

# ***Building a Bridge to Improve Student Success***

***A Collaborative Project between the  
Connecticut State University System  
and Area School Districts***



***Report to the  
Connecticut General Assembly  
January 2010***

# Introduction

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Pursuant to Section 39(d) of Public Act 07-3 (JSS), the Connecticut State University System (CSUS) received a \$250,000 appropriation through the Department of Higher Education (DHE) to develop a college readiness program. This was reduced to \$237,500, and distributed among the four universities as follows:

Western Connecticut State University:	\$110,745
Southern Connecticut State University:	\$ 71,250
Eastern Connecticut State University:	\$ 35,625
Central Connecticut State University:	\$ 19,880

*“On or before January 1, 2010, the Board of Trustees for the Connecticut State University system shall complete an assessment of the college readiness grant program and submit a report with such assessment, in accordance with section 11-4a of the general statutes, to the joint standing committees of the General Assembly having cognizance of matters relating to higher education and education and to the Commissioners of Higher Education and Education. Such assessment shall include a summary of the strategies used by each of the state universities receiving funding pursuant to this section, the methods used to assess the outcomes of such strategies, and, where applicable, recommendations for making programmatic changes and incorporating positive findings to improve college readiness programs.”*

The Connecticut State University System submitted an extensive planning report in March of 2008. This report describes the details of each of the university collaborations and outlines their plans for 2009 toward improving student learning at the college level. Included as well are plans for the continuation and expansion of the program in 2010.

## BACKGROUND

The issue of recent high school graduates arriving on the campuses of the state universities ill prepared to meet the expectations of college level work is not at all a new issue. In an effort to improve academic performance, enhance access to all university programs and control the cost incurred from offering remediation at the post-secondary level, the Connecticut State University System Board of Trustees passed a resolution in July 2003 requiring all full-time, first-time-in-college freshmen to successfully complete

any necessary proficiency courses in Mathematics and English within their first 24 academic credits. As a result, students who fail to achieve proficiency prior to the beginning of the sophomore year need to complete developmental work elsewhere before they can register for further credit courses in any of the four CSUS universities.

In the five academic years since the passage of this resolution, students have, for the most part, been able to finish their remedial coursework before accumulating 24 academic credits, but even this constraint meant only that no one entered their second year of college work more than one year behind. For these students, the possibility of graduating in four years with a baccalaureate degree (even attending full time every semester) was not a realistic expectation. Clearly, it is not an acceptable situation to have nearly a third of entering freshmen paying tuition to acquire skills that should have been learned in high school as preparation for post-secondary education. CSUS stepped up to the challenge of turning this situation around, but to do so required collaboration with the high schools sending students to the state universities.

The system approach is based on a successful model developed by Western Connecticut State University (WCSU) through its five-year long project with the Danbury and Bethel local school districts. The model has been adopted and adapted by the other three universities in the system after they considered their own strengths and the nature and status of their collaborations with their principal feeder school districts.

Underlying rationale for the strategies of this program can be summarized as follows:

- Sustainable improvements in student preparation for college must be supported by the **bridging of two education cultures** that have traditionally been kept separate: the university faculty culture and the high school teacher culture. Effective change that takes hold in the practicing educators is likely to have the highest and most lasting impact. A sense of shared accountability is developed where all participants work together for the benefit of students.
- Expectations for student learning by university faculty and high school teachers must **ensure a continuum for student learning** addressing content and pedagogy. High school students should have visible learning goals that connect in clear ways to the expectations for university level work. Ensuring the proper alignment of learning outcomes at the high school level with the curriculum, instruction, and assessment of universities is essential. Sound partnerships between high schools and universities involve all those who have a stake in the life success of the students.
- It is essential to maintain an **evidence-based focus on student development and on the learning progress**. The work of students and the collection of evidence for student performance should be the evidence guiding the curriculum and pedagogical improvements. Assessments that measure readiness for

university level work must be seamlessly integrated into the high school experience. Joint examination of evidence and continuous interaction between faculty and teachers need to be supported.

- A **continuous improvement mindset** must be created. Jointly identified challenges in student learning in the high schools are targeted for improvement and well defined curricular changes and teaching approaches are implemented. The collected evidence for learning is then used to refine and expand the improvements in other areas.
- While in high school, **students must see themselves on the pathway to college**. Through the collaborations the high schools should embrace college preparatory expectations for learning and self regulation, a smooth progression in content and pedagogy, and the opportunities for students to become the focus of learning, an important requisite for university success.
- The continuity of efforts must be supported by a **strong commitment to collaboration** between leadership and administration at the universities and the school districts. Such commitment must grow from successful initiatives in the past and from a renewed pledge to collaboration that is visibly embraced by key members of the two educational communities.

While these PK-16 efforts represent good first-steps, we cannot ignore the data that suggests that offering remedial courses in college may be too late. Indeed, scholars have found that those freshman college students who took at least one remedial course were half as likely to finish their degrees as those who did not take college remedial courses. Thus, it is critically important to intervene prior to college if we are to have an impact on student retention and later student success in college.

#### **WESTERN CONNECTICUT STATE UNIVERSITY'S "BRIDGES" MODEL**

(A) providing opportunities for high school faculty to participate in mutual learning exchanges with college faculty;

(B) providing opportunities for high school students to discuss college readiness and college expectations with such high school and college faculty members;

(C) instituting software or other instruments for assessing high school students' college readiness skills and for identifying areas requiring remediation before entering college;

(D) engaging high school and college faculty in workshops to plan eleventh and twelfth grade curricular changes to address areas in need of such remediation; and

(E) developing and instituting shared decision making structures that increase faculty and parental involvement in promoting a school culture and environment that fosters positive student development in physical, social-interactive, psycho-emotional, moral-ethical, linguistic and intellectual-cognitive behavioral areas.

Clearly, finding ways to improve students' proficiency prior to entering their first year of college made sense. Western piloted a collaborative project with two area high schools to "build a bridge" to improve student success. The goals were simple: decrease the number of students needing remediation in college by (a) providing high school students with a clearer idea of college expectations, and (b) building relationships between the English and mathematics faculty in the university and high schools so that good communication regarding *standards* and *expectations* could occur.

There were three recurring phases to the plan. During the first phase, they tested the high school juniors in English and mathematics using slight revisions to our regular placement tests. English had recently developed a group-graded, prompted-essay exam that would allow for diagnostics and more accurate placement at the university level. Mathematics used the *College Board's* 35-item paper-and-pencil "Companion Test" to the online Accuplacer exam. This could be given in a 45-minute timed classroom environment, making computer access unnecessary (at that time, computer access was not available to us). In both academic areas, individualized feedback regarding the placement test results was provided to the students and teachers so they could identify specific strengths and weaknesses.

During the second phase, faculty at the high schools and university met in the summers to plan curricular changes for the high school students' senior year. The plans that were developed required different approaches in English and mathematics. In English (as Connecticut requires four years of English in high school), the *senior year courses could be augmented* to meet the standards necessary for successful college entry. In mathematics, however, the state of Connecticut requires only three years of high school work, so the faculty chose to devise *elective after-school mathematics courses* during the first year of the project. After a great deal of discussion among the math faculty during the summer workshops, the mathematics faculty chose a self-paced web-based instructional program (*ALEKS, Assessment and Learning in Knowledge Spaces*, a *Glencoe/McGraw-Hill* system used at the university) that allows each student to begin where he/she needs to begin in order to move through the algebraic work successfully.

The third phase of the project consisted of *retesting the high school students in the spring of their senior year*. Simultaneously, juniors were tested for the next cohort of students in the project, and the program began again.

This model had initial and dramatic impact on student achievement among freshmen at WCSU. After only two years of the program, students who participated in the Bridges program needed writing remediation at a rate of 13% compared to non-Bridges high school students who needed remediation at a rate of 61%. And students who graduated from high schools participating in the Bridges program were retained from freshman to sophomore year in college at a rate of 73% versus 54% for students coming from non-Bridges high schools, also after only two years of the program. Currently – after five years – only 6% of students in the Bridges program needed remediation in writing.

There is consistent agreement among policymakers, educators and members of the business community that improving the academic achievement of high school students in preparation for college-level work is the *sine qua non* of their future success, particularly within the global marketplace. Recent high school-to-college efforts in Connecticut have focused on better preparing high school students for graduation and college success and the resolution by the Connecticut State University System (2003) enhances that effort by requiring all its first year freshman to complete any “remedial” college courses within their first 24 academic credits, thereby maximizing their chances of graduating from college.

## **SUMMARY OF FUNDED PROGRAMS**

As Western Connecticut State University developed the next generation of its very successful high school intervention program for successful transition to the university, the other universities learned from Western’s early success and developed approaches of their own, so that, during 2009, nine high schools were involved in these outreach programs from the CSUS universities, impacting hundreds of high school teachers and thousands of high school (and middle school) students.

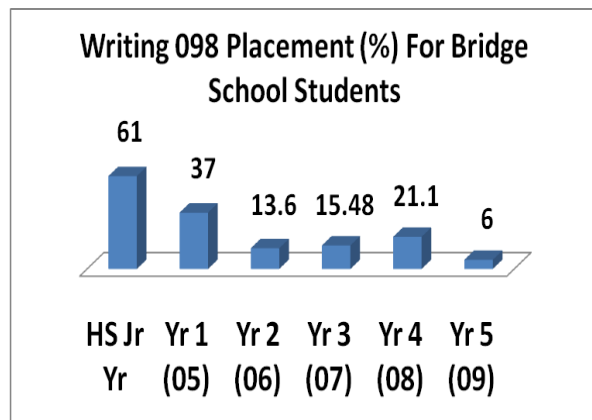
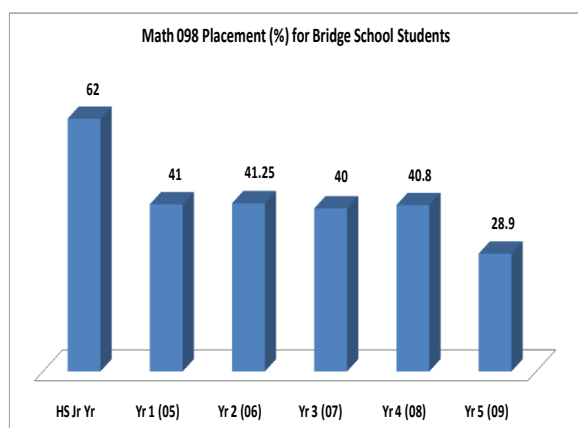
Each university developed its own approach, taking into account the relationships that already exist with various high schools, and the patterns of attendance at the university from those high schools. Yet, in every case, the emphasis is on producing college-ready graduates from Connecticut’s high schools. The impact of the collaboration has pushed work as far as middle schools, and at Southern and Western, the program has expanded beyond mathematics and English writing to include science as well. The goal was, and continues to be, to develop sustainable and focused intervention at the high school level that supports student achievement in the transition to one of the Connecticut State Universities.

This notion of *transition* from high school to college is much more complex than it first appears (Timpone & White, 1998). While there is a tendency to believe that aligning the curriculum between high school and college is sufficient (Venezia, et. al, 2005), this is an extraordinarily oversimplified perspective. Stewart and Johaneck (1998), for example, have argued that while curriculum alignment is a necessary first step, it is equally important to consider what they refer to as the *intellectual vitality* of this connection. That is, high school and college teachers must share in the academic phenomenon whereby classroom instruction becomes highly interactive and focused on a rich analysis of deep meaning brought about through complex problem-solving activities or highly analytic and synthetic reasoning.

Such practices are consistent with notions of students developing the “habits of mind” that promote higher level thinking and problem solving skills, both considered essential to success in college. Thus, a specific goal of this project is to decrease the number of high school students needing remedial coursework upon entering a university by promoting sound, reflective practices between high school and university math and English faculty that emphasize deep understanding of content.

At **Western Connecticut State University**, the project developed into building ongoing relationships between the two faculties and administrations, such that the reduction in the necessity for remediation has been even more dramatic, and several more school districts have asked to be a part of the project. The Western “Bridges” team has presented at national conferences, and its approach is being tested in other states. The reduction in the need for remediation and the retention data after five years speaks for the viability of this approach. Since FY 2005, there has been a reduction of 53% for those students requiring remediation in math and a reduction of 90% for those students requiring remediation in writing.

**PERCENT OF FRESHMEN NEEDING REMEDIATION FROM BRIDGE HIGH SCHOOLS**



At **Southern Connecticut State University** (SCSU), the project builds upon the already existing partnerships between Southern and local schools. Since SCSU has the largest teacher education program in Connecticut, it has already established initial partnerships with two of the four high schools in this project.

Hillhouse High School has long been a partner in the James Hillhouse/SCSU Minority Teacher Scholarship Program designed to provide graduates of Hillhouse with the necessary supports to obtain their undergraduate degree at Southern—on a full scholarship—and obtain their teacher certification and teach in the New Haven Public Schools.

Southern added Hamden High School to the rolls of Professional Development Schools (PDS), and this is a setting where many pre-service secondary education candidates receive their field experiences prior to student teaching. These PDS linkages will act in a reciprocal manner that will further both the clinical experiences for students and at the same time assist the project in moving toward its objectives. We believe this project will enhance Southern’s preparation program for secondary education teachers, as well as better prepare high school students to succeed in college. At Southern, the collaboration has led to working with middle school faculty after only one year of the project. As the first cohort of “Bridges” students begins at Southern, data is being collected so that the impact may be measured.

**Central Connecticut State University** was new to this initiative, and planned two projects with New Britain High School, focusing on English writing competence and mathematics to align curriculum with expectations for college freshmen. University faculty, working closely with high school faculty, produced a 50% increase in students who would place into college level English composition. Similarly, mathematics faculties collaborated to align high school intermediate Algebra with college-level math courses. It was found that most New Britain High School students are well prepared to place out of remedial mathematics.

**Eastern Connecticut State University** took a slightly different direction as well. Eastern, Windham High School (WHS) and Norwich Free Academy (NFA) faculty worked from summer 2008 through summer 2009 to accomplish 3 goals:

- align high school math and English courses with college math and English placement tests,
- align high school math and English courses with college level math and English learning goals,

- encourage high school juniors and seniors to take additional math and English courses in order to place into college level math and English upon college entry.

In the fall of 2009, Eastern switched from working with high school teachers to working with middle school teachers. This switch stemmed from confidence that WHS and NFA math and English teachers are informed about expectations of colleges for their students, are aligning their classes to the extent possible with college placement tests and math and English learning goals, and will continue the activities that were conducted in the 2008-2009 academic year. A second motivation was the availability of data that shows that even before high school, Hispanic students are behind in math. The Windham superintendent concurred that this is a significant contributor to differential high school outcomes by race and is confident that the greatest gain will be achieved by working closely with 7<sup>th</sup> and 8<sup>th</sup> grade math teachers.

## **NEXT STEPS**

Clearly, this initiative at each of the universities has had a positive impact on the need for remediation of first year students, retention, and the college-readiness of many high school graduating seniors in Connecticut. It has become increasingly clear that intervening in the junior year of high school is at best a “catch-up” approach. The collaboration between college faculty and K-12 teachers must reach farther into the school systems of Connecticut, such that every student has an opportunity to leave high school prepared for college or career. In order to make this goal a reality, the middle school curriculum and even the elementary school curriculum must be aligned with this overall goal – particularly in mathematics and English. It has also become clear that the need for curricular alignment reaches beyond mathematics and writing skills to the sciences, social sciences, history, etc., and, even more importantly, it reaches into areas of critical thinking and “habits of mind.”

In order to impact the development of aligned curricula from PK-20, the Board of Trustees of the Connecticut State University System outlined what an entering student must have studied and at what level to be ready for college level work upon entering the university. These expectations are outlined in new, more specific admission standards, passed by the Board last spring, and set to take effect in 2015 or thereafter, depending on the progress made in offering every child in Connecticut an opportunity to complete an appropriate curriculum. These standards are in alignment with the proposed criteria for high school reform and consistent with national college and career ready standards.

Bridges programs must continue to clearly outline for teachers and school districts the level of skill that is required for college success, and give teachers and school districts the tools needed to achieve that level of instruction. As each university continues Bridges initiatives, they will broaden both in subject matter and in grade level until Connecticut can rightly claim alignment between K-12 and postsecondary education. This goal is far beyond what current funding for the four programs of faculty interaction can accomplish.

The collaboration that has evolved surely is demonstrated to be successful in reducing the need for remediation, and it has also pointed the direction for new endeavors for collaboration between the K-12 system and the universities. Central has begun to involve their seniors in teacher training programs in their outreach to high schools; Eastern and Western are using students in the outreach to middle schools. Clearly, lessons from these initiatives will provide very useful information not only for collaboration in district-wide curriculum revisions, but also for teacher training programs. To be effective, reform must touch all parts of the educational system, and this initiative is a bright sign of the significant progress that is possible when colleagues collaborate. Each university will continue its initiative in one form or another, and the additional monies appropriated by the legislature will be well used to continue to achieve these impressive outcomes.

# University Reports

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## Western Connecticut State University

### Building a Bridge to Improve Student Success: A Collaborative Project between WCSU and Danbury and Bethel High Schools

#### DESCRIPTION OF INITIATIVE

At Western Connecticut State University (WCSU), the Bridges program is an ongoing and sustained program that has been in operation for five years. It involves structured opportunities throughout the academic year as well as during the summer for high school faculty to participate in mutual learning exchanges with university faculty. There are a series of summer workshops in mathematics curriculum, writing curriculum and a newly developed science curriculum workshop.

- **Mathematics Summer Curriculum Workshop:** A team of University faculty and high school teachers review the results of the mathematics placement exam (given to juniors and seniors who plan to attend WCSU) and develop ways to address deficiencies. As part of this examination, the group evaluates student performance on each specific test question and identifies areas for improvement. On the second day of the workshop, the group sets short- and long-term goals and creates practice problems to help students improve their skills in critical areas. As a result, the Math team now has a set of 100 practice problems to use in the upcoming school year. Among the team's long-range goals is to reinstate the use of the ALEKS courses (self-directed, computer-based instruction for 098-level mathematics) at the high schools to further decrease the need for remediation at the university.
- **Writing Summer Curriculum Workshop:** The Writing team reviews the WCSU placement exam and how it is scored. Together, teachers and faculty score placement essays for seniors from the two high schools who will be attending WCSU in the fall. As a result of this work, the Writing team focused its efforts on sharing ways to improve paragraph unity and coherence—issues identified as weaknesses in the Spring 2008 “Bridge” placement testing of juniors and seniors. High school faculty also shared technology they are using to work with remedial writers.

- **Science Summer Curriculum Workshop:** The Science meetings were extraordinarily productive. In the first meeting, the Science team discussed ways to strengthen their collaboration. Ideas included the following: 1) offering the chemistry placement exam to all high school juniors taking chemistry; 2) bringing high school students to campus to use WCSU lab facilities; 3) developing first-year seminar courses for all Science majors at WCSU to help with the transition from high school to college; 4) creating a “speakers bureau” of WCSU faculty to guest lecture at the high schools; 5) compiling an e-mail list to distribute information about Science events on campus; and 6) holding seminars at the high schools to discuss how students can best prepare for STEM careers. The Science team also began work on a “Study Skills Guide for the Sciences” that can be distributed to high school students.

These workshops emphasized curriculum review based on high school student outcomes, as well as the introduction of new, technology-assisted teaching and assessment tools at both the high school and university levels. Each spring, juniors and seniors at both Bethel and Danbury high schools take WCSU placement exams in mathematics and writing. This year, for the first time, students also took the chemistry placement exam. During the academic year, high school teachers and University faculty continue to meet periodically to assess progress.

## **RATIONALE**

The collaborative approach to college readiness has had a demonstrable positive effect on both the academic and social readiness of beginning university students. It is, however, a project that involves a large number of faculty and administrative support from both high school and university, and has changed the culture of both institutions, such that the University faculty and staff take responsibility for communicating expectations clearly and coherently to K-12, and K-12 teachers and administrators have embraced as a goal the preparation of students to succeed at the university level.

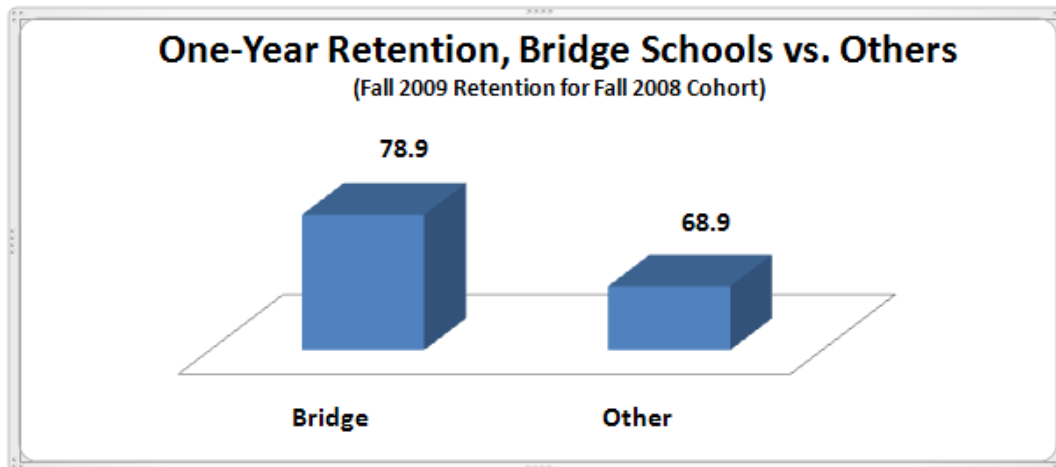
At WCSU, the existence of this program has also benefited student learning at the university level: providing opportunities for students training to be teachers to participate in this collaborative curriculum review, and have a real experience of outcomes based curriculum revision. Other students at the university have been offered broadened opportunities to impact the social readiness of both high school students and middle school students to prepare for the challenges ahead of university life. In fact, WCSU students in the professional writing major had the opportunity to staff a “Young Writers Camp” for middle school students, thereby enhancing their education as well as providing a serious opportunity for middle school students to learn about developing writing skills.

- **Young Writers Camp:** WCSU hosted its first Young Writers Camp in early August. Twenty-two middle school and high school students attended the five-day camp to hone their writing skills in a variety of genres, including fiction, poetry, journalism, memoir, songwriting, flash fiction, and the college admission essay. Professional writing majors assisted. The camp culminated in a public reading of the student writers' works. In Fall 2009, the student writers reunited for an autograph party for their Young Writers Camp Journal. The next camp will take place July 25-August 1, 2010, and include a residential program.

## IMPACT

Because of the dramatic impact on program participants, reducing the need for remediation and increasing retention, the collaborative teams were called upon to make several presentations to state and national audiences.

### NUMBER OF FRESHMEN FROM BRIDGE HIGH SCHOOLS ENTERING WCSU



**November, 2008: "It's Up to Us: Going the Distance to Close Gaps and Raise Achievement for All" 19<sup>th</sup> Education Trust Conference, Arlington, VA:** Members of the "Bridge" team attended the "It's Up to Us: Going the Distance to Close Gaps and Raise Achievement for All" Conference 2008, in Arlington, VA. Sponsored by the Education Trust, this conference is geared specifically toward sharing information about how to help students succeed K-16. Among the featured speakers was Arne Duncan, then CEO of Chicago Public Schools and now U.S. Secretary of Education.

**March, 2009: New England Board of Higher Education (NEBHE)**

**conference:** WCSU was invited to make a presentation about the Bridge project at the New England Board of Higher Education conference in Boston.

Presenters were Dr. Linda Rinker, Provost and Vice President for Academic Affairs; Dr. Linda Vaden-Goad, Dean of the School of Arts and Sciences; and Dr. Abbey Zink, Arts & Sciences Coordinator of the Bridge Project.

**April, 2009: Norwalk Community College workshop (Writing):** Dr. Abbey Zink and Prof. Lynne Paris-Purtle led a workshop at Norwalk Community College to share how WCSU scores its writing placement essays for the Bridge project. More than a dozen NCC faculty and administrators participated.

**May, 2009: NEBHE publication:** The Bridge project was featured as a model program in a new NEBHE publication: *Aligned by Design: Models and Lessons for Linking K-12 and Higher Education to Measure and Achieve Readiness* (May 2009).

**August, 2009: Norwalk Community College workshop (Bridge Project):**

Drs. Linda Vaden-Goad and Abbey Zink made a presentation about the Bridge Project and answered questions about the results and model. More than a dozen faculty and administrators from NCC and its feeder school districts participated.

**November, 2009: "When the Going Gets Tough: Smart Choices and Bold Action to Raise and Close Gaps." 20<sup>th</sup> Education Trust Conference in Arlington, VA:** WCSU shared their work with more than 30 K-16 educators from across the United States in a presentation titled "Bridging the College-Readiness Gap by Working Together." Presenters were Dr. William Glass, Deputy Superintendent of Danbury Public Schools; Dr. Linda Vaden-Goad, Dean of Arts and Sciences; and Dr. Abbey Zink, A&S Bridge Project Coordinator and Assistant Dean. The response was very positive, and WCSU has been approached about sharing the model and results elsewhere.

## LESSONS LEARNED

The most important lesson learned over the five year course of this program is that collaboration among education systems is a powerful tool indeed to impact student learning. Both curriculum and teaching style have been positively impacted at both levels. One very positive result that was not anticipated is the impact on student learning at the university level. The obvious benefit to teacher training program design is only one aspect of the impact at the university level; in fact, writing majors, students

learning psychology, and others have been positively affected by the opportunity for a hands-on experience with high school and middle school students.

As WCSU continues with this collaborative approach to postsecondary education, it has become clear over the five years that the program should expand into other disciplines (hence the introduction of a science collaboration), as well as to other levels of K-12 education (hence the new programs aimed at middle school).

- **Exploration Academy Visit (2/20/09)**

About 94 students from the Exploration Academy at Rogers Park Middle School visited WCSU on Feb. 20, 2009, for a half day of enrichment activities across the disciplines that culminated in a campus tour. The Exploration Academy is specifically targeted toward students interested in STEM areas. (For more information, see <http://bbac-x1.danbury.k12.ct.us/midweb/STEM/Site/Welcome.html>.)

For this visit, the students were divided into ten teams named for famous scientists, mathematicians, inventors, and/or explorers: Armstrong, Bohr, Curie, Darwin, Einstein, Fermi, Goodall, Hubble, Jobs, and Kwolek. Each team participated in two enrichment activities led by WCSU faculty and/or staff. These activities had catchy titles like “Bone Quest,” “Animating Spinwheels,” “Weather Wizards,” “Spineless Wonders,” “Temples, Pyramids, and Tombs,” and “So You Think You Like Production? Making Your Videos Look Great.” The students were accompanied by several teachers and parents who served as chaperones. WCSU students assisted in special sessions.

## **NEXT STEPS**

Since 2004-2005, the “Building a Bridge” project has focused on decreasing the need for remediation in Mathematics and Writing. In 2008-2009, WCSU began expanding the “Building a Bridge” project into the Sciences and into the middle schools. In 2009-2010, we plan to continue these expansion efforts. To this end, WCSU requested and recently received \$100,000 in federal funding (with the assistance of U.S. Rep. Chris Murphy) to expand the Bridge project into STEM-related areas in Danbury and Bethel middle schools. This proposal was included in the FY 2010 Commerce-Justice-Science appropriations bill in the U.S. House of Representatives. There is important community support for this program as well. Praxair, Inc. (the largest industrial gases company in the Western Hemisphere, with world headquarters in Danbury) made a gift of \$50,000 to Western in support of this collaborative community program.

# Southern Connecticut State University

## The Galileo Project, Southern Connecticut State University

### DESCRIPTION OF INITIATIVE

The Galileo Project is a multi-year project designed to foster partnerships between Southern Connecticut State University (SCSU) and three high-priority area feeder schools: Hillhouse HS (New Haven), Maloney HS (Meriden), and Hamden HS. The project focuses on developing pedagogical strategies to address specific areas of student weakness in English composition and algebra.

The goal is to ensure that more high school graduates come to Southern better prepared and that fewer students place into developmental courses in these subjects. SCSU developed a rationale for addressing the relevant issues based on four premises: that the project be approached scientifically rather than anecdotally; that empirical evidence (e.g., aggregated data from high school and university transcripts) be used; that innovative programming be created; and that programming be assessed and altered as needed to adapt to changing circumstances.

Since August 2008, Southern faculty members have been meeting regularly with one English and one mathematics teacher from each of the three high schools. These meetings occur in two fashions. On the one hand, SCSU regularly convenes the Composition Team and the Math Team as two separate entities that share curricula, prepare and implement observations (both at the high schools and at Southern), conduct testing of high school and university students in different levels of classes (e.g., Honors, college-prep., etc.), prepare programming for our annual High School Teaching Academy, analyze aggregate data from student transcripts, and “unwrap” a component Strand of the state Standards.

The other types of meetings occur when SCSU pairs a university faculty member with a specific high school teacher in the same subject area. Many of these pairings—and there are six (two-member pairs covering English and math in each of the three high schools)—have met on a weekly basis for months at a time. In one case, the Maloney HS Math pairing, the two team members successfully developed and implemented an entire Unit Plan on teaching fractions and linear functions. This Unit Plan will form the basis of a professional presentation at the Annual Conference on Technology in Collegiate Mathematics in Chicago, March 2010. In all, there have been nearly eighty meetings since the project began seventeen months ago.

## RATIONALE

Since the goal of this project was to impact the need for remediation and retention of students, Southern faculty reviewed the high school transcript for every first-time, first-year freshman at Southern from all three high schools.

This analysis provided information on the levels of English and math that students took senior year in high school and how those students performed. SCSU then tracked each student through Banner to determine which Math and English composition course the student placed into; what grade the student earned; whether or not the student registered in the next English and math course in sequence; what the student's overall GPA was; whether or not the student was retained; and whether or not the student was placed on academic probation. SCSU then created comparisons using aggregated data from the three high schools and aggregated data on Southern students overall. This use of empirical evidence enabled SCSU to hone in closely on relevant information. For example, it was found that, while Hillhouse students were far more likely to place into Algebra I than Southern freshmen overall, Southern was more likely to retain a Hillhouse graduate than the average Southern freshman.

Another step taken was to survey Southern faculty members who teach developmental courses to ascertain their perceptions of the greatest areas of student deficiency by using the state Standards. Since one of the three partners, New Haven Public Schools, is currently undertaking an ambitious reform initiative, Southern has offered curricular consultation and data-sharing with the district. While not precisely identical to the Galileo Project, three of the four members of the consulting team are Galileo Project participants. Finally, Southern used the opportunity presented by the state's commemoration of the Lincoln bicentennial to sponsor an essay contest at Hillhouse HS, which provided more evidence regarding both levels of student motivation and performance.

Like Western, Southern is in the process of expanding the vertical team to include six middle school teachers and guidance counselors from Meriden, New Haven, and Hamden. Since test scores tend to dip in the middle grades in high-priority districts and since many urban mathematics teachers in middle schools are not subject-certified, it was felt this was a vital link in cultivating the skills that will eventually make students college-ready.

Finally, the annual highlight for the Galileo Project in both its first and second years is the annual High School Teaching Academy, during which Southern faculty model pedagogical strategies to address one component strand of the state Standards. Another very popular feature of the academy is a moderated panel discussion of students who have gone through the experience of taking developmental courses in English and math.

## **IMPACT**

The impact of Southern's efforts on secondary school students is both direct and indirect. The direct impact emanates from developing materials for curricular areas for which students need additional support (e.g., performing arithmetic functions with fractions and decimals, the delivery of a successful model Unit Plan in the teaching academy, etc.). Some of this direct impact was "unintentional." For example, an English teacher from Hillhouse decided to use Colorado State University's online writing platform and introduced the concept to colleagues, who followed suit.

This is possibly the first time that secondary school educators have used this particular tool, which Southern's composition faculty frequently employ. The indirect impact pertains to cultivating closer working relationships with teachers in all three high schools and to sparking "water cooler" conversations in teachers' lounges about the issues the Galileo Project has raised. (The Mathematics Coordinator for Meriden Public Schools specifically mentioned this.) There has not yet been an impact on admissions. It would be premature to claim an impact on remediation post admission at this early point in time. Relationships with the principals of all three high schools have been developed, and they are being kept apprised of the progress being achieved.

# Central Connecticut State University

## Bridges Initiative: English and Mathematics

### English

#### DESCRIPTION OF INITIATIVE

Central Connecticut State University's (CCSU) English department, and specifically its coordinator of English composition in collaboration with New Britain High School (NBHS) teachers focused on jointly-led writing workshops to supplement college-level writing, using portfolios as the method for evaluation. The pilot English Bridges Program consisted of two primary elements: 1) jointly-led writing workshops and 2) portfolios which served as the program's assessment method. Partners in the project were the English department of which Heather Urbanski served as the coordinator, pre-service CCSU teacher candidates, and New Britain High School English teachers. Feedback was also gathered from the CCSU coaches and NBHS students as a means of evaluating the program.

#### Jointly-Led Writing Workshops

- Jointly-led writing workshops were held for future CCSU students (who have applied and/or been accepted to the university) as an effective way to supplement preparation for college level writing. The target was New Britain High School students.
- Two workshops were conducted on March 7 and April 4. Twelve NBHS students attended the first, and eight returned for the second. A total of eleven CCSU seniors and one CCSU writing instructor served as coaches for the two sessions.
- Two additional workshops were planned – a mandatory session on May 2 and an optional meeting on May 9 to finalize portfolio preparation.

#### Portfolio Evaluation

- The portfolio was used to evaluate students' writing abilities rather than a timed writing situation such as the Accuplacer. Since the SAT Writing section already provides data on student success with timed writing assignments, it was determined that a voluntary portfolio analysis system, in conjunction with SAT data, would help to separate students who experienced test anxiety from those with more systemic writing difficulties.
- The team designed criteria for portfolio content and a rubric, based on both the NBHS curriculum and CCSU English 110 standards.
- A team of reviewers, including NBHS faculty and several instructors from CCSU, assessed the portfolios. The portfolio scores were combined with SAT Writing scores to determine projected placement at CCSU.

- A report was generated for the NBHS English Department regarding the results of the portfolio scoring, identifying those criteria where the students scored the best and where they were the weakest, highlighting possible curricular changes.

## **RATIONALE FOR APPROACH**

The collaboration was based on the premise that the best way to improve writing is to give students ample opportunities to write. It was determined that providing intensive writing practice directly to potential CCSU students kept the numbers manageable and had the best chance of yielding results. The portfolio evaluation method was selected to allow the faculty/teachers to review writing in addition to the SAT writing section so as to differentiate students with test anxiety from those with more systematic writing difficulties.

## **IMPACT**

- a) Secondary School Students: Some important findings were related to the New Britain High School (NBHS) curriculum. Two themes emerged regarding curricular areas that would likely cause NBHS students difficulty either in placing into English 110 or in its successful completion:
  1. Critical thinking skills: Portfolio evaluation of students' writings demonstrated a need to work on more complex ideas that move beyond clichés and plot summaries. The portfolio pieces seemed overly simplified and lacked an awareness of context.
  2. Proofreading strategies: While there were some systemic "grammar" issues, what the portfolio evaluators noticed most often were poor proofreading skills (e.g., missing words, inconsistent use of conventions, etc.). The portfolios demonstrated a need for effective strategies for reviewing and proofreading the student's own work.
- b) Admissions: This Bridges initiative targeted a sub-group of high school students who have applied or intend to apply to Central Connecticut State University. The Program is too early in its conception to determine if association with CCSU while in high school motivates them to apply.
- c) Remediation post admission: The sample size of participating students makes it difficult to generalize about the program's impact on whether remediation courses would be decreased. Nonetheless, the high school students whose portfolios were analyzed yielded a 50% success rate for being placed directly into English 110, instead of the remedial English 099 course.

## **LESSONS LEARNED**

Several adjustments and recommendations for the 2009-10 program became clear after the 2008-2009 program:

- a) Pairing CCSU students with NBHS students received nearly unanimous praise and provided mutual benefits to both pre-service teachers and the NBHS students. Several CCSU student-coaches obtained internships with NBHS as a

result of their involvement. [Update: Discussions are occurring with spring 2010 CCSU course instructors from which CCSU student tutors will be drawn.]

- b) Begin NBHS student outreach and workshops earlier, with the initial interest meetings held in November and the first workshop held in January. Use the Admissions Office's "College Fair" at NBHS in fall as an opportunity to introduce the program and begin identifying students. [Update: Interest meetings, conducted within the NBHS English classes, occurred from 12/4/09 -12/11/09.]
- c) Hold more frequent workshops and methods of communication with NBHS students to improve attendance and engagement. [Update: For the spring 2010 semester, six workshops have been tentatively scheduled with the first one set for January 30.]
- d) Collect portfolios at the final workshop session, rather than relying on students to submit them outside of the Bridges environment. On-going collaboration between the University and the School System is vital to success. [Update: Portfolios will be collected on May 22, 2010.]

## NEXT STEPS

The current plan includes the following changes to the original pilot's approach:

- a) When NBHS students submit their final writing samples for their portfolios, students will be given a common assignment – that of writing an academic analysis of the shared text, Stephen King's writing memoir, *On Writing*. This will provide a common feature that should facilitate evaluation for determining placement within CCSU's writing courses (English 099 vs. English 110).
- b) Because the May 2009 portfolio review highlighted proofreading as an area of improvement, a "pocket" version of a handbook will be added to the materials students use during the workshops.
- c) Rather than holding a kick-off meeting in a lecture hall at New Britain, CCSU's English coordinator visited every English course in which seniors were enrolled in December 2009 to introduce the program and encourage students who plan to apply to CCSU to participate.
- d) The first workshop will be held on CCSU's campus on Saturday, January 30, with additional sessions tentatively scheduled for February 27, March 13, April 24, May 8, and May 22.

## Mathematics

### DESCRIPTION OF INITIATIVE

Mathematics faculty collaborated with New Britain High School Math teachers and Bristol High School Math teachers to consider the alignment of the NBHS intermediate algebra program with CCSU's remedial Elementary Algebra (Math 099) and Intermediate Algebra (Math 101) programs. They also used the Accuplacer examination to determine New Britain High School students' placements for college level math courses. An initial meeting between CCSU and NBHS mathematics faculty was held in November. CCSU

mathematics faculty shared course syllabi and final exams for Math 101. They also shared data pertaining to how NBHS students had performed in CCSU mathematics courses. The NBHS mathematics teachers shared course descriptions and midterm and final exams. The two groups discovered that NBHS faculty included topics that CCSU faculty had not been emphasizing in Math 101 courses (specifically: polynomial equations, conics, and such topics as synthetic division to find zeros of functions). Conversely, NBHS teachers were not placing much emphasis on thinking about functions or using graphs to explore functions. Another outcome of the meeting was a discussion about an NBHS policy that no courses should have prerequisite courses, which grew out of concerns for equity. Discussions ensued about how this may result in placement into courses by students who had failed a prerequisite course (e.g., failing Algebra I and then being admitted to Algebra II).

## **RATIONALE FOR APPROACH**

Understanding how the levels of the high school mathematics curricula predict where students place and how well they do when they begin college level work formed the basis for collaboration and ongoing efforts between Middle/High Schools and the University. Faculty/teachers considered whether different emphases in courses were causing students not to perform well on placement examinations, specifically the Accuplacer examinations, which CCSU students take if they do not place out of Math 099 or Math 101 on the basis of Math SAT scores.

## **IMPACT**

- a) Secondary School Students: Some important findings emerged from analyzing district data and Connecticut Mastery Tests. Patterns of weakness that would predict difficulties with college level courses were identified, which provided a framework for collaboration.
- b) Admissions: An analysis of CCSU data of first and full-time students from New Britain indicates no meaningful change in profile or performance over the last five years. However, NBHS teachers were able to become more familiar with mathematics expectations at CCSU and can now better articulate them to their students who might be considering CCSU.
- c) Remediation post admission: Our efforts so far would have a limited impact on remediation post admission. However, most NBHS students enrolled in regular Algebra II courses confirmed that they were well prepared to test out of Math 099.

## **LESSONS LEARNED**

- a) New Britain teachers value the opportunity to work with CCSU mathematics faculty, and they value the opportunity to come to the CCSU campus for faculty development activities. One example is the November workshop on the use of Smart Board technology attended by both CCSU faculty and 17 New Britain middle/high school teachers. CCSU supplied each of the schools with a virtual

graphing calculator that could be used on existing Smart Boards (demonstrated in the workshop).

- b) A plan for testing participating students in Algebra II needs to be implemented sooner in the year to have information about follow-up testing for Math 101. Ideally, students would be brought to campus.
- c) On-going collaboration between the University and the School System is vital to success.

## **NEXT STEPS**

- a) CCSU and New Britain School District are collaborating on a proposal for the Teacher Quality Partnership Grant in order to continue efforts to prepare middle/high school students for required mathematics courses.
- b) Our ongoing discussions suggest how CCSU may assist in strengthening the content knowledge of middle school teachers and developing proportional reasoning and with fractions and rational numbers for teachers of 6-11 grades.
- c) Additional opportunities for providing professional development need to be explored. These joint professional development workshops will require stipends for New Britain teachers to work outside their regular school day.
- d) It would be helpful for CCSU mathematics faculty to attend a joint meeting with mathematics Bridge partners from the other three Connecticut State University System institutions to discuss their activities and to share strategies and plans for the program.

# Eastern Connecticut State University

## Bridges Program with Norwich Free Academy and Windham High School

### DESCRIPTION OF INITIATIVE

Eastern Connecticut State University (ECSU), Windham High School (WHS) and Norwich Free Academy (NFA) faculty worked from summer 2008 through summer 2009 to accomplish three goals: (1) align high school math and English courses with college math and English placement tests, (2) align high school math and English courses with college level math and English learning goals, and (3) encourage high school juniors and seniors to take additional math and English courses in order to place into college level math and English upon college entry.

During the summer of 2008, four Eastern, six NFA and four WHS teachers visited Western Connecticut State University to learn about their successful Bridges program with Danbury schools and then met to plan activities for the fall semester. From September 2008 through May 2009, Maple T.A. math tests were developed by Eastern math faculty and administered by WHS and NFA teachers to gauge a student's math proficiency. Maple T.A. scores were compared to Accuplacer scores to assess whether the Maple T.A. test, which is internally scored, is a reliable predictor of Accuplacer scores.

Finding that it was a reliable predictor, teachers used the test to help students understand their current proficiency level and the effect that it would have on their likely college placement. A similar initiative was piloted with the assessment of student's writing. A Literacy Narrative was constructed and administered to WHS and NFA juniors and seniors. Results indicated that the narrative is likely to be a good predictor of a student's placement into Eastern's English 100 or English 100P course based on the current Guided Self-Placement. Faculty from the three schools spent one-half day discussing strategies for using Literacy Narratives in the future to help students gauge their writing proficiency and the effect that will have on their placement into college writing and also how teachers can use the Literacy Narratives to improve student writing.

In the Fall of 2009, Eastern faculty and administrators met with the Windham Superintendent of Schools and several Windham Middle School teachers to discuss an extension of outreach to the middle school level. Based on suggestions from the Windham faculty and administrators, plans were developed to create a program to address the disparity in math achievement between Hispanic and non-Hispanic 7<sup>th</sup> and 8<sup>th</sup> graders. Windham staff expressed sentiments that the most effective means to accomplish this will be to provide tutors to support teachers during regular math classes. In addition, a winter holiday “math camp” will be developed with Windham teachers identifying students who will be invited. To implement this plan, a special Education class at Eastern will be developed and offered in the spring semester 2010. The class will help students develop skills in math education, especially one-on-one instruction, require that they review necessary math concepts, and require activities that will promote cultural sensitivity. Students will be assigned to tutor in Windham Middle School classes on a weekly basis and will work at the Math Camp.

## **RATIONALE**

Eastern’s initial approach to working with NFA and WHS was based on successful models elsewhere and the fact NFA and WHS send large numbers of students to Eastern. Our hope was to increase the portion of those students who place immediately into college level courses in their first semester. This was motivated by the desire to decrease time to graduation, increase retention (knowing that slow progress to a degree decreases the probability of retention), decrease the number of sections of remedial and developmental coursework offered at Eastern, meet legislative and BOT objectives, and increase enrollment of low-income, first-generation and minority students from NFA and WHS at Eastern.

The switch from working with high school teachers to working with middle school teachers stemmed from confidence that WHS and NFA math and English teachers are informed about expectations of colleges for their students, are aligning their classes to the extent possible with college placement tests and math and English learning goals, and will continue the activities that were conducted in the 2008-2009 academic year. A second motivation was the availability of data that shows that even before high school, Hispanic students are behind in math. The Windham superintendent concurred that this is a significant contributor to differential high school outcomes by race and is confident that the greatest gain will be achieved by working closely with seventh and eighth grade math teachers.

## IMPACT

Having successfully completed the pilot year, Eastern will begin comparing the math placement scores of entering 2010 freshmen from NFA and WHS students to those who entered in 2008. The cohort that entered in 2009 will have had varying levels of exposure to program activities. A challenge to this will be the change being implemented from basing math placement on SAT scores rather than Accuplacer. The effect of the program on English placement will be easier to discern because the method of placement is less likely to change. In addition to reducing the need for remedial and development math by WHS and NFA students, a goal of the Bridges program was to enroll more low-income, minority, and first-generation students from these schools. This data has not yet been analyzed for the Fall 2009 cohort.

## LESSONS LEARNED

### A. English Sub-Group Conclusions and Recommendations:

- The Literacy Narrative 2 assignment completed by high school juniors already clearly reflected students' strengths and weaknesses as writers, and predictions about possible college writing placement were easy to make based on their writing. Therefore, the assignment is similar to the ECSU placement essay in significant and useful ways. **It is recommended that such assignments continue to be incorporated into the high school English classes to help prepare students for the kind of writing they will be asked to do in such placement situations (at ECSU, SCSU and other colleges and universities who use similar placement systems).**
- The Literacy Narrative 2 assignment was challenging for students (especially as revised in January) and the results showed that students are not equipped to discuss their writing in an authoritative and objective way (they lack both the vocabulary and perspective to do so). **It is recommended that high school faculty find ways to incorporate more analysis and discussion of writing structures and strategies into their class work, thereby building the vocabulary and analytical skills needed for thoughtful and accurate assessment of the students' own writing.**
- Several factors were noted that influence writing/literacy instruction at the high schools and that contribute to what participants saw as significant differences between the primary emphases in high school curricula and those of college writing courses:
  - High school English curricula emphasize the reading of literature and writing about literature far more than other kinds of writing, while college curricula place much less emphasis on literature and

more emphasis on writing in a variety of genres for a variety of audiences and situations.

- Similarly, English teachers' formal preparation in teacher certification programs emphasizes the teaching of literature, not writing. Most teachers were not required to complete a course in methods of writing instruction in their certification programs, and they receive little in the way of ongoing faculty development in this area.
- High school English teachers' courses and student loads are significantly higher than National Council of Teachers of English (NCTE) guidelines. NCTE states that in order for responsible and pedagogically sound instruction (especially in writing) to take place, teachers should be responsible for no more than 80 students per term. NFA and WHS teachers are regularly responsible for 100-125 students per term, making significant process-based writing instruction impossible.
- The responsibility for writing instruction (as prescribed by Connecticut Department of Education guidelines) is shared between English and social studies. Students are as likely to encounter writing assignments similar to those expected in college writing courses in their social studies courses as in their English courses. Questions were raised concerning social studies teachers' formal preparation (in teacher certification programs) and ongoing faculty development in methods of writing instruction.
- Emphasis on the Connecticut Academic Performance Test (CAPT) places significant constraints on a high school English teacher's ability to modify curriculum. These tests emphasize timed, extemporaneous writing rather than the development and communication of complex ideas through a process of writing and revision that is emphasized in college-level writing.

## **B. Math Sub-Group Conclusions and Recommendations:**

- The Bridges Program was beneficial for both Eastern faculty and high school teachers. Eastern faculty had the opportunity to know about issues in mathematics teaching and learning in high school. For example, the high school students at a lower mathematics track lacked motivation to practice mathematics required for SAT and Accuplacer. The focus therefore, needs to be on alternative ways of teaching mathematics to motivate as many students as possible.

- High school teachers modified their content to better prepare students for the Accuplacer exam. Students were interested in the modification of content because they knew that the new content would help them to score higher in the college placement exam. Because of the alignment between high school content and the content of the placement exam, the high school students were more serious about the mathematics courses they were taking. They did not ask the question: "Why do I need to do this?" **Because of the effect on student motivation and other benefits, it is recommended that high school teachers continue to align their course content with college placement exams.**
- Emphasis on the Connecticut Academic Performance Test (CAPT) places significant constraints on a high school mathematics teacher's ability to modify curriculum. However, there is a huge discrepancy between SAT and CAPT. **Because future placement of students at Eastern will be determined by using SAT scores, it is recommended that its teachers become more aware of the skills required for SAT.**
- As noted above, the Bridges program was found to be successful and should be continued. Recently, Eastern was awarded a Connecticut teacher quality enhancement grant of \$96,300 to use mathematical modeling to train high school teachers to assure that graduates are able to pursue college level mathematics. Both high schools, Windham High and NFA, are involved in this project. Eastern has also added Windsor High School and Norwich School District in this new grant. It is expected that the grant program will further contribute to bridge the gap between school and college mathematics, and is a productive outgrowth of the Bridges collaboration between the University and the high schools.

**C.** The strong sentiment that work should begin at the middle school level was somewhat surprising. Details about the ways that Eastern can best assist the middle school teachers (in-class support rather than after-school tutoring, for example) were not anticipated.

## NEXT STEPS

Once changes related to placement testing across the Connecticut State University System have been finalized, Eastern will meet with WHS and NFA teachers to discuss approaches to strategies that will enhance their students' performance. Appropriate strategies will vary depending on how students are placed. For example, if SAT scores are used for Math, then the construction of Maple T.A. tests and exercise aligned with SAT scores would be helpful as these could be used by high school juniors and seniors

to gauge proficiency. Regardless of placement, however, with additional funding Eastern faculty will continue to meet with WHS and NFA faculty to align high school course work with college math and English learning goals.

Next steps for the Middle School project include confirming the instructor for the Education class, recruiting students, working with middle school teachers over the next two months, and developing curriculum and plans for the math camp. A middle school teacher who also teaches at Eastern as a part-time math faculty member has been funded to develop the curriculum and will likely be the instructor of the Education class.