the "n.d." (no date) notation is NOT included if a date is not available. Otherwise, dates are indicated whenever possible.

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## OVERVIEW

The Education Development Center (EDC) prepared this report of example models of contextualized curricula across Massachusetts and the country as part of the work of the MCCWDTA grant, funded by the U.S. Department of Education. The aim of this report is to inform the development of contextualized developmental and ABE in the community colleges of Massachusetts. Understanding the elements, the evidence of effectiveness, and the lessons of these varying models can assist in developing a customized model that meets the needs of community college students in Massachusetts.

The contextualization examples described below were nominated for review by the MCCWDTA Design Team, managers, and consultants and represent a diversity of structure and format, purpose (basic skills or content/technical focus), reach (single-campus implementation to multi-state sites), and degree of contextualization, as well as for their appropriateness for Massachusetts community colleges.

Each model profile is divided into distinct categories to allow for comparisons across models, and each model profile concludes with a section, “Considerations for the MCCWDTA Model,” that summarizes its pertinent features in relation to MCCWDTA. The Breaking Through model is described first because it was identified by the MCCWDTA proposal as the core model for the MCCWDTA program. Others are listed in alphabetical order.

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## BACKGROUND

According to current research by Bailey, Jeong, & Cho (2009), over half of community college students enroll in at least one developmental education course during their tenure in college, costing community colleges \$1.9 to \$2.3 billion dollars (pp. 3-4). Yet studies to date have shown relatively low completion rates of developmental sequences. Overall, “46 percent of students referred to reading remediation and 33 percent of those referred to math remediation completed their sequence of developmental education,” although the rate is much lower for those students who are placed into the lowest level of developmental education courses (Bailey et al., 2009, p. 9). Students in the system face an array of high school level courses that don’t grant them credit, may seem to hold them back from their college or technical education goals, and cost college tuition.

Contextualization is one approach being implemented. This method helps to give relevance to basic skills coursework and a connection to college and career, giving students additional access points to learn, retain and transfer the material, and motivation to stay in school. Contextualization is often integrated into a focused array of programs, including acceleration, extended student learning supports, and learning communities, and some of the models included below may include more than one.

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## METHODS

Material for this report was compiled in Spring 2012 through interviews with leaders and/or implementers of contextualized developmental and ABE programs and Massachusetts state developmental education and ABE leaders and practitioners, as well as through a review of conference presentations, websites, and example contextualized curriculum materials.

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## WHAT IS CONTEXTUALIZATION?

The terms “contextualization” and “contextualized learning” have been used to describe a broad variety of practices in education. In her 2011 research synthesis, *Facilitating Student Learning Through Contextualization: A Review of Evidence*, Delores Perin distills the basic essence of contextualization as “the practice of systematically connecting basic skills instruction to a specific content [area] that is meaningful and useful to students” (p. 3). She goes on to define two practices of contextualization: *contextualized* and *integrated* instruction. In *contextualized* instruction, the primary objective is to teach the basic skills of reading, writing, or mathematics in the context of a specific subject area “for the purpose of meaningful application” (p. 5). In *integrated* instruction, the primary purpose is to scaffold learners within a specific content area, such as in science, social studies, business, career technical education (CTE), or career development. The *Breaking Through Contextualization Toolkit* (Jobs for the Future, 2010), a guide for implementing the Breaking Through model, describes contextualized courses and programs as “a means of accelerating student learning by beginning the acquisition of career skills during basic skills coursework” (p. 15).

According to interviews for this report, contextualized model descriptions, and conference presentations, the key benefits of contextualization are that it:

- *Is flexible and adaptable*: Contextualized curricula can be adjusted to the class and individual student needs. For many other contextualized models, including Breaking Through, faculty can begin a course with a basic content shell and augment it with particular curricula materials tailored to the interests and needs of that particular group of students.
- *Can enhance engagement and motivation by providing relevancy to workforce skills*: This is the basic principle of contextualization as seen in the definition above.
- *Can help to accelerate the pace of access to college courses*: This is evident in Middlesex Community College’s contextualization of the Emporium companion contextualized workbook – contextualization occurring in the midst of an accelerated program to assist the students’ understanding of the materials.
- *Can address challenges in the design of traditional developmental and basic skills education*: Uri Treisman (2009), noted that contextualization was one of the promising new delivery systems, with the potential to address some of the challenges of traditional developmental education models.

As described in the models below, contextualization occurs in many different forms, depending on the choices made to address student and workforce needs. However, beyond the acquisition of basic skills, all models listed in this report attempt ultimately to expand and improve college and career outcomes for adults by strengthening their skills and capacities, increasing their engagement and motivation to succeed, and building self-confidence in their own abilities.

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## RESEARCH ON CONTEXTUALIZATION

Although nearly all models described below have conducted evaluations, there is little rigorous research on contextualized models to date. Many of the available studies in the field have involved small numbers of participants over short periods of time, and even in larger studies showing positive effects, it is often unclear what elements in particular contributed to the success and how to scale the model without losing the benefits. However, there are a number of research syntheses that can inform the development of the MCCWDTA model in addition to the evaluation summaries in the models below.

Columbia University's Community College Research Center (CCRC) and its researchers have published several working papers and briefs on contextualized learning, one of which is the research synthesis *Facilitating Student Learning Through Contextualization: A Review of Evidence* (2011) noted above. For this research synthesis, Delores Perin, a senior research associate with the CCRC, analyzed 27 studies of contextualization conducted between 1990 and 2010. Perin's study found positive outcomes of contextualized instruction. Nevertheless, Perrin also documented the limited use of contextualization in community colleges currently, with possible reasons including expense, lack of knowledge of its existence or awareness of its benefits, the effort required to implement it, and "general resistance to moving toward an interdisciplinary focus" (Perin, 2011, p. 271). One overall conclusion of the analysis was that contextualization of basic skills instruction, "especially when coupled with explicit strategy instruction, is a promising approach for academically underprepared community college students. Conclusions are tentative, however, because of the shortage of rigorous studies with college populations" (p. 282).

Perin continues with recommendations for implementing contextualization, which parallel recommendations and findings featured in reports by Baker, Hope, and Karandjeff (2009), Kalchik and Oertle (2010), the *Breaking Through Contextualization Toolkit* (Jobs for the Future, 2010), conference presentations, and other sources. These implementation notes and recommendations are paraphrased and compiled here:

- *Selection*: Carefully select the context for the basic skills instruction to match the need, such as courses with high failure rates.
- *Collaboration*: Foster interdisciplinary collaboration between basic skills and content/workforce skills instructors. Include teachers as part of the curriculum design team to get their buy-in, to help them understand how to teach the course, and to help them understand the content, whether they are learning the industry or the ABE/Developmental Education pedagogies. This collaboration will also assist in aligning the course material to future courses in the developmental education or academic/career path.
- *Faculty Support and Professional Development*: Provide ongoing professional development to support teachers as they adjust to this new type of teaching and consider assistance such as embedded tutors in the classes themselves.
- *Interactive Instruction*: Engage the students in real-world, authentic exercises including team work, data collection, problem solving, and experiences with employers or community organizations and guide them in their own inquiry process.
- *Assessment*: Develop evaluation measurements that can assess increases both in basic skills and in the content area.
- *Evaluation*: Collect and evaluate outcome data not only for the basic and content skills in the contextualized course but also for grade point average, retention, future course taking, and degree or certificate attained.
- *Continuous Improvement*: Make ongoing adjustments to the implementation to address realities in the classroom: "Underscore that one of the most important things we have learned is that the materials don't necessarily work the first time and could need to be changed for each class" (Interview for this report with Amy Dalsimer, Director, Pre-College Academic Programming Department at LaGuardia Community College/CUNY, May 2012).

Other common threads have appeared across the breadth of research, evaluations, and interviews reviewed for this report. For example, the reasons most cited for turning to contextualization include student interest and engagement, knowledge and application transfer, diminution of the stigma attached to remedial attendance, and improved life and career opportunities for students. Challenges mentioned include cost; scheduling of interdisciplinary collaboration and resistance to the collaboration; lack of awareness of contextualization; lack of preparedness by instructors, students, or colleges; lack of support by administrators; the effort required to work

within system parameters; and finding ways to apply “abstract material to concrete experiences” (Kalchik & Oertle, 2010, p. 3).

Treisman (2009) acknowledges this last challenge when he talks about the high failure rate of community college developmental education students in the gateway courses algebra and pre-calculus. In his lectures and writings, he posits that this failure rate is partially based on the fact that the content of these courses is “irrelevant” to students’ subsequent university courses and to the careers to which they aspire. Thus, developmental math students who want to be “nurses, EMTs, firemen, . . . key professions that our economy needs,” are “stuck” in a course (algebra) that “doesn’t work,” and that statistics—quantitative reasoning—has more direct relation to these types of careers.

While contextualization itself may not be a panacea, it holds much promise for providing relevance for Massachusetts community college students as well as a pathway for them toward self-confidence, credit-bearing courses, and successful careers.

The report of contextualization models follows the References section below.

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## BREAKING THROUGH

The MCCWDTA grant proposal identified the Breaking Through model as the basis for the adult basic skills and developmental education contextualization framework for the project. For this reason it is listed first in the report.

Note: Although summary pieces of information on the Breaking Through program appear below, readers should also consult the [Breaking Through Contextualization Toolkit](#), [Breaking Through Practice Guide](#), and the Breaking Through information on the “[Jobs for the Future](#)” and “[Breaking Through](#)” initiative websites for in-depth information, examples, and guidance. Written URLs for these resources are listed in the References section.

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### GOAL OF THE PROGRAM

The Jobs for the Future: Breaking Through website defines the goal of Breaking Through as follows: “Breaking Through promotes and strengthens the efforts of 41 community colleges in 22 states to help low-skilled adults prepare for and succeed in occupational and technical degree programs.”

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### DESCRIPTION OF THE PROGRAM

Breaking Through is a collaboration of Jobs for the Future and the National Council for Workforce Education.

The Breaking Through model is broken into four strategies designed to assist students in developing a college or career pathway. As described in the Breaking Through website, these four strategies are:

- *Accelerated Learning*. Through the innovative use of assessment tools, restructured curricula, targeted instruction, contextualization, and other strategies, change delivery methods and content so that students can meet their goals faster.
- *Comprehensive Support Services*. Make academic, economic, and social support services easily accessible to students whose life challenges put them at risk of not completing their education.
- *Labor Market Payoffs*. Restructure both pre-college and college-level instruction to connect course content with the workplace and to connect students with actual employers and workplaces.
- *Aligning Programs for Low-Skilled Adults*. Reorganize college programs and link them with external programs to provide students with a better understanding of how they can move into and through college, and to provide clear pathways that enable them to do so.

Although each of the four strategies is important in and of itself and as part of the whole, this report will focus on the contextualization piece of the Accelerated Learning strategy. The flexibility and power of the Breaking Through contextualized model is summarized in the *Breaking Through Contextualization Toolkit (2010, p. 2)*:

Contextualization accelerates the progress of students in career pathways by offering them career content immediately, even as they develop their basic skills. It also improves students’ motivation to persist in their education and pursue further academic and career courses. And it teaches students how to apply their skills and knowledge in the real world. . . . Breaking Through programs reflect a spectrum of options in terms of courses to contextualize: [General Education Development] GED, [English as a Second Language] ESL, developmental, or general education courses contextualized for specific careers, general career fields, and/or career exploration, as well as contextualized career exploration and employability skills courses.



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## POPULATIONS SERVED

The level of entry for each Breaking Through program is determined by the college, the level of knowledge required, and the program. Some programs are geared toward Level 2 students (5th-12th grade), some toward the lowest level students, and most base decisions on the results of a placement test such as the ACCUPLACER. Overall, according to the Jobs for the Future: Breaking Through website, “Breaking Through students include those who dropped out of high school [as well as] those who have a high school credential or GED but whose skill levels in math and reading are below the eighth-grade level.”

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## INDUSTRIES/PROGRAMS TARGETED

Programs using the Breaking Through model can be customized for multiple industries as well as for core college subjects such as math and English language arts. Some of the industries already contextualized through Breaking Through programs are healthcare (certified nursing assistant, pharmacy technology, phlebotomy, medical office worker), automotive and automotive technician, construction, early childhood education, business, career exploration, and information technology (IT).

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## PEDAGOGICAL APPROACHES

The Breaking Through model supports several variations on a contextualized pedagogical approach, as described in the *Breaking Through Contextualization Toolkit* (pp. 3-4):

Community colleges can use [broad] career fields, [narrow] specific occupations, or [general] career exploration as the context for building content into the curriculum. . . .The ultimate decision on content will rest upon decisions about: the need for diverse materials to use for contextualization; the importance of students’ obtaining technical skills compared with general career skills; the importance of students’ obtaining occupational course credits; the depth and breadth of instructors’ familiarity with career content; the size of the student population interested in particular occupations and career fields; and students’ need for general career-exploration experiences.

The *Breaking Through Contextualization Toolkit* describes these approaches in more detail (pp. 3-5) and then summarizes the advantages and disadvantages of each in a table (p. 6). The contextualized content is categorized as

1. Career Fields and Career Clusters, such as Healthcare, which can reach a broad population of students interested in the field and give them a general introduction to the occupations. In addition, because the field is broad, the amount of materials to use for teaching will be greater than in the Specific Occupations, below.
2. Specific Occupations (e.g., child care providers), which give in-depth, technical skill development for particular occupation, can focus students interests to a specific field, and could increase the likelihood of receiving occupational credits directly in the field. As opposed to Career Fields, instructors can focus in on one industry, learning it in-depth as well.

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## EVIDENCE OF EFFECTIVENESS

According to the Breaking Through website, Breaking Through participants demonstrated “significantly higher rates of retention, course completion, and higher skill gains than non-Breaking Through students.” Some Breaking

Through programs have results from their individual programs, such as the Denver FastStart program evaluation listed here.

- According to the *2010 Follow-Up of the Community College of Denver FastStart Program* (Bragg, Baker, & Puryear, 2010), the FastStart program’s primary goal is on acceleration and includes significant student support. However, the contextualization of the materials is the key to allowing students to understand the math and English content. According to the report, “The FastStart model uses a cohort-based, learning-community approach that contextualizes classroom-based academic learning experiences, with particular attention paid to recruiting low-skilled learners. Developmental math and English courses are complemented with a student success course that focuses on both college and career preparation” (p. ii). The report concludes its evaluation of the program by saying that the “the accelerated FastStart model shows promise for students testing into multiple levels of remediation in developmental math and English/reading, particularly in those combinations that place students a couple of courses below college level in a single subject” [vs. many levels below college level] (p. xxx (30 pages in)).

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## EXAMPLES OF BREAKING THROUGH PROGRAMS

### NORTH SHORE COMMUNITY COLLEGE (NSCC)

NSCC has been working with the Breaking Through model since its demonstration phase in 2005, and chose to focus on the specific occupation of child care providers. According to the *Breaking Through Contextualization Toolkit* (p. 12), NSCC created an onramp into two- and four-year degree programs for low-skilled, Hispanic child care workers with limited English proficiency in Lynn, Massachusetts.

NSCC utilizes a contextualized ESL/Early Childhood model to bring non-native speakers of English into college courses sooner than they might have without the contextualization of ESL. The College uses cohort classes and a bilingual Achievement Coach to support the students.

#### **Expansion of Breaking Through**

According to recent interviews with Kelly Sullivan, Director of NSCC’s Project GRAD and Chris Bednar, NSCC Communications Skills faculty, NSCC is expanding its contextualized programs, integrating coaching, and aligning to workforce needs—in particular in health and criminal justice—and gradually integrating these new courses into mainstream developmental education. A pilot developmental education course in healthcare, focusing on literacy, will be scaled and integrated into the regular developmental education program in Fall 2012. For this course, students will be reading two well known, popular books: *Night*, an Oprah’s Book Club selection, is set during the Holocaust, and the instructor guides the class discussion to the psychological ramifications of the Holocaust. *The Immortal Life of Henrietta Lacks*, a New York Times Bestseller, is an engaging look at cancer research that connects students to their career interests in the health profession. NSCC will also integrate a legal/criminal justice pilot course and launch a human services pilot course and a business pilot course in the fall.

#### **Program Design**

To determine the industries around which to pilot additional contextualized modules, the campus polled students about their career interests and identified areas where the job market is greatest. The aim is always to maximize students’ opportunities for employment.

#### **Course Structure and Pedagogy**

*Skills focus:*

These developmental education courses focus on developing students' skills in the areas of:

- Thinking metacognitively, through reflections after each of their readings.
- Reading and writing, focusing as much as possible on the inferential ideas in their reading and writing.
- Outlining, drafting, editing, and revising.
- Demonstrating mastery of important writing elements:
  - Thesis statements
  - Topic sentences
  - Supporting details
  - Concrete, specific language
- Demonstrating fluency in basic writing skills like grammar usage, sentence skills, vocabulary, spelling, paragraph and essay construction, summary, and response writing.
- Demonstrating the ability to integrate outside source material into their own original work.
- Demonstrating fluency in organizing and producing spontaneous writing (i.e., journals, essay questions, and in-class writing assignments).

*Blended/Online Approach:*

In addition to a face-to-face, in-class component, 50 percent of each contextualized developmental course is conducted online through the Angel Course Management System. Students use online discussion boards, Google Docs, and case studies, and research source material for their writing.

- Online: NSCC uses Google Docs for reading reflections and contextualized formal essays, sharing information, and discussion boards; Google Presentation (PowerPoint) study research and presentations; crossword puzzles to cover pre-reading vocabulary; and audiobooks for assistance with comprehension while reading.
- In the class: Classroom time is spent continuing discussions from the discussion forums, exploring essay topics, working through vocabulary, and developing research fluency.

The courses are largely student driven. The students work through Google Docs to develop research areas of interest, create digital presentations as teams, post their own questions about the reading, and comment on other students' questions. In class, they dictate the course of the discussion on readings by bringing with them specific questions that instructors encourage them to prepare ahead of time.

The online component also assists with assessing the students' progress. Instructors can:

- Make "cloud comments" to online essays and journals.
- Cover challenging and useful vocabulary words and then put them in a crossword puzzle quiz so students are familiar with the words and the definitions prior to encountering them in their reading.
- Look at the questions posted on the discussion forums and encourage higher level, open-ended questions.
- Review students' active, online reading journals, in which they make connections between the readings and their lives.

Courses run for one semester (15 weeks), with 2:45-minute classes meeting twice per week. Instructors come from the NSCC developmental education faculty, with training coming from the college itself.

## More Information

More information on contextualized NSCC programs can be found throughout the *Breaking Through Practice Guide*, the *Breaking Through Contextualization Toolkit*, and on the NSCC Project Grad website (<http://www.northshore.edu/grad>).

## LAGUARDIA COMMUNITY COLLEGE

LaGuardia was also one of the Learning Colleges in the initial Breaking Through program, and in addition to the notes from an interview provided below, there is much information about the initial programs from the *Breaking Through Practice Guide* and the *Breaking Through Contextualization Toolkit*.

### Course Structure and Pedagogy

In a May 2012 interview for this report, LaGuardia's Amy Dalsimer, Director, Pre-College Academic Programming Department, noted that LaGuardia took inspiration from its peers in the Breaking Through Network, including NSCC, as well as from the Integrated Basic Education and Skills Training (I-BEST) programs in Wisconsin and Illinois. All their contextualized programs are otherwise "home grown," with some trial and error involved in their development.

LaGuardia has developed programs in the Career Cluster model. The college has two types of contextualized basic skills or career path programs for developing learners, working within the New York state regulations requiring that students have either a high school diploma or a GED before enrolling in credit-bearing classes in New York colleges and universities. The college is using the Bridge Model and New York Basic Education and Skills Training (NYBEST), which are summarized below.

- **Bridge Model:** This model consists of 115 hours of contextualized GED prep classes that are aligned with the health and business sectors and will also be aligned with science in the near future. The model's purpose is to address student attrition in courses aimed at bringing students through the high school credential. Rather than having just test- and skill-based GED classes, LaGuardia developed a contextualized college preparation GED model with readings from the college disciplines. The dual goals are to prepare students for the GED (primary) and to transition them into a college and career path. Once they have obtained their GED, students may still need more skills to score well on the ACCUPLACER; however, as a result of these preparation classes, students generally improve their scores on the reading and writing tests on the ACCUPLACER and Compass and on the first math section—basically those areas that cover the GED requirements.

Per Dalsimer, the program has seen its GED preparation class completion rate increase somewhat when compared to the roughly 30% completion rate prior to launch of the contextualized model. More specific information will be available when findings from a randomized trial are released at the end of the July. Dalsimer believes contextualization is responsible in large part for the increase because students can see how relevant the classwork is and because the curriculum is "aspirational" for them. Students "immediately understand that the Bridge program is the first step of where they need to go."

- NYBEST: To address the need for employment training opportunities for students in developmental education, LaGuardia opened access to non-credit workforce training to students with a lower level of basic skills than would be otherwise eligible for the program. Again per Dalsimer, the purpose of the program is access to success, enabling students to start on the path to post-secondary degree programs and, eventually, to a “good job in New York.” LaGuardia redesigned programs such as the EMT and community health courses to open them to students who are reading at the 7th-grade level or above. Previously, students needed to be reading at the 10th-grade level. In most cases, these programs still require that students have a GED or high school credential, assuming they will need it to get a job. The courses are co-taught with adult education faculty and the professional technical faculty. The courses integrate “good practice” around reading, writing, and math in a contextualized domain, and the instruction is set up so students can do the course work and be successful. The effect is “powerful and immediate.”

In response to its student body, LaGuardia has three ESL NYBEST tracks: one ESL track for students who have sufficient education but insufficient English skills, another for people who do not have much education in their own language, and a third for students who were born in the U.S. but still struggle with academic English.

## DAVIDSON COUNTY COMMUNITY COLLEGE

### Course Structure and Pedagogy:

Davidson County Community College, in Thomasville, NC, was another of the original 26 Learning Colleges in the Breaking Through Demonstration Initiative. Information pertaining to the college is found throughout the *Breaking Through Practice Guide* and *Breaking Through Contextualization Toolkit*, including this information from p. 2.10 of the *Practice Guide*:

Davidson County Community College basic skills instructors have created customized learning plans for their students by taking college-level texts from introductory occupational courses and extracting the parts applying to basic skills competencies (e.g., fractions, paragraph development). Instructors emphasize that students are doing college-level work, which can increase students’ motivation and confidence that they will be successful in college. The relevant portions of the texts, kept in a three-ring binder, are organized by basic skills competencies and occupational areas. Instructors receive training in using these resources to pull out readings and assignments for each student based on his or her skill gaps and occupational interest, identified in a survey completed by each student at the beginning of the course. Because the binders are accessible in the classroom, teachers can easily customize instruction. This is particularly important when students in a classroom have varying career interests and skill needs.

Davidson County Community College also uses customization in its Achieving College/Career Entry (ACE) program, which serves college students who test into the lowest levels of developmental education. The program expedites students’ completion of remediation by targeting specific skill deficiencies. ACE uses the Test of Adult Basic Education (TABE) to ascertain students’ grade-level of functioning, obtain a benchmark, and determine where to focus skill development. Small groups, computerized instruction, and individualized texts are some of the approaches used in the classroom. Students can receive extra assistance from peer tutors, professional writing and math coaches, and a Learning Assistance Center. The program averages three to four months for precollege skill development, and offers students the ability to

dually enroll in ACE and developmental education or college-level courses.” (*Breaking Through Practice Guide*, p. 2.10)

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## LESSONS FOR MCCWDTA CONTEXTUALIZED BREAKING THROUGH MODEL

These programs provide a number of insights for consideration in developing the MCCWDTA model:

- There are multiple pathways to contextualized curriculum models—flexibility allows the program to meet multiple needs and be continually tailored to current workplace and student demands.
- Careful consideration should be given as to what industry to contextualize and the contextualization content level (broad, narrow, general career focused) to meet the needs of the particular students in the program.
- Contextualization should be aligned with its industry or college pathway, the purpose of the program, and student interests.
- Contextualized materials can be time-consuming to develop; industry or industry faculty involvement can assist in obtaining materials and in lending relevance to them.
- Pilots allow the program to develop with some trial and error before scaling it up.
- Funding for development can come from multiple sources.
- Evaluation measurements to determine if the program is meeting its goals should be incorporated from the outset.
- Student supports should be incorporated to monitor and encourage students as they progress through the developmental and basic skills sequences.

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## ACCELERATED LEARNING PROGRAM (ALP)

### GOAL OF THE PROGRAM

The ALP was developed to accelerate students into a credit-bearing course (English 101) while providing them with support in the form of a companion course (ALP 052) to help them succeed. While this program mainly emphasizes acceleration (fast-tracking developmental education students beyond the last Developmental Education course) and strong student support, it is contextualized in that instructors use actual college materials as the basis for learning and also teach students college and career success skills.

### DESCRIPTION OF THE PROGRAM

The ALP was developed in the fall of 2007 at the Community College of Baltimore County, Baltimore, MD. The contextualization focus is on succeeding in a college, credit-bearing writing course as well as on strategies for success in college overall. Upper-level developmental education students enroll directly in English 101 “while simultaneously taking a companion course [ALP 052], taught by the same instructor, which provides extra academic support” (Jenkins, Speroni, Belfield, Smith Jaggars, & Edgecombe, 2010, abstract). Up to eight ALP students participate in the ENG 101 course, and under ideal conditions there are no more than 20 total students in this class at a time. The ENG 052 course may enroll just these eight ALP students, or may combine ALP students from multiple ENG 101 classes. ENG 052 generally meets just after or before ENG 101 (ALP website; Jenkins et al., 2010, pp. 1-2).

### POPULATIONS SERVED

Students who place into the upper-level developmental education writing course are invited to enroll in ALP.

### INDUSTRIES/PROGRAMS TARGETED

No particular industries or programs are targeted, since the emphasis is on ELA skills and general college success.

### PEDAGOGICAL APPROACHES

Instructors tailor the developmental course (ALP 052) to the needs of the students enrolled in a given semester. The emphasis during this session is to work on activities that will prepare students to work effectively in English 101, answer questions, strengthen writing and grammar skills, discuss concerns and strategies for college, and anything else that the students need to succeed. If students pass both courses (ALP 052 and ENGL 101), they take the next course in the writing sequence, ENGL 102.

### EVIDENCE OF EFFECTIVENESS

In 2009, the Community College of Baltimore County asked the CCRC at Teachers College, Columbia University, to conduct an in-depth quantitative analysis to assess whether ALP is effective and, if so, whether it is worth the added cost of running the two courses simultaneously.

The results suggest “that among students who place into the highest level developmental writing course, participating in ALP is associated with substantially better outcomes in terms of English 101 completion and English 102 completion, the two primary outcomes ALP was designed to improve.” However, they found “no evidence that ALP students’ greater likelihood of completing English 101 and 102 correlates with increased rates of college persistence or passing other college-level courses.” In looking at the results of the cost-benefit analysis, ALP was found to be not only “more cost-effective” than the traditional developmental English sequence but also “the benefits of ALP are more than double the costs” (Jenkins et al., 2010, abstract).

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## EXAMPLES OF ALP PROGRAMS

Although 76 colleges currently offer the ALP programs, information about two programs is provided on the Community College of Baltimore County website (<http://alp-deved.org/alp-schools-directory/>): Community College of Baltimore County, Baltimore, MD, and Patrick Henry Community College, Martinsville, VA.

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## LESSONS FOR MCCWDTA CONTEXTUALIZED BREAKING THROUGH MODEL

This program provide a number of insights for consideration in developing the MCCWDTA model:

- ALP is adaptable in order to meet needs of current students when they need it, whether in conceptualizing, writing, understanding, etc.
- The instructor understands the knowledge developmental education students need to master.
- Being able to attend ENG 101 gives students the ability to get college credit one semester earlier than if they had to complete a developmental sequence first.
- Students receive additional support by a community of developmental education students who are in the same program.
- The course is only available to students who place into the highest Developmental Education course; lower level students are excluded.
- The program requires additional class time for developmental education students and additional teaching time for instructors.
- The program requires faculty with the appropriate experience and/or training who are willing and available to teach both ENG 101 and ENG 052.
- The small class size of eight developmental education students in the ENG 101 class is not feasible in some colleges, although different configurations are possible. For instance, at least one college combines two cohorts of the eight developmental education students in ENG 101 together into one ENG 052 class.

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## RESOURCES

Videos describing the program and instruction can be found on the ALP homepage (<http://alp-deved.org>).

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### GOAL OF THE PROGRAM

According to the Partnerships for a Skilled Workforce, Inc.: Who We Are webpage, the mission of the Health Care Learning Network (HCLN™) is to enable “individuals to meet the economic needs of their families by giving them the academic knowledge they need to enter post-secondary health care education programs, and the skills they need to succeed as students” (2012).

### DESCRIPTION

HCLN™ is a web-based, self-paced, and instructor-facilitated college-preparatory program contextualized to health care. It is designed, to build the reading, writing and math skills for entry-level health care workers who aspire to professional health jobs, but who do not have the literacy skills to enter health care education programs. Its student body is expanding to include community college and adult education program students who place into developmental education.

HCLN™ was designed by World Education, Inc. (WEI) in Boston and includes four courses, Introduction to Computers, Preparing for Health Care Careers (the English course), Health Math and Health Science. The curriculum was based upon standards for adult learning and transition programs developed by the National Institute for Literacy (Equipped for the Future), National Healthcare Skills Standards, and the WEI’s Transition to College. The curriculum combines academic and experiential learning and incorporates the 21<sup>st</sup> Century skills of critical thinking, problem solving, and time management. Students are introduced to medical terminology and basic anatomy. They learn to read instructions, complete Internet research projects, and use the math necessary to perform their jobs.

The characteristics and standards for HCLN™ were developed by Healthcare Works, a consortium of workforce boards; health care employers; community colleges; organized labor organizations; and community, state, and private organizations. See the Partnerships for a Skilled Workforce, Inc. website for more information <http://pswinc.org/partnership/rebrole.htm>.

### POPULATIONS SERVED

HCLN™ students are low-income, front-line health care workers between the ages of 20 and 63. Sixty-seven percent are female heads of households. The majority have been nursing home workers—certified nursing assistants, clerical, maintenance and dietary workers—many with more than one job and significant family responsibilities. Almost one-half are minorities and almost two-thirds are not native English speakers. They have high school diplomas or GED’s, but test at the eighth grade reading and math levels on the Test of Adult Basic Education. They have been out of school for an extended period of time.

Although HCLN™ was designed for incumbent health care workers, MassBay Community College is piloting HCLN™, with the first students to enroll in the fall of 2012. Sixteen Framingham ESL<sup>plus</sup> students are currently enrolled.

### INDUSTRIES/PROGRAMS TARGETED

Health care, with a potential for a licensed practical nurse (LPN) degree or other health occupations.

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## PEDAGOGICAL APPROACHES

HCLN™ is designed as a contextualized, self-paced online program with instructor support. HCLN™ includes four courses: Computers for College, Preparing for Health Care Careers, Health Math, and Health Science. (Partnerships for a Skilled Workforce: The Health Care Learning Network website). The courses include instruction on college-success strategies such as reading and understanding instructions, test-taking skills, and memory development. Courses include videos, audio, and quizzes, and because they are online, students can access the materials at any time. Contextualization occurs in various parts of the program, including quizzes. Although the model has been that World Education, the instructional developer, leads the courses, teachers from MassBay Community College, Framingham Adult ESL<sup>Plus</sup> and Operation Bootstrap in Lynn will be trained to facilitate the courses.

On average, it takes students 12 months to complete the courses, however, MassBay Community College will pilot an accelerated model in the fall of 2012. Students will be expected to study at least 15 hours a week and complete each course in six weeks on average.

According to an interview in 2012 with Sylvia Beville, Executive Director of Partnerships for a Skilled Workforce, HCLN™ was developed to make learning fun, to teach students about health care careers, and to help them be successful community college students. Much of the content was developed to help students in “getting past barriers” on the ACCUPLACER and TEAS placement exams.

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## EVIDENCE OF EFFECTIVENESS

HCLN™ collects data on its programs which shows that “411 individuals have become HCLN™ Scholars [students], representing a mix of frontline health care workers and adult education students. Thirty-seven percent (152 Scholars) have completed HCLN™ coursework and enrolled in post-secondary education or have applications pending. Due to the length of time it takes to obtain a health care certificate or degree, only ten have been awarded a degree. All but one graduate became a licensed practical nurse” (*Partnerships for a Skilled Workforce—Who We Are*).

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## EXAMPLES OF HCLN PROGRAMS

HCLN™ program sites have included Kindred Health Care nursing homes, North Shore Medical Center, SEIU1199 Training and Advancement Fund, Metro West Medical Center, and Radius Health Care. Six adult education programs in New England used the science course in the WEI Transitions to Careers and College Project. Three sites have or will be added in 2012--Massachusetts Bay Community College, Framingham Adult ESL<sup>Plus</sup> and Operation Bootstrap in Lynn.

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## LESSONS FOR MCCWDTA CONTEXTUALIZED BREAKING THROUGH MODEL

This program provides the following insights for consideration in developing the MCCWDTA model:

- Facilitated instruction can keep students on course and, students report, the teachers are a valued resource.
- The online format gives students greater freedom regarding when and where they participate in the course.
- On-line learning is most successful when there are “learning labs” or other face-to-face contact.

- Students progress more rapidly when expectations for hours of study are reasonable, but high. For working students the expectation has been six hours per week. For community college students, the expectation will be 15 hours per week.
- HCLN™ is directly geared to career opportunities that provide a chance of greater salary benefit—an incentive to complete.
- Access to and use of technology for learning has not been a problem. Students need computer and Internet access to participate and develop an understanding of technology, but the majority of HCLN™ students have had computers and Internet access at the time they enrolled.

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## INTEGRATED BASIC EDUCATION AND SKILLS TRAINING (I-BEST)

### GOAL OF THE PROGRAM

The stated goal of I-BEST is to “increase the rate at which basic skills students are able to succeed in college-level coursework leading to certificates and associate degrees in high-demand fields” (Zeidenberg, Cho, & Jenkins, 2010, p. 1).

### DESCRIPTION OF THE PROGRAM

I-BEST launched in 2006 and was developed by the Washington State Board for Community and Technical Colleges (SBCTC).

According to its website, “in Washington’s 34 community and technical colleges, Integrated Basic Education and Skills Training (I-BEST) pairs workforce training with ABE or ESL so [that] students learn literacy and workplace skills at the same time. Adult literacy and vocational instructors work together to develop and deliver instruction. Colleges provide higher levels of support and student services to address the needs of non-traditional students. I-BEST programs must include college-level professional-technical credits that are required of all students in the selected program and are part of a career pathway” (I-BEST website).

### POPULATIONS SERVED

I-BEST can serve both Basic Education and Developmental education students. According to the I-BEST website homepage, all students must qualify for federally supported levels of basic skills education, and students must be pre-tested using the Comprehensive Adult Student Assessment Systems (CASAS), the standardized test used statewide to assess ABE and ESL students.

### INDUSTRIES/PROGRAMS TARGETED

Like Breaking Through, the I-BEST program is able to cover a wide range of occupations. However, “I-BEST programs must appear on the demand list for the local area and meet a minimum set wage” (I-BEST website). According to Jenkins (2010, slide 3), the top 10 I-BEST programs by enrollment in 2006-07 and 2007-08 were:

- Medical Assistant
- Nurse’s Aide
- Office Manager
- Microcomputer Applications Specialist
- Early Childhood Teacher
- Auto Mechanic
- Welder
- Criminal Justice/Law Enforcement
- Office Clerical
- Home Health Aide

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## PEDAGOGICAL APPROACHES

The I-BEST model requires that an instructor from the basic skills instruction faculty and an instructor from the professional-technical program jointly plan outcomes and curriculum and instruct in the same classroom with at least a 50% overlap of the instructional time. The instruction is split, with the ABE instructor responsible for ensuring “that the basic skills necessary to understand concepts, pronounce the vocabulary, [and] write reports are delivered to the students within the context of the workforce education content.” The workforce education instructor “focuses on the delivery of the workforce content.” The actual time each faculty member spends instructing may vary from course to course, with the ideal being a “seamless” integration (I-BEST: Tools for Instructors website).

See the *Create Your Own I-BEST Program* section of the SBCTC website for a guide on developing learning outcomes and assessments, campus involvement, and community engagement; on understanding and implementing integrated teaching; promoting student transitions along the career pathway and student success (<http://www.sbctc.ctc.edu/college/e-ibestcreateyourownprogram.aspx>).

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## EVIDENCE OF EFFECTIVENESS

A 2009 CCRC study found that students participating in I-BEST “achieved better educational outcomes than did other basic skills students, including those who enrolled in at least one non-I-BEST workforce course. I-BEST students were more likely than others to: continue into credit-bearing coursework; earn credits that count toward a college credential; earn occupational certificates; and make point gains on basic skills tests” (Jenkins, Zeidenberg, & Kienzl, 2009, p. 3).

Jenkins et al. (2009) also found that, over the two-year tracking period, there was a higher probability of students earning at least one college credit, a higher number of quarter-term college credits, a higher probability of students persisting into the second year and of earning an occupational certificate, and a higher likelihood of students making point gains on the CASAS basic skills test when compared to non-participating students. However, the study authors stress that this was a correlational study, and thus cannot claim that the I-BEST program *caused* the superior outcomes.

A later study of students who enrolled in I-BEST in 2006–07 and 2007–08, also conducted by the CCRC, examined the effect of the program on seven educational outcome variables. The study found that “enrollment in I-BEST had positive impacts on all but one of the educational outcomes (persistence was not affected), but no impact on the two labor market outcomes. However, it is likely that I-BEST students did not fare better than the comparison group in the labor market because they were entering the market just as the economy was entering the recent major recession” (Zeidenberg et al., 2010, p. 3).

In addition to the overall positive findings, there is, however, a mixed response from colleges on the necessity of 50% overlap in teaching time; finding compatible and committed instructors can be difficult; and financing two instructors, additional program staffing, coordination and planning time, and the additional student support is costly. (Jenkins, 2010, Slide 13).

Van Noy and Wachen (2011, slide 16) state that fully integrated instruction between technical and basic skills instructors with integrated learning outcomes is difficult to achieve. As a result, across the 150 I-BEST programs,

there is a combination of integration and contextualization of basic skills, and many programs feature contextualized basic skills instruction rather than full workforce skills instruction. In addition, the researchers state that programs should look beyond short-term certificate programs and close gaps between these short-term programs and higher level occupations, such as between the nursing assistant and nursing programs.

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## EXAMPLES OF I-BEST PROGRAMS

- I-BEST for Developmental Education programs:  
[http://www.sbctc.ctc.edu/college/workforce/ibest\\_dev\\_ed\\_summaries.pdf](http://www.sbctc.ctc.edu/college/workforce/ibest_dev_ed_summaries.pdf)
- State Board for Community and Technical Colleges Approved I-BEST Program Summaries  
[http://www.sbctc.ctc.edu/college/abepds/program\\_summaries\\_5.8.12\\_for\\_external\\_use.doc](http://www.sbctc.ctc.edu/college/abepds/program_summaries_5.8.12_for_external_use.doc)

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## LESSONS FOR MCCWDTA CONTEXTUALIZED BREAKING THROUGH MODEL

This program provides the following insights for consideration in developing the MCCWDTA model:

- Integrated and contextualized instruction gives students direct skills related to an industry occupation.
- Participation of technical instructors in course development and instruction helps to ensure knowledgeable and relevant technical skills instruction.
- It can be difficult to coordinate technical and basic skills instruction.
- The dual faculty model can be costly.
- Students may need continued support to persist and succeed after participating in the I-BEST programs.

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Zeidenberg, M., Cho, S., & Jenkins, D. (2010). *Washington State's Integrated Basic Education and Skills Training Program (I-BEST): New Evidence of Effectiveness (CCRC Working Paper No. 20)*. Community College Research Center, Teachers College, Columbia University. Retrieved from <http://ccrc.tc.columbia.edu/Publication.asp?UID=805>



### GOAL OF THE PROGRAM

According to a 2006 study report on the development of Math-in-CTE,

the Math-in-CTE model. . .began with the principle that the math content ought to emerge from the occupational content rather than from superimposing math into the [technical] curriculum. The goal was for CTE teachers to identify math concepts inherent in their curriculum and to move students from specific occupational applications of this math to the broader mathematical principles that these applications involve. Our goals for the students were that they be able to: recognize how to solve practical problems by using mathematics in their occupational area; recognize math occurring in other contexts; and do so without diminishing the acquisition of technical knowledge in the course (Stone, III, Alfeld, Pearson, Lewis, & Jensen, 2006, p. 5).

### DESCRIPTION OF THE PROGRAM

The Math-in-CTE model was designed by the National Research Center for Career and Technical Education, University of Minnesota, and funded by the Office of Vocational and Adult Education to answer the question of how the math skills of CTE students can be enhanced during this “critical juncture” of high school without detracting from the CTE skill-building they need for the workplace (Stone, III et al., 2006, p. 4).

According to the Math-in-CTE Lessons website, “The Math-in-CTE model is not a curriculum; rather, it is a process and a pedagogy through which the math that naturally occurs in existing CTE curricula may be enhanced.” CTE teachers “interrogate” their own CTE curricula to “identify the intersection of CTE and math concepts.” Once this step has been completed, they create the “math-enhanced CTE lessons using a seven-element pedagogic model” described below and develop “scope and sequence plans” for integrating the separate Math-in-CTE lessons into their CTE courses. CTE teachers attend workshops and meet “regularly with their math partners as they prepare to teach the lessons” (Cassaro, n.d.).

### POPULATIONS SERVED

The Math-in-CTE program is designed specifically for 11th and 12th graders who have already been introduced to algebraic and other procedural knowledge via their mathematics coursework (Stone, III et al., 2006, p. 5).

### INDUSTRIES/PROGRAMS TARGETED

According to the Math in CTE Lessons website, CTE addresses at least the following industries:

- Agriculture
- Auto technology
- Business/Marketing
- Construction/Manufacturing
- Criminal Justice
- Culinary

- Early Childhood/FACS
- Engineering
- Graphic Arts
- Health Occupations
- IT

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## PEDAGOGICAL APPROACHES

According to Stone, III, et al. (2006, p. 12), the Math-in-CTE model involved both a pedagogy and a process and included seven elements, listed below. Additional charts in subsequent pages of the Stone, III et al. report represent the flow of the lesson and an example of how one would play out in a classroom.

1. Introduce the CTE Lesson: explain the lesson and highlight the math embedded in the lesson
2. Assess students' awareness of the math related to the lesson. Use a variety of methods in order to reach all students, and introduce relevant math vocabulary
3. Work through the math example embedded in the lesson, gradually transitioning from the CTE vocabulary to the math vocabulary.
4. Work through related, contextual math-in-CTE examples, using the same math concept embedded in the CTE lesson. Use similar examples in the same occupational context, with levels of difficulty increasing from basic to advanced, while continuing to bridge the CTE and math vocabulary. Check for understanding.
5. Work through traditional math examples in the same manner.
6. Have the students demonstrate the understanding, bring the math examples back to the CTE content, and conclude the lesson.
7. Incorporate math questions into formal assessments at the end of the CTE unit and course.

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## INSTRUCTIONAL PREPARATION

To prepare for the Math-in-CTE modules, CTE teachers were paired with math teachers to build curriculum maps, provide professional development for the teacher-teams, and implement the math-enhanced lessons (Stone, III et al., 2006, p. 14).

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## EVIDENCE OF EFFECTIVENESS

This Math-in-CTE program was initially designed as a study, and throughout this original implementation quantitative and qualitative data were collected and analyzed:

After one year of exposure to the math-enhanced lessons, the students in the experimental classrooms performed significantly better on the TerraNova and ACCUPLACER tests of math ability. They also performed better on WorkKeys [part of the curricula], though the difference was not significant. Furthermore, there were no differences in measures of occupational or technical knowledge—meaning that CTE students' math skills increased without detracting from the content skills learned in their CTE courses (Stone, III et al., 2006, p. xii).

In addition, the “CTE–math teacher partnerships that formed were highly valued by both and considered essential to the success of the program and of any future replications. All agreed that the expertise of both math and CTE teachers were needed to make this project work” (Stone, III et al., 2006, p. 55).

Although the success stories were “widely shared,” there were teachers with doubts about the outcome of the study and its benefit to students. According to Stone, III et al. (2006, p. 62), the concerns were primarily that:

- CTE teachers are not math teachers and are not trained to teach math.
- The program takes away from the CTE they should be teaching.
- By the end of the year, students were getting tired of the lessons; instructors related this reaction back to the length and number of lessons and the need for systematic implementation throughout the year.
- Some teachers expressed concerns about meeting the needs of their advanced students who found the lessons redundant and boring. However, others reported that their advanced students were gaining benefit by seeing the application in the workplace; while they may have excelled at the math in a traditional classroom setting, they could now see how it was put to a practical use.
- Too much math in the curriculum could potentially impact the enrollments of these classes; instructors emphasized that students come to class because they enjoy the CTE and do not expect to learn math.
- Teachers found out that too many students did not possess the most foundational math skills such as measuring, multiplying, simple ratios/proportions, etc. Remediating to these skills often made the lessons longer than planned and took “precious” time away from the CTE content.

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## LESSONS FOR MCCWDTA CONTEXTUALIZED BREAKING THROUGH MODEL

This program provides the following insights for consideration in developing the MCCWDTA model:

- Students receive both traditional and contextualized math in order to transfer their math knowledge beyond this program and to see the relevance of math to a technical career.
- There is a clearly defined structure for teachers who are not sure where to begin.
- This is a high school program, so adjustments may be necessary for the adult population.
- CTE teachers are not generally math teachers, and professional development is needed to teach traditional math as well as math relevant to CTE.
- Curriculum should be designed to eliminate unnecessary redundancies and process.
- It is important to understand the overall goals of the program, and the skill level of the incoming students and design and adjust accordingly.
- Instructors need to be cognizant of, and provide for, students who master the math content more quickly than others.

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## RESOURCES

- National Research Center for Career and Technical Education Math-in-CTE website:  
<http://136.165.122.102/mambo/content/view/43/56/>

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## NEW MATHWAYS PROJECT

### GOAL OF THE PROGRAM

The New Mathways Project is being developed by the Charles A. Dana Center at The University of Texas at Austin, is builds off the Statway™ and Quantway™ work in 2010–2011 with the Carnegie Foundation for the Advancement of Teaching. The project’s goal is to improve community college students’ completion rates for developmental mathematics and “gateway” credit-bearing math classes; this in response to current completion rates of 33% and 20%, respectively, for these courses. (Bailey, Jeong, & Cho, 2010). By offering alternatives to the traditional sequence of developmental classes leading to College Algebra as the gateway class, New Mathways allows students to learn math that is relevant to their proposed major in ways that traditional pathways do not. For example, a student planning to major in a social science can take a developmental course that is both contextualized with statistics, required in social science studies, and leads more quickly into credit-bearing work. The course work developed by the project “enables college students placed into developmental mathematics to complete a credit-bearing, transferable mathematics course in one academic year or less, while simultaneously building skills for long-term success in college and in life” through a complementary Student Success Course taken concurrently (University of Texas at Austin’s Charles A. Dana Center, New Mathways).

### DESCRIPTION OF THE PROGRAM

The New Mathways Project “lays out three pathways that are structured to enable students to earn college credit on an accelerated time line either through a yearlong model or a co-requisite model” (U. Texas, New Mathways). Each pathway is tailored to meet the needs of students with different interests and career goals. The three pathways are:

- The *Dana Center Statistics Pathway*. This pathway “teaches statistics along with the requisite arithmetic and algebra so that students interested in the humanities or social sciences can engage immediately in mathematics. . .relevant to their education and career goals.”
- The *Dana Center Quantitative Literacy Pathway*. This approach “serves students focused on developing quantitative literacy skills through a transferable, credit-bearing general education mathematics course that will be meaningful for their professional, civic, and personal lives.”
- The *Dana Center STEM Pathway*. This pathway “leads to Calculus I and enables students in STEM-related majors to take a transferable, credit-bearing course that fulfills [both] their developmental and their first college-credit mathematics requirements.”

In addition, the Dana Center is currently developing a Student Success Course, which would be a semester-long course that “teaches concepts from the learning sciences to help developmental math students acquire strategies—and the tenacity—to succeed in math.” (U. Texas, New Mathways).

### POPULATIONS SERVED

The Mathways program is designed to serve any college student who is assigned to a developmental math sequence and who may have trouble completing developmental math work as well as sticking with the credit-bearing math class that is required as part of a baccalaureate program. The three options provided by Mathways are designed to appeal to students at different developmental levels and with different career aspirations and needs.

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## INDUSTRIES/PROGRAMS TARGETED

Like Breaking Through, the New Mathways model does not target one particular industry or academic program. New Mathways provides a viable route for all entering students assigned to developmental math classes to improve their knowledge of math concepts, succeed in a credit-bearing mathematics class, and learn material that is relevant to their proposed major.

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## PEDAGOGICAL APPROACHES

The New Mathways Project has two structures, “Accelerated” and “Intensified.” The descriptions below are abbreviated from the *Implementation Guide* from the University of Texas at Austin’s Charles A. Dana Center (pp. 1-3).

Three *Accelerated pathways* are designed for students who have completed Arithmetic or are placed at a Beginning Algebra level. The three pathways have a common first course: As in the Accelerated Learning Program, a quantitative-literacy-based course introduces and prepares students for college-level math. Students take this course along with the mandatory co-requisite student success course.

After completing the first-semester course, students in the Quantitative Literacy and Statistics Pathways move on to one of the two specialized pathway courses in which they earn transferable college credit. Students in the STEM Pathway enter into a two-course sequence that is contextualized for, and prepares them for, Calculus. Students earn transferable college credit in the second STEM course. There is also an option for students who place at the Intermediate Algebra level to go directly into the STEM sequence without taking the common introductory course. In this case, students take the student success course at the same time as they take the first STEM course.

*Intensified pathways* serve students who are close to college level but need support to be successful. Similar to the Accelerated Learning Program model discussed earlier, these students go directly into a transferable college-credit course in Statistics or Quantitative Literacy along with a mandatory co-requisite student success course that includes just-in-time, contextualized support for the foundational math skills needed in the math course.

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## INSTRUCTIONAL PREPARATION

Faculty development for the New Mathways Project courses starts a year or a semester before a teaching assignment to enable instructors to become familiar with and to try out the content and pedagogies. A list of “intents” for the training can be found on page 23 of the *New Mathways Project Implementation Guide*.

Although details could not be found for this instruction, New Mathways predecessor Statway offers a guide for instructions called *Statway Course Design Principles*. Guidance includes asking course authors to “select contexts judiciously and provide all necessary scaffolding for students to learn within those contexts” (p. 2). In particular:

- Data sets and problem contexts should not require significant amounts of time to explain to students.
- The amount of explanation time required should be weighed against potential benefits of the context in terms of bringing particular concepts to light or challenging students to transfer knowledge and skills to new settings.
- Whenever new contexts are introduced, lesson materials should incorporate scaffolding procedures and routines to follow in order to introduce the new context to students.

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## LESSONS FOR MCCWDTA CONTEXTUALIZED BREAKING THROUGH MODEL

This program provides the following insights for consideration in developing the MCCWDTA model:

- Contextualization is a standard and integral part of the model.
- Multiple pathways allow students to choose the best path for them. Students should be assisted in choosing the pathway, however, in order not to be overwhelmed.
- The emphasis is on knowledge that is immediately useful for careers rather than for climbing academic ladders.
- Students receive support while entered in college-credit courses.
- Supporting documentation and resources are available for campus administrators and faculty.
- The next version of the pathways is just being developed now; thus, there will not be data on their success until cohorts have moved through the course sequences.

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## RESOURCES

The Dana Center completed development of Version 1.0 of the Statway curriculum in July 2011. Samples of these materials are available for download at: <http://www.utdanacenter.org/mathways/statistics-pathway.php>.

A paper on the development and design principals of Statway, *Improving Developmental Mathematics Education in Community Colleges: A Prospectus and Early Progress Report on the Statway Initiative*, by Cullinane, J., and Treisman, P. J. (2010) can be found at:

[http://www.postsecondaryresearch.org/conference/PDF/NCPR\\_Panel4\\_CullinaneTreismanPaper\\_Statway.pdf](http://www.postsecondaryresearch.org/conference/PDF/NCPR_Panel4_CullinaneTreismanPaper_Statway.pdf).

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## REFERENCES

The University of Texas at Austin’s Charles A. Dana Center website provides the following resources:

- “New Mathways Project” webpage. Retrieved from <http://www.utdanacenter.org/mathways/>
- *New Mathways Project Implementation Guide*. Retrieved from <http://www.utdanacenter.org/mathways/downloads/new-mathways-implementation-2012april16.pdf>
- “Quantitative Literacy Pathway” webpage. Retrieved from <http://www.utdanacenter.org/mathways/quantitative-pathway.php>
- *Quantway™ Design Principles*. Retrieved from <http://www.utdanacenter.org/mathways/downloads/quantway/quantway-design-principles-2012april16.pdf>
- *Quantway™ Mathematics Learning Outcomes*. Retrieved from <http://www.utdanacenter.org/mathways/downloads/quantway/quantway-math-learning-outcomes-2012april16.pdf>
- “Statistics Pathway” webpage. Retrieved from <http://www.utdanacenter.org/mathways/statistics-pathway.php>
- *Statway™ Course Design Principles*. Retrieved from <http://www.utdanacenter.org/mathways/downloads/statway/statway-course-design-principles-2012april16.pdf>

## TENNESSEE TECHNOLOGY CENTERS (TTCS)

### GOAL OF THE PROGRAM

TTCs aim to be the “premier provider of workforce development throughout the State of Tennessee” by:

- Providing competency-based training of the highest quality that will qualify individuals for employment and or advancement in jobs.
- Providing high quality training and retraining of employed workers.
- Providing high quality training that is economical and accessible to all residents of Tennessee, thereby contributing to economic and community development of the communities we serve (Hoops, 2010, p. 4).

### DESCRIPTION OF THE PROGRAM

The TTCs are workforce development entities governed by the Tennessee Board of Regents. They provide competency-based, economical training for Tennessee residents to qualify them for employment and/or job advancement. Part of this training includes basic skills instruction, such as applied math and writing, to help students succeed not only in passing the requirements of the program but also in their future employment. Tennessee has 27 technology centers, offering certificate and diploma programs in more than 50 industries as well as customized training for business and industry (Tennessee Technology Centers website).

### POPULATIONS SERVED

According to Hoops (2010, pp. 5-6), TTCs serve populations seeking ABE, academic diplomas, and technical training, and they also work with companies to train employees in “short-term skill improvement programs and professional certifications.” Centers exist across the state; with about 13,000 full-time equivalent (FTE) students enrolled in certificate or diploma programs spread across 27 centers, they serve both rural and urban students.

### INDUSTRIES/PROGRAMS TARGETED

As with the Breaking Through program, the TTC programs can work with a number of industries. A complete listing of the programs can be found at the Office of Tennessee Technology Centers website (<http://tbr.edu/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=8029&libID=8053>).

A short list of programs offered by the centers includes: Automotive Mechanics and Technology, Business Systems Technology, Computer Operations and Electronics, Technology, Electronics and Electro Mechanical Technology, Machine Tool Technology and Precision Metals, Nursing Assistant, Phlebotomy, Practical Nursing, and Surgical Technology.

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## PEDAGOGICAL APPROACHES

As in the New Mathways Accelerated Pathways program, the TTCs offer a contextualized basic and applied skill development component called Technology Foundations. The Technology Foundations content is integrated as a component of every occupational and technical program except practical nursing.

According to Hoops (2010, pp. 23-24), certain elements in the TCC programs diverge from the traditional delivery of developmental education and remediation in community colleges. These are abbreviated here:

- Everyone enters the Technology Foundations components, with the exception of Practical Nursing and some allied health programs
- There is not a distinction between those who are well prepared for their occupational program and those who are not quite good enough and must obtain developmental or remedial skills. This platform removes the stigma from developmental education and makes it clear that these skills are important for everyone.
- Almost no one fails to complete or achieve levels of success in Technology Foundations.
- The Technology Foundation content is integrated into the occupational and technical program of the student. Foundation competencies are presented as parallel to both the educational program and to the skills required in the workplace.
- Technology Foundation's organization as a self-paced, competency-based program also encourages students who did not do well in classroom settings or students who have not been in classroom settings for some length of time. The TTC programs are designed to develop competencies and work environment skills.
- Instructors in Technology Foundations know how students are faring in their occupational programs and can coordinate foundation learning programs with the other program instructors.

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## PROGRAM DESIGN

In contrast to the New Mathways Project, one major feature of the TTC program is that students enroll in a whole program that is fully defined in terms of content, objectives, and structure. This cuts down dramatically on the decisions students need to make when they decide to enroll in a particular program. The only decisions necessary are which program to enroll in and whether to attend full time or part time. Hoops (2010, p. 17) states that this absence of choice in TCC students' program "has major implications for the student experience; the first being elimination of confusion around which classes to take and in what sequence; second, there is very little choice in scheduling; and third, almost by default, the focus is on completion."

One choice for administrators and course developers in developing the program and offering courses is what industries to serve. Because the TTCs' goal is to prepare students for successful careers, they are careful to match the number of graduates to existing demand for workers in a particular occupation. If there are limited numbers of jobs in a particular field in the community, then centers may limit their training efforts in that field. Center directors "assert that the goal of the centers is to help people obtain an education and a job [and] not only to train more LPNs" (Hoops, 2010, p. 6).

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## EVIDENCE OF EFFECTIVENESS

The TCC program provides evaluation anecdotal data from interviews with students, teachers, and employers, in a report by Hoops which describes positive program impact. For example, on pages 24 and 25, Hoops notes "the



stories of students, observations by instructors and testimony by employers about the impact of Technology Foundations suggest that the program is remarkably effective and provides students with the opportunity and the encouragement to learn basic skills and basic occupational competencies that, in other settings, they may not otherwise acquire.”

In addition, Hoops describes impressive student outcomes in obtaining program certificates. He documents that “when students complete their Technology Foundations component they sit for the Career Readiness Certificate (CRC) assessment. . . .Of 4,250 students completing Technology Foundations and a CRC this year to date, 30% (1,275) have received a gold certificate, 57% (2,432) a silver certificate, and 12% (542) a bronze level (Data supplied by TBR, Tennessee Technology Centers, for 2009-2010)” (Hoops, 2010, p. 23).

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## LESSONS FOR MCCWDTA CONTEXTUALIZED BREAKING THROUGH MODEL

This program provides the following insights for consideration in developing the MCCWDTA model:

- With few choices facing them, entering students are able to focus on the entire program rather than individual courses.
- There are no placement tests that could turn potential students away from pursuing their college plans.
- The self-paced format with instructor support allows students the time they need to be successful.
- Because all students except the nursing students go through the Technology Foundations program, there is no stigma attached to taking developmental courses.
- Course enrollments are limited by the number of jobs available.
- Instructors need to be trained to provide the personal guidance and feedback

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## REFERENCES

- Hoops, J. (2010). *A Working Model for Student Success: The Tennessee Technology Centers Preliminary Case Study*; Complete College America. Retrieved June 24, 2012 from [http://www.completecollege.org/docs/Tennessee%20Technology%20Centers-%20A%20Preliminary%20Case%20Study\(1\).pdf](http://www.completecollege.org/docs/Tennessee%20Technology%20Centers-%20A%20Preliminary%20Case%20Study(1).pdf)
- “Tennessee Board of Regents: Tennessee Technology Centers” website. Retrieved June 19, 2012 from <http://tbr.edu/offices/tennesseetechnologycenters.aspx?id=322>

# CONTEXTUALIZATION IN OTHER MODELS

There are many other models of ABE and Developmental Education in which contextualization can be integrated, even if it is not integral to the program. The following discussion provides a few examples.

## ACHIEVING THE DREAM/DEVELOPMENTAL EDUCATION INITIATIVE (DEI)

### GOAL OF THE PROGRAM

The goal of the Achieving the Dream/Developmental Education Initiative (DEI) is to “help community colleges understand what programs are effective in helping students needing developmental education succeed and how to deliver these results to even more students” (Achieving the Dream: What We Do).

### DESCRIPTION

DEI is an extension of the Achieving the Dream model. DEI was launched in 2009 by six Achieving the Dream states (Connecticut, Florida, North Carolina, Ohio, Texas, and Virginia) joining together to focus on policies to support developmental education students. The initiative itself combines changes to policy and practices, and follows four Strategic Directions. The fourth is where contextualization can occur.

- Strategic Direction 1 focuses on leadership and institution-wide commitment by developing implementing institution-wide policies and practices that support better outcomes for those students.
- Strategic Direction 2 focuses on increasing the number of underprepared students who quickly become ready for credit-bearing courses
- Strategic Direction 3 is geared toward providing intensive and comprehensive academic and student support services
- Strategic Direction 4 looks to colleges to revise existing developmental education curricula and/or adopt new teaching methods to address the learning styles of developmental education students (New Strategies for Developmental Education, pp. 4-5).

The DEI initiative receives funding from the Bill and Melinda Gates Foundation and the Lumina Foundation for Education (“Jobs for the Future: Achieving the Dream,” “Achieving the Dream: What We Do”).

### POPULATIONS SERVED

DEI is geared broadly toward students who place into developmental education. The populations served may differ depending upon the campus.

### PEDAGOGICAL APPROACHES

Pedagogical approaches vary from campus to campus, following the strategic directions listed above. All colleges are required to implement at least one strategy within Strategic Direction 1, as well as one or more strategies within Strategic Directions 2-4. Examples of programs following the strategic directions follow.

### EXAMPLES OF ACHIEVING THE DREAM: DEI PROGRAMS

The following program descriptions are taken from two colleges’ Developmental Education Initiative websites.

## SOUTH TEXAS COLLEGE (STC)

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At STC, the DEI program has two parts. One part involves the gradual implementation of two subjects, sociology and history, into the developmental reading and developmental English curricula. The other part of STC's DEI program involves the interaction of four Student Success Specialists with first-year developmental reading and/or developmental English students. These specialists assist the students with course concerns such as schedule information and advisement, as well as any school-related challenges for which first-year students might need assistance. (DEI: South Texas)

## VALENCIA COLLEGE

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The Valencia College DEI program also has two parts, Learning in Community (LinC) and Supplemental Learning:

LinC pairs two courses of different disciplines together, allowing faculty and students to form a semester-long learning community. LinC faculty partner to develop integrated lesson plans—"LinCing" their two different disciplines so students experience an integrated learning experience. Students who participate in LinC courses show higher success rates than those in similar, non-LinC courses.

Through Supplemental Learning (SL), students who have successfully completed gateway courses serve as SL leaders by sitting in on the course and providing supplemental instruction to students before or after class. SL leaders guide students in developing effective study and learning techniques, thereby improving their college success skills and ultimately their success in the class. On the whole, students who participate in SL classes perform better than students who participate in similar classes without an SL leader. In 2009-10, Valencia offered SL in 341 classes, impacting over 8,000 students (DEI: Valencia).

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## LESSONS FOR MCCWDTA CONTEXTUALIZED BREAKING THROUGH MODEL

- South Texas chose the strategy of "gradual implementation" of subjects into developmental reading and English rather than from the start of the course.
- Student Success Specialists at South Texas and Supplemental Learning students at Valencia provide some of the services of the ALP 052 course in the Accelerated Learning Program at Baltimore County, in perhaps a more individualized and cost efficient manner. However, these models differ in that the additional support is not offered by the classroom teacher.
- Valencia emphasizes a Learning Community

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## REFERENCES

"Achieving the Dream: Developmental Education Initiative" website. Retrieved from <http://www.deionline.org/>

"Achieving the Dream: Developmental Education Initiative: What We Do" website. Retrieved from <http://www.deionline.org/about/>

"Jobs for the Future: Achieving the Dream" website. Retrieved from <http://www.jff.org/projects/current/education/achieving-dream/13>

*New Strategies for Developmental Education: Building on an Achieving the Dream Foundation.* (n.d.) Retrieved from <http://www.deionline.org/resources/download.aspx?id=81788c71-f934-4b5d-bc1f-2df3ca424869>

“Developmental Education Initiative: South Texas College” website. Retrieved from <http://develop.southtexascollege.edu/DEI/DEIindex.html>

“Developmental Education Initiative: Valencia College” website. Retrieved from <http://valenciacollege.edu/dei/atd.cfm>

## EMPORIUM MODEL

### GOAL

The Emporium Model allows students to enter instruction at the spot where their skills are lacking and to work at their own pace, including accelerated, to ensure mastery of the content

### DESCRIPTION

The Emporium Model utilizes computer-aided, self-paced instruction, with learning taking place in a 1:1 computer lab, generally at specific class times and with a coach or teacher present in the class to provide support and supplemental materials as needed.

### POPULATIONS SERVED

Students needing any level of math remediation can use the Emporium Model.

### INDUSTRIES/PROGRAMS TARGETED

N/A: The emphasis is on bringing content skills up to a level sufficient for taking college credit-bearing courses, and not on the industries.

### PEDAGOGICAL APPROACHES

According to the National Center for Academic Transformation: The Emporium Model website, The Emporium Model:

- Eliminates all lectures and replaces them with a learning resource center model featuring interactive software and on-demand personalized assistance.
- Depends heavily on instructional software, including interactive tutorials, practice exercises, solutions to frequently asked questions, and online quizzes and tests.
- Allows students to choose what types of learning materials to use depending on their needs, and how quickly to work through the materials.
- Uses a staffing model that combines faculty, graduate teaching assistants (GTAs), peer tutors, and others who respond directly to students' specific needs and direct them to resources from which they can learn.
- May require a significant commitment of space and equipment.
- Allows more than one course to be taught in an emporium, thus leveraging the initial investment.

### EXAMPLES OF EMPORIUM MODEL PROGRAMS

#### MIDDLESEX COMMUNITY COLLEGE

According to Middlesex Community College staff, Middlesex Community College employs the Emporium Model with Pearson's MyMathLab for developmental math instruction. This course takes place in a computer lab with a teacher and/or professional tutor in the room. There are a total of 12 MyMathLab modules. Students can enter at Math 001, completing four modules to be successful, or they can place into a higher level module, depending on their scores on the ACCUPLACER. Middlesex requires a mastery rate of 80% in order to move on to the next module. Seventeen percent of students are now covering all 12 modules in one semester. Faculty spent two years developing supplementary workbooks to help students through the modules.

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## LESSONS FOR MCCWDTA CONTEXTUALIZED BREAKING THROUGH MODEL

This program provides the following insights for consideration in developing the MCCWDTA model:

- Students can accelerate their learning, or go at a pace they need to fully comprehend the materials, depending upon their learning needs.
- Faculty can supplement the computer program with additional materials, which could be contextualized. For example, in Middlesex Community College, faculty created their own workbooks. These workbooks could be enhanced with the contextualized materials we are creating.
- Extra time and money are necessary to develop supplemental materials.
- Students generally need to pay for access to the computerized course materials in addition to their tuition for the course.
- The Emporium Model requires sufficient computer lab space to accommodate student needs.
- Basic technology skills are required to use the computer.
- The program can be seen to give over instruction to the computer, rather than the trained teacher professional. However, some instructors who teach in this model claim that they are seen as Guides on the Side in time of need and are able to provide just-in-time, directly beneficial aid to students experiencing difficulties. At other times, these instructors provide suggestions and advice on college success topics such as how to take notes.

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## REFERENCES

“National Center for Academic Transformation: The Emporium Model” website. Retrieved from [http://www.thencat.org/PlanRes/R2R\\_Model\\_Emp.htm](http://www.thencat.org/PlanRes/R2R_Model_Emp.htm)

# PROFESSIONAL DEVELOPMENT MODELS

## FACULTY INQUIRY NETWORK (FIN)

According to the FIN website, FIN consists of community college faculty from across California, working in teams to investigate a complex problem in basic skills education. . . .Over the two years of the project, the 18 faculty teams received grants to support their inquiries; extensive resources, training, and coaching; and the chance to learn from colleagues around the state. The project also supports campuses to ‘go public’ with their findings by developing compelling multimedia representations of what they are learning about students. . . .The Faculty Inquiry Network is funded by the William and Flora Hewlett Foundation, the Walter S. Johnson Foundation, and the Bay Area Workforce Collaborative (Faculty Inquiry Network).

## EXAMPLES OF INQUIRY TOWARD CONTEXTUALIZATION

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Five CTE programs participated in a FIN in which they studied contextualized learning “to better understand how to sustain student success.” A few of these are listed below, pulled from the Faculty Inquiry Network: CTL in CTE Deepening Practice website.

- Laney College  
The Laney FIN team is made up of faculty from the Carpenteria Fina project, a Career Advancement Academy that contextualizes ESL with cabinetmaking instruction for non-English speakers. The team used its FIN project to test whether contextualized instruction was really making a difference for their students. Though the instructors were seeing some success, they had trouble describing what triggered it. They needed a better understanding of why certain techniques were more successful than others.
- Santa Barbara City College  
Students enrolled in the college’s Green Construction Trades classes were also enrolled in the Youth Corp and were not ready academically or emotionally for the college classroom. The instructor struggled to find a way to reach these students because most of them were not interested in class work. He shot a significant amount of videotape to demonstrate the classroom struggles he faced. Through a series of missteps and restarts the instructor used his intuition, and help from his FIN coaches, to navigate through the issues he struggled with in class.
- Skyline College  
The Early Childhood Development faculty were concerned that their Latina students were not taking full advantage of the learning opportunities available to them, i.e., they often took one class or completed the lowest level certificate, would get a job but not continue their education or advance to higher level job opportunities. The team thought this was happening because their students had “low horizons” which corresponded with low literacy; i.e., that students who had less developed writing and reading skills also had lower career aspirations. The team’s hunches about low horizons did not prove to be true.

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## REFERENCES

“Faculty Inquiry Network” website. Retrieved from <http://facultyinquiry.net/>

“Faculty Inquiry Network: CTL in CTE Deepening Practice: Using Faculty Inquiry to Deepen the Practice of Contextualized Teaching and Learning in Career Technical Education” website Retrieved from <http://facultyinquiry.net/ctl-in-cte-deepening-practice/>



## TALLAHASSEE, FLORIDA, FLORIDA A&M UNIVERSITY DEVELOPMENT RESEARCH SCHOOL (FAMU DRS)

FAMU DRS pulled together a team consisting of three universities (Florida A&M University, Valdosta State University, and Bowling Green State University) to assist in providing training via “Discover CTL: An Online System for Teacher Development in Contextual Teaching and Learning.” The distance-learning model allows teachers to learn CTL in a “contextual, problem-based, engaging manner.” The ultimate goal is to enhance P-12 student learning, resulting in better success in postsecondary education and careers (Hudson & Dennis).

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### REFERENCES

Hudson, C., & Dennis, D. (n.d.). *Addressing Accountability via Contextual Teaching and Learning*. Retrieved from [http://www.wtamu.edu/webres/File/Journals/MCJ/Volume2/addressing\\_accountability.pdf](http://www.wtamu.edu/webres/File/Journals/MCJ/Volume2/addressing_accountability.pdf)