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## **ABSTRACT**

*A university and a career technical education (CTE) center joined forces to offer dual credit courses. Two institutions worked together to create and implement five different dual credit courses in the areas of physics and mathematics. This paper presents two major findings. First, results of the student's evaluations of their dual credit experience at a CTE center are presented and discussed. Sixty-four students in the program were telephone interviewed and two different groups of students participated in focus groups. Second, the development and implementation of the program is described. Emphasis is placed on relationships, course identification, mentoring, rigor, assessment, authenticity and providing a showcase for the work. This paper provides evidence that successful dual credit programs at CTE centers can be implemented with a university partner in a very short period of time and provides guidelines for those wishing to do the same.*

## **Introduction**

Dual credit, also known as “dual enrollment, concurrent enrollment, post secondary enrollment and joint enrollment” can be defined as a course or program where high school students can earn both high school and postsecondary credits for the same course. Andrews (2004) points out that such opportunities range from earning a single course of college credit to earning up to two years of college work prior to high school graduation. This paper uses the phrase “dual credit.” That is, at the successful completion of a course, students were awarded both high school and college credit. In our particular case, the five courses were taught on the campus of the (CTE) center by qualified CTE faculty members.

High school students have several choices to earn college credit while still in high school. These choices range from correspondence courses, on-line college courses, post secondary enrollment option (PSEO), dual credit, and tech prep. Correspondence and on-line courses are available to students that apply and are accepted to a college or university and are normally handled individually instead of through the high school. While PSEO options are well established in the state of Ohio (Jordan, 2001), this choice requires the student to travel to the

campus to attend classes. Dual credit and/or tech prep allow the high school student the opportunity to earn high school and college credit while remaining at the high school campus. In October of 2006, the State of Ohio announced 3.6 million dollars available for school districts around the state to provide math, science, and foreign language instruction to high school students that would result in both high school and college credit in a format which allowed the students to stay on their high school campus. The Ohio legislature made funds available to increase the opportunities for high school students to experience college level classes without the added cost of transportation. That funding provided \$225,000 to 16 educational service centers. A university and a CTE center joined forces to receive one of those grants. The university is a regional campus of a medium size Midwestern university serving approximately 2,500 undergraduate students. The university is open admission, non-residential, has a very diverse student population, and is heavily involved in their local community. The CTE center serves 27 school districts in five southwestern Ohio counties. They offer approximately 50 different career and technical programs.

Once the grant was awarded, a very short period of time was available between moving from concept to implementation (less than 6 weeks). A critical planning meeting was quickly scheduled where college math faculty met with CTE math faculty and they identified the most appropriate course to begin to teach as dual credit. Similarly, the college physics faculty member met with the CTE physics faculty member and they identified the most appropriate course based on student needs, instructor expertise, and likelihood of student success. At the end of this meeting, faculty (not administrators) had identified the courses to begin offering in January as well as courses to consider in future semesters.

A total of five courses in mathematics and physics were offered to 64 students. Student were in special sections of the CTE course—sections offered exclusively for those students taking the course for both CTE and college credit. Courses were offered at the CTE center, and taught by CTE instructors. The students taking the dual credit course were simultaneously CTE students and college students and earned credit for each. College resources such as academic advising, hosting on-campus college visits, assistance with the Free Application for Federal Student Aid (FAFSA) and access to online libraries were available to all participating students. Students were issued the university IDs and were given university computer accounts. Although certainly not required, most of the students taking the course for college credit wore the university lanyard around their necks (almost as a status symbol) throughout the course.

## **Literature Review**

The definition of dual credit or dual enrollment programs is fairly broad. Kleiner and Lewis (2005) defined dual enrollment as “high school students who earn college credit for courses taken through a postsecondary institution.” In their report, such courses could be taught on the college campus, on a high school campus or at some other location. In some cases dual credit is described as the Postsecondary Enrollment Option (PSEO) however PSEO is largely a program where the courses are taught by college faculty often on the college campus (Jordan, 2001). Barnett and Andrews (2002) distinguish between dual credit and dual enrollment. Dual enrollment is when students are concurrently enrolled and taking classes in high school and

college; whereas, dual credit is when students receive both high school and college credit for a college-level class that is successfully completed.

The Academic Pathways to Access and Student Success (APASS) study recently reported that dual credit courses are offered by high schools in all 50 states (Bragg & Rubin, 2005). The number of dual credit programs continues to grow and such programs seem to be gaining momentum (Andrews, 2001; Andrews, 2004). Boswell (2001) reported that 38 states have instituted policies to promote dual credit programs. Kleiner and Lewis (2005) found that during the 2002-2003 academic year, 48 percent of all Title IV degree-granting institutions had high school students taking dual credit courses. Initially dual credit was targeted toward the high achieving students in college prep curriculum.

Tech prep began nationally in the 1980s with federal backing to increase the number of technology-skilled workers. Carl D. Perkins funds (1984) were made available to encourage school districts to offer programs allowing student progression from high school to a two-year college. In the early 1990s these funds were offered to all 50 states for tech prep programs with core curriculum integrating rigorous academic education with career technical education (ODE, 2009).

Farmer (1998) identified research priorities for future study related to tech prep. The areas identified allow researchers the ability to evaluate the progress of tech prep programs in achieving its goals. Ruland (2003) identified an evaluation model to assess program and student outcomes related to tech prep programs. The wide varieties of tech prep offerings provided by individual states make assessment and comparisons across state lines difficult. States must identify performance related to seven essential program elements and four core indicators. Ruland acknowledged the difficulty in creating a single evaluation model for all tech prep programs regardless of location. States have flexibility to evaluate and report performance according to their needs. However, some standardization would allow for comparisons when looking across state lines and meet the accountability requirements for the federal funding.

Ohio's tech prep offerings began with the 1993-94 school year. Tech prep is a dual credit program offered exclusively by Ohio's career technical/vocational high schools receiving Carl D. Perkins federal funds (ODE, 2009). Tech prep is vocational program specific and allows students the ability to receive dual credit in a particular career. Articulation agreements are in place so that students can matriculate to the college/university following high school allowing smoother transitions and the opportunity for the student to complete a degree, certification, or both (Lewis, 2008).

Lewis (2008) examined the effectiveness on improving academic performance of high school students and linking secondary to postsecondary instruction. Lewis' examination looked at available data from studies and reports to determine the effectiveness of programs of study (POS) also known as tech prep. In some instances the lack of studies relating student achievement after high school at postsecondary institutions made the determination of effectiveness untenable. Lewis concluded that to produce higher achievement following high school completion academic components must be strengthened through correlation with vocational relevance.

Vocational education has been often considered the track for low-achieving, non college-bound students (Palmer and Gaunt, 2007). Past research has shown that the typical CTE student performs somewhat lower academically (Levesque and Hudson, 2003) and is more economically disadvantaged (Campbell, 1986; Levesque and Hudson, 2003). In the past students who followed the path of a Career Technical Education (CTE) were being trained to enter the workforce immediately after high school. However, as the need for a more educated workforce continues, more and more CTE students are participating in some kind of postsecondary program (Grubb, 1999). Attention is now being paid to strengthening the transition from career pathways to college (Karp and Hughes, 2008). According to the Ohio Department of Education, the mission of CTE high schools is “Provide quality programs and services to meet the lifelong career education needs of Ohio’s youth and adults as well as the ever-changing demands of the present and future workplace” (ODE, 2008, p. 3). Dual credit is the next logical step for Ohio’s CTEs to meet the new demands of the workplace. Clark (2002) documented the existence of dual credit courses in a variety of high schools including CTE centers. Such programs are especially important for the student who may not initially think of herself/himself as college bound.

The benefits of such programs are numerous. They include reducing the amount of time students spend in college, increasing access to postsecondary schooling, improving the high school curriculum, strengthening the coherence between high school and college curricula, helping colleges recruit students including minority students, easing the transition to college, and reducing college costs (Boswell, 2001; Hoffman, 2005; Harnish & Lynch, 2005; Kronholz, 1999; Marshall & Andrews, 1991; Robertson, Chapman and Gaskin, 2001). For some students dual credit is their first exposure to post secondary education and plants a seed that higher education is possible.

Bailey, Hughes and Karp (2002) in their review of existing literature found that the majority of students who participate in dual credit programs do continue in some form of post-secondary education. This finding was further confirmed by Smith (2007). Smith found that there was a positive contribution of participation in dual credit programs to increased educational aspirations. More specifically, she found that those taking dual credit courses at the college campus had higher educational aspirations than those taking the classes at the high school. At a time when it is critical that more students continue a post secondary education, Smith’s findings are especially important. Not only does research indicate that student who participate in dual credit programs continue in post-secondary education, Kim and Bragg (2008) found that dual credit hours earned had a positive relationship with college readiness. In particular, students who earned dual credit hours had a significantly positive relationship with college readiness in mathematics.

Few publications were identified which actually surveyed student satisfaction with dual credit programs. Peterson, Anjewierden and Corser (2001) report the results of a student survey given to over 600 students who participated in a very large scale effort facilitated by Salt Lake Community College. They report that of the students they surveyed 26% of students were completely satisfied with their dual credit experience, 41% were very satisfied, and another 29% were satisfied (Salt Lake Community College, 1999). In this same survey 56% of respondents

reported that participation in the dual credit program affected their decision to attend college in the future.

Even fewer publications are focused exclusively on career technical education. One notable exception is Karp et al. (2007). Karp et al. (2007) completed a large-scale investigation of whether dual credit programs were a useful strategy for encouraging postsecondary success including those in CTE programs. More specifically they analyzed two large-scale existing data bases for CTE students participating in dual credit programs in Florida and New York City. They found that CTE students who participated in dual credit were more likely to: graduate than those who did not, more likely to enroll in college, more likely to enroll in a four-year college, more likely to have a higher GPA, and more likely to progress faster in the post-secondary degree.

## **Purpose**

The literature indicating that dual credit programs lead to positive outcomes is enlightening. However, high achieving students are likely to attend college with or without the experience of a dual credit course. Initial evidence suggests that such dual credit programs may be especially valuable in CTE centers where some students are not in a college track curriculum. The purpose of the paper is twofold. The first purpose is to describe whether the program we created on such short notice was successful according to student perceptions. We defined program success based on whether the student was satisfied with their experience, whether the dual credit course was more challenging than their high school courses in the same discipline and whether students left the course feeling college ready and/or college motivated. The second purpose of the paper is to provide a summary and guidelines for those at CTE centers wishing to start similar programs.

## **Setting**

An Ohio career technical/vocational high school (referred to as CTE center) partnered with a local university to offer dual credit courses to all students regardless of vocational program. Students were required to take the university's placement test prior to enrolling in any dual credit course. The CTE center enrolls approximately 2000 high school students from 27 districts encompassing five surrounding counties. The university is a branch campus located near the CTE center.

The CTE instructors selected to deliver the dual credit courses met the requirements as adjunct instructors for the university. The courses selected were based on transferability to other postsecondary institutions as well as a wide applicability towards degree completion independent of program of study. Although this particular dual credit program occurred at a CTE center in cooperation with a local university, similar programs could be provided by typical high schools. As this program has expanded other CTEs and comprehensive high schools are offering dual credit programs.

## **Procedure**

During the spring of 2007, fall of 2007, and spring of 2008, the CTE center and the university offered courses in Physics I and II with labs, Intermediate College Algebra, Statistics, and Pre-Calculus to 64 students. Courses were offered at the CTE center, and taught by CTE center instructors. CTE teachers were qualified as part time instructors by the university. Most had subject area master's degrees acceptable for appointment and meeting criteria according to North Central Faculty Accreditation. Additionally, CTE faculty worked closely with the university faculty mentors regarding syllabi, courses, experiments and lab plans. Each CTE teacher had an assigned college mentor.

The ACT Compass assessment was used to determine the current math and reading skills. Students needed to score at a certain level to qualify to take the college course. Students used the same syllabus, textbook, and had very similar assignments and exams as those taking the same course at the university. The CTE and university faculty met several times throughout the semester. The CTE faculty members kept detailed portfolios on the course and student work. They included every assignment, exam, homework assignment given over a 16-week term. They kept samples of student work, e-mail exchanges with the university, and student performance records.

At the conclusion of each course, a comprehensive assessment was completed by an outside consulting firm. Sixty-four dual credit students who participated during the past three semesters were interviewed by phone. Additionally, two focus groups were held to further illuminate and explain survey results. Lastly, all of those involved in the project (the instructors, the administrators, and the admission coordinator) answered several questions identifying the most important aspects of creating such a program.

## **Assessment of the Dual Credit Experience**

### **Demographic**

All students (64 in total) completed telephone surveys that evaluated the program. Of those, 40 enrolled in the math courses and 24 enrolled in the physics courses. All students reported they were Caucasian. Thirty-one students were male and 33 were female. When asked their age when they began the course, 28 students indicated they were 16, 31 reported they were 17 years old, and five students said they were 18. Thirty-eight students were enrolled in the 11<sup>th</sup> grade and 26 participants were 12<sup>th</sup> graders.

### **Overall Satisfaction**

When students were asked to give an overall rating of the course, the vast majority (94%) rated their experience in the course "excellent" or "good" (Table 1). A higher percentage of math students (58%) ranked their experience as "excellent" than the physics student (29%); however, overall, all of the feedback was extremely positive.

Table 1

*Overall, how would you rate your experiences in this course?*

	Excellent	Good	Average	Fair	Poor
Overall (n = 64)	47%	47%	5%	2%	0
Math (n = 40)	58%	42%	0	0	0
Physics (n = 24)	29%	54%	13%	4%	0

Focus groups also indicated students had many positive things to say about the dual credit program. When students were asked what they liked best about the dual credit program, they responded that they liked the cost (free because of state funding); they liked receiving credit for both CTE center and college; and that they appreciated taking courses at the high school rather than traveling to a college campus which saved them time and money. Students commented that they liked the instructors teaching the course and felt they were both capable and had good attitudes. When asked what they did not like, they reported that the courses were more challenging than they expected. They reported that they have and do recommend the dual credit course to other students who are willing to put in the necessary work. Lastly, students commented that they liked being taught by the CTE academic teachers. They felt a college professor would be too intimidating.

### **Parental Support**

One-hundred percent of students considered their parents to be either very or somewhat supportive of them enrolling in a dual credit course. In fact, 77% of students maintained that their parents were very supportive. When students were asked whether they discussed enrolling in the course with their parents, 95% indicated that they did.

### **Difficulty of Course**

Table 2 indicates that about 83% of students felt the course was much more or somewhat more difficult compared to their other courses. However, 100% of the physics students either found the course much more difficult or somewhat more difficult. While most of the students found that the course was more difficult, only 61% of students found that there was more homework compared to their high school classes in the same subject (Table 3). Related “difficulty” is the “course speed.” As one would expect, the majority of students (83%) found the speed of the college course to be faster than that of their CTE academic courses.

Table 2

*How difficult was this course compared to other courses in which you were enrolled at MVCTC?*

	Much More	Somewhat More	About the Same	Somewhat Less	Much Less
Overall (n = 64)	46%	37%	10%	3%	5%
Math (n = 40)	26%	46%	15%	5%	8%
Physics (n = 24)	79%	21%	0	0	0

Table 3

*How much homework did you have in this course compared to other courses you have taken in the same subject?*

	Much More	Somewhat More	About the Same	Somewhat Less	Much Less
Overall (n = 64)	22%	39%	28%	9%	2%
Math (n = 40)	13%	48%	28%	13%	0
Physics (n = 24)	38%	25%	29%	4%	4%

The focus group results further illuminate the survey findings. When comparing the learning experience of college to that of CTE, students felt that the dual credit classes were faster paced and more challenging. Students reported that the homework was more difficult and they found it difficult to adjust to the college due dates. The classes were smaller which gave them more one-on-one time with the instructor and they believed that the students in this program were a higher caliber than the other high school students.

### **College Preparation and Aspiration**

Students were asked several questions relating to their future college experiences. After completing the course, table 4 shows that 80% of respondents “definitely agree” when asked “Enrolling in this course will help me be better prepared for other college level courses in this subject and another 16% probably agreed. Related, nearly 47% of students indicated they were very confident in their ability to do college-level coursework and another 47% indicated they were “somewhat confident” (table 5). At the end of the class, almost all students 98% reported that they were either very confident or somewhat confident in their ability to be accepted to a 4-year college. One student explained to the CTE center administrators that prior to taking the dual credit course he personally was not sure he could succeed in college. He explained that his

parents had not attended college and it was simply such an unknown that he did not consider it. He felt that because of this experience, he was seriously contemplating going to a local college.

Table 4

*Enrolling in this course will help me be better prepared for other college level courses in this subject.*

	Definitely Agree	Probably Agree	Unsure	Probably Disagree	Definitely Disagree
Overall (n = 64)	80%	16%	2%	3%	0
Math (n = 40)	83%	15%	3%	0	0
Physics (n = 24)	75%	17%	0	8%	0

Table 5

*How self-confident are you in your ability to do college level coursework?*

	Very Confident	Somewhat Confident	Somewhat Unconfident	Very Unconfident
Overall (n = 64)	47%	47%	6%	0
Math (n = 40)	53%	45%	3%	0
Physics (n = 24)	38%	50%	13%	0

### **Faculty and Administrator Feedback**

In addition to the surveys completed by high school students, the faculty and administrators were asked to reflect on the experience and respond to two questions: 1) what was the most important thing you (we did) to make this program a success and 2) what would you do differently if you did this again? Five groups of people responded to the questions: university administrator, CTE administrator, university faculty, CTE academic faculty, and the university admissions coordinator.

With respect to the first question “What did we do to make this program a success,” almost all of those interviewed commented on the relationship building between the high school and the university. One university faculty member commented that “I got a good idea of who I was working with and we started building a relationship/partnership from the start.” A faculty member from the high school stated that the single most important thing we did was to “develop

a relationship.” He further explained that in order for a dual credit program to be successful there must be trust from the university that the CTE center is offering the same course. Several faculty and administrators commented on the usefulness of the regular visits between the two faculty and staff groups. Other ideas that faculty and administration felt were important to the success of this program were: having the CTE students visit the university campus, using the standard entry requirements for placing into the course using Compass, the criteria of a 3.0 overall GPA to enroll in the class, and the extensive assessment of both course content and student perceptions. The director of Admission and Financial Aid spoke to the importance of having strict timelines for applications and skills assessments. She also talked about having all parties that are remotely responsible for the program (including business services, admissions, student services) at the table early in the process.

When asked what “you (we) would do differently if we did this again” responses ranged from involving more administrative offices from the beginning to taking more time to evaluate which students are ready for this type of course. A CTE academic instructor highlighted the fact that this course was delivered at a much faster pace and care must be taken to carefully screen students. He felt that seniors (not juniors) were better prepared to handle the fast pace and are also more focused on college. Both the CTE and the university physics faculty commented on the importance of determining long term viability prior to implementation. In our case, once funding ran out, we continued the program but because students had to pay a portion of the college tuition, enrollment dropped. In the case of physics the enrollment dropped so low that we were unable to offer a section of the course. This was extremely frustrating since the physics faculty at both the university and the high school were vested in making this program succeed. Perhaps more than the math faculty, the physics faculties created opportunities engaging both college and high school students completing a group project involving launching 2-liter bottle rockets at the university campus. While there seems to be enough interest to sustain the math classes at the CTE center we need to identify ways to promote interest in the physics classes.

## **Discussion**

CTE students found their dual credit experience overwhelmingly positive. This is consistent with prior literature (Peterson, Anjewierden and Corser, 2001). Recall that their survey of over 600 students report 96% of students were satisfied to some degree with their experience. That finding was almost replicated exactly with this study finding 95% of the students ranking their experience as either good or excellent. In fact, one can argue that the CTE students evaluated the course more favorably than students taking the same course at the college campus. Students were appreciative of the fact that they could earn college credit while staying on the CTE center and some were very appreciative of having their instructor teach the course. It comes as no surprise that the parents involved in this program were supportive of their efforts. In this case, 100% of college tuition was paid. The parental support may point toward the need to direct some of the dual credit marketing efforts toward the parents.

Regarding difficulty of the course, the majority of the students found the course to be more rigorous than their CTE academic courses. Recall from the literature review that one of the benefits of incorporating dual credit into a high school curriculum is to increase the rigor of the high school courses. This paper provides further support for such claims. In this particular case,

the physics courses were evaluated to be more difficult than the math courses. While this could be explained by the course content, it may also be explained by the instructor. The physics courses were taught by the same instructor and all math courses were taught by the same instructor. Like any course at any level, some teachers are perceived to be more difficult than others. In this case some of the math classes (intermediate algebra) were relatively low level for a college course which may explain some of the difference between the two groups. Another factor that may further explain the difference is the math courses where a repeat of information previously learned by the students in their middle through high school math classes. However, the physics course presented new material and information previously not seen in this context by the students.

Two of the most compelling arguments to bring dual credit experiences to CTE schools are it better prepares students for college and also increases the likelihood they will attend college. Students in this study overwhelmingly felt like the course better prepared them for college. As one student put it “I have a lot to change about my study habits to succeed in college.” Another student who took both physics and math explained to us that neither of his parents attended college but having succeeded in both college math and physics he was now starting to seriously consider it. While this study cannot claim that the dual credit experience improved the likelihood of attending post-secondary school, we do know at the conclusion of the course, most of the students in the dual credit course were confident in their abilities to get accepted into a college (Karp et al., 2007).

## **Implications for Educators**

### **Relationships**

Perhaps the single most important factor that attributed to the success of this program was the focus on the relationship between the college faculty and the high school faculty. When the project began, the university professors were extremely skeptical of the ability of a college course to be taught in a high school setting by a high school teacher. They were concerned about the high school environment, about the credentials of the high school teacher, and about whether the course would be taught with the rigor that would qualify it as a university course. In time, this skepticism dissipated. As university faculty and high school faculty got to know one another, the university professors were increasingly convinced that the courses were being taught at a college level. Such relationship building was facilitated by scheduling regular meetings throughout the term in which all groups got together, by e-mailing throughout the term, and by actual classroom visits in both direction.

### **Identification of Appropriate Courses**

In the very first meeting, the faculty at the high school and the faculty at the university decided together which physics course and which math courses to offer. The only role the administrators played in this decision is that they identified the high school faculty who were qualified to teach college level and they identified the college faculty who would be willing to work on such a project. Because the high school teacher knew the students and because the

university faculty member knew the content of the course, it was critical that the specific courses that were chosen were done so at the faculty and not the administrative level.

## **Mentoring**

The math high school teacher was paired with a university professor and similarly the physics high school teacher was paired with a physics professor. The university professors shared all of their course material, teaching techniques, visited the classrooms while the high school teachers were teaching, and kept in close contact electronically. As with many mentoring relationships, the mentors learned much from their mentees. Over time, the relationship became less of a mentoring relationship and more of a “two colleagues sharing information” relationship.

## **Rigor**

Because this was the first time the university had participated in any dual credit initiatives, university administration and faculty proceeded cautiously. High school students taking these courses had to have a 3.0 GPA, they had to have parental consent, and they had to place into the course through ACT Compass scores. In addition to rigorous entry requirements, the exams, assignments, homework, and laboratories were very similar in content and difficulty as those given in the on-campus section of the course.

## **Authenticity**

Because the CTE students remained on the high school campus it was important to give them as much of an authentic college experience as possible. All students participating in the program visited the university on more than one occasion. Initially, they came for orientation. Like all students at the university they were issued IDs and were given full access to the university’s library and on-line resources. High school instructors emphasized the fact that this was college, not high school and that their work would be going on a transcript. Students needed to follow the same drop dates as every other student at the university. In the case of physics, the high school students came to campus and “shot rockets” with their peers on the college campus.

## **Assessment**

All of the math courses and all of the physics courses were heavily assessed. Students were telephone interviewed and two different focus groups were held. In addition to student interviews instructors met regularly to identify what was going right and what needed adjustment. For instance, after teaching physics for a term, the high school teacher determined that the way the lab was scheduled at the high school he/she simply did not have time to complete the college laboratories when considering set up and break down. The difference in class time (40 minutes for high school 5 days per week versus 1 hour 15 minutes 2 days per week lecture plus a 3 hour lab period once per week for college) resulted in approximately the same amount of seat time for students. However, the lab time presented a new problem regarding completion of college lab requirements at the high school while allowing the student the ability to ‘see’ the purpose/relationship to the topic. College labs involve multiple steps that a 40 minute period cannot accommodate. The following semester physics was double blocked.

Instructors also kept a detailed portfolio of the course. This portfolio included syllabus, homework, quizzes, exams, and lab reports. It included sample student work as well as e-mails of correspondence between the high school and university physics instructors. Such assessments were helpful in motivating university administrators to expand the program.

### **Showcasing the Work**

It was very important that the right people learn about the success of the dual credit program. State legislators, university department chairs, high level administrators, local high school administrators were invited to a session which showcased the work and the assessment of this work. The event was well attended and virtually all of the attendees left with a very positive impression of the work. It was so well received that one legislator requested a meeting with the University President the next day to talk with him about the success of the program. It was not simply enough to pilot and learn from our experience. It was critical that those who influence policy learn of these efforts.

### **Conclusions**

Given Karp et al. (2007) findings that CTE students who participated in dual credit were more likely to: graduate, more likely to enroll in college, more likely to enroll in four year college and more likely to progress faster in post-secondary degrees it is especially important that we develop more dual credit programs for student who may not initially be college bound. Dual credit experiences are appropriate and necessary at CTE high schools. Faculty, administrators and students alike all provide feedback that indicates high quality dual credit programs in CTE centers can be set up with college and university partners in a very short period of time.

Recall that there are two purposes of the paper. The first was to describe student perceptions of a dual credit program. This paper indicates that students in a CTE program found the dual credit experience positive, the courses more rigorous than the CTE academic courses, the courses better prepared them for college, and the students were more confident of their ability to be accepted into college. However, the descriptive data reported in this study is limited. One cannot conclude any causal relationship. Future work needs to identify whether taking a dual credit course actually causes the student to feel more prepared for college and whether that feeling translates into actual college admission. The second was an assessment of the most important factors to consider when setting up similar programs. Such factors include creating an environment where relationships can flourish, keeping the identification of which dual credit courses to offer at the instructor level, creating a formal mentoring relationship between college and high school faculty, maintaining a rigorous curriculum, extensive assessment of the course and showcasing the work to those who influence policy.

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