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# Academic Standards in Career and Technical Education

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**A**LL PUBLIC SCHOOLS ARE REQUIRED to meet Adequate Yearly Progress (AYP) in order to avoid stiff penalties, per the No Child Left Behind (NCLB) Act. This presents a unique challenge for comprehensive career and technical (CTE) schools. While there is an emphasis on the CTE path that students are interested in pursuing, academic areas must be mastered with proficiency in order for a school to be successful (in this case, as defined by the Pennsylvania System of School Assessment, or (PSSA)). In addition, graduation in select districts is dependent upon proficiency. For a comprehensive CTE school to survive, it must have a sustainable teaching model that aligns and integrates career and technical skills with math and reading anchors. Central Tech, a comprehensive career and technical school in Erie, Pennsylvania, has developed a working model for achieving this integration.

For each student at Central Tech, daily instruction includes English, science, social studies and mathematics; this is in addition to a CTE area which encompasses the other 3.5 periods of the day. Historically, CTE has been underestimated in its ability to help students achieve academic success. At Central Tech we are working to change this way of thinking.

## Making the Grade

In 2003, Central Tech's PSSA scores reflected 19 percent student proficiency in math (out of the 36 percent required for proficiency) and 30 percent in reading (with 45 percent needed). The school was considered a failing school in the eyes of the Pennsylvania Department of Education. The administration, staff and students set out to make changes in the school's performance. The first step was to form a School Support Team made up of

teachers and administrators. This team scrutinized all aspects of the school to find a means of academic improvement. It addressed issues ranging from student and staff morale to staff development. A key area that surfaced was a need to align the academic standards with CTE programs. As part of the Perkins Act, which provides federal funding for career education, the federal government requires CTE schools to integrate academic standards into the CTE curriculum. Central Tech's career and technical instructors reviewed all competencies for their training areas and aligned them with the Pennsylvania standards in math and reading. In 2004, the school's scores more than doubled in reading and math and it was on the road to meeting AYP. In 2006, the school achieved its goal of meeting AYP.

The teachers and the administrative team

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wanted to continue the success. Since the percentages required for AYP increase in three-year increments, the next goal was to create a model that would allow Central Tech to further improve its performance. This model developed as some of the school's academic teachers pushed into the career and technical programs and co-taught with the instructors. Appropriately, this has come to be referred to as the "push-in" model.

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### **"Push-In" Model: The Vision**

CTE provides a bridge between the world of work and the world of education. Schools in the state are under increasing pressure from the federal mandates of NCLB, and employers, to educate students who are proficient not only in their career and technical skill areas, but also in the Pennsylvania anchors for reading and math. Central Tech's goal is having students apply the anchors to their career areas and becoming well-rounded employees. In order to achieve these goals, a number of dramatic changes needed to occur.

The first change had to occur at the teacher level. In order to achieve success, CTE teachers had to first have a solid understanding of the reading and math anchors established by the Pennsylvania Department of Education. Next, they needed to integrate reading and math anchors into their curricula. Finally, English and math content teachers had to understand how to apply PSSA anchors to CTE labs.

### **"Push-In" Model: Program Components**

Central Tech adopted a new teaching model that aligned and integrated CTE and academic goals. Math and reading content teachers are "pushed-in" to CTE labs on a rotating schedule. This schedule allowed math and English teachers to come into contact with all students in grades 9-12 for approximately one hour a week per discipline. A vital advantage to this model was that no additional funding or resources were required. The academic teachers assigned to the push-in model were referred to as resource teachers. The main goal of the resource teacher was to meet and plan with the individual CTE teachers to develop 30-minute lessons. These lessons incorporated the math or reading anchors in a manner that related directly to the CTE lab where the lesson was taught. At the CTE lab, the academic teacher taught a short lesson on a specific anchor while

the CTE teacher observed. When the academic teacher finished, he or she observed as the CTE teacher applied the anchor presented to their skill area.

Feedback was positive from both academic and CTE teachers. Candyce Ross, an English resource instructor who pushed-in to several different CTE labs to integrate reading anchors, stated, "The teachers sit with us and work along with the students, giving their input as to how the skills I am teaching will help them specifically in their field of study." Michael Bieter, Microsoft IT Academy instructor said, "I really enjoyed the interactive quality of the push-in model. I could watch the kids show the resource teacher how they apply skills learned during the lesson to programming and networking."

### **Sustaining the Model**

An important component to the success of this model has been preplanning. The CTE instructor and the academic teacher need to meet in advance to plan a lesson. For example, after learning the current topic of study in a pre-conference, the reading instructor pushed-in to Central Tech's Protective Services Lab with an article to read on firefighting. The students read this career-related article and wrote about it using a summarization technique. In another lesson, the math teacher focused on career-related math with a review of measurement in a carpentry program.

Mark Rutkowski, carpentry instructor, said, "The students enjoyed talking to the math teacher in shop and showing off their technical skills, they were teaching each other." Central Tech's Pennsylvania High School Coaching Initiative staff has been instrumental in all stages of this model. Scheduling, professional development and resources (career-related articles and trade journals) have been provided. Lesson plans and materials are catalogued and kept in the coaching office for future use. In addition, feedback has been facili-

tated by coaches in the form of professional learning communities, and curriculum study and development with CTE instructors and resource instructors. This has created regular opportunities for collaboration so that problem areas can be addressed, and successes can be celebrated.

This model will help the school achieve its new goals. CTE teachers gain a much better understanding of math and reading anchors, while math and English teachers gain insight into how to apply math and reading anchors to CTE labs. Because the model facilitates organization of subject matter in a way that builds on a student's prior knowledge and experiences, the end result is true integration of academic and career and technical skills.

Several components need to be in place for the integration project to be successful. While educators must be aware of the 11th-grade PSSA and their impact on it, Central Tech made it clear from the beginning that this is a teaching model and not an assessment model. Schools already have many assessments of student performance in place; at some point the students must learn the material necessary to succeed.

At press time Central Tech did not have its 2007 PSSA results, but educators there come away with two important documents that validate the push-in model. One is a document that integrates career and technical standards with Pennsylvania math and reading anchors. The second is a catalogued set of career and technical lab-specific lesson plans that integrate math and reading anchors with CTE skills.

Teachers and administrators at Pennsylvania's comprehensive CTE schools should agree that career and technical educators are now required to train students who are proficient in industry-standard career and technical skills, as well as state math and reading standards. The ideas presented in this integration model can and will help this school meet those goals. ■