Case Study

Jefferson County-DuBois Area Vocational-Technical School
Reynoldsville, PA

The Pennsylvania CTE Best Practices Initiative is documenting the promising practices that Pennsylvania Career and Technical Education administrators and teachers are utilizing as they work to improve program quality and student results.

Jeff Tech’s Key Strategies At-A-Glance

• **STAR** (Stop Everything and Read) used on a school-wide basis.

• **Math instructors** work with CTE instructors to create linkages between academic math and its technical applications.

• **CTE and academic colleagues** collaborate to link together content from multiple disciplines.

• **“Integration Day”** incorporates academic and technical skills while engaging the entire school and all disciplines around a central theme.

• **School leaders** meet regularly with each instructor to review students’ scores on PSSA and NOCTI tests.

• **Eight special education instructors** provide on-site support to students.
Introduction


Jeff Tech is a full-time, comprehensive career and technical center (CTC) that serves 460 students in grades nine through 12. Admittance of ninth-grade students began in 2008. As a comprehensive CTC, students who attend Jeff Tech take academic courses (math, science, English, social studies, health, physical education) as well as career and technical education (CTE) courses. Jeff Tech currently offers 15 CTE programs. There are 15 CTE instructors, 14 academic instructors and eight learning support specialists (provided by the school district and funded by the sending districts).

The CTC completed a $12.6 million dollar renovation project in 2006. Classroom and program areas were updated with the addition of 15,000 square feet and two new program areas were added.

The school’s vision is to “meet the needs of the community by offering courses designed to provide skills for entry-level employment and opportunities for postsecondary education.” Because there is no local community college in the area, the school provides opportunities for high school and adult learners. Jeff Tech offers career and technical training for adults through full-time enrollment for one year and also through various evening classes.

As of 2010, the leadership team at Jeff Tech is in the early stages of a process designed to improve the school’s performance. The process began with the arrival of Marsha Welsh as Jeff Tech’s administrative director (equivalent to a superintendent) in Fall 2007, and continued with the selection of a new principal in April 2008 and the addition of a new position, assistant principal, in August 2009. The leadership team has launched a number of new initiatives that are promising, but have not yet yielded clear outcomes. Jeff Tech is putting a particular focus on efforts to improve the integration of CTE and academics, using data as a tool to improve programs and provide active support for special needs students.
The Pennsylvania CTE Best Practices Initiative, carried out by the Meeder Consulting Group in partnership with the PDE-BCTE, is documenting the strategies used by CTE programs to create standards aligned systems and to support those systems with people, processes and partnerships. All of these strategies are aligned to the goal of increasing academic and technical achievement among students.

Leaders and teachers in Career and Technical Education (CTE) programs that improve are very intentional about achieving student success. They thoughtfully develop a Standards Aligned System, and support that system with people, processes and partnerships to deliver results.

Pennsylvania has adopted the SAS (Standards Aligned System) as a comprehensive approach to improvement of student achievement across the Commonwealth. The SAS model is supported by six elements: Clear Standards; Interventions; Materials and Resources; Instruction; Curriculum Framework and Fair Assessment.

More information about the SAS Model can be found at www.pdesas.org.
Incorporating Literacy and Numeracy Strategies into CTE

The administration and staff at Jeff Tech are developing a culture of integrating the school’s academic course curriculum with the CTE curriculum. The goal of this effort is to offer a more meaningful learning experience for students in both areas. The instructors are expected to incorporate math and literacy in their classes, and the leadership team’s goal is to provide instructors with a planning period at the beginning of each day specifically to work on integration activities.

The instructors at Jeff Tech are working to integrate reading, writing and math improvement initiatives in their classrooms. The entire school participates in a reading program called STAR (Stop Everything and Read) once per week, with students in every class spending 22 minutes in sustained reading in an area of interest. This strategy is intended to build an ethic of reading for learning and pleasure across the entire school.

In math workshops, the students work on calculator exercises with the support of math instructors and learning support staff who circulate around the room. These classes provide an opportunity for building student camaraderie as well as training learning support staff who assist the students.

The English instructors are working on several initiatives, including helping students with note-taking skills and coordinating with the school librarian to secure fiction and non-fiction book sets that correspond to CTE content areas (for example, “Tuesdays with Morrie” was selected as literature that relates to the healthcare CTE program).

Math educators provide workshops, such as joint math classes in the school cafeteria, to strengthen student understanding and competent use of scientific calculators, particularly for use during PSSA testing.

The auto mechanics instructor assigns 30 minutes of reading time at the beginning of each class period. Students read their textbooks first, then they are free to read materials of their choice. Students will refer back to what they read in class while they are working on their applied CTE assignments. For writing practice, the students write in their journals weekly about what they learned that week. The seniors’ journals are reviewed by the English instructors for grammar and spelling. Students also work with the English instructors to create a resume.

The welding instructor began developing an integration-based senior project for students in his CTE program in the 2000-2001 school year. This “Supervision Project” incorporates writing, research, math, science and OSHA safety. The goal of the project is for the senior student to function as the supervisor of a metal fabrication project. He or she oversees a team of fellow students and guides them through the project phases of planning, design, scheduling, purchasing, cost estimating and product
fabrication. The senior is responsible for documenting the team’s performance through daily reports as well as a final report. Students gain an appreciation for teaching and leading as well as learn whether or not they would like to one day be a supervisor in the workplace.

Students in the Digital Media program worked with their instructor and the math teacher to select a math term and prepared a written description of the term. They conducted research to find instances within the digital media field in which the term was being used. Finally, they created a visual representation of the term on a poster. The instructors documented the process they followed so that it can be replicated by other CTE programs. The math instructor commented that part of his goal is to “leave teachers with tools that they can continue to use.”

Build Relevance through Cross-Curricular Linkages

Instructors at Jeff Tech collaborate to link together CTE and academic disciplines as well as to link together content from multiple CTE programs. One popular initiative among instructors and students is the annual “Integration Day,” a special event where students from all CTE programs are brought together in the gymnasium for the day. The theme for the 2008-2009 school year was Japan. Leading up to “Integration Day,” students read the book “Hiroshima” in English class and studied the Japanese culture in social studies. Students from the CTE programs contributed to the event with the culinary program preparing Japanese food, the Building Trades program building tables and the Cosmetology program providing Japanese hair and makeup styling. Following the event, students wrote newspaper articles about the event in English class.

Another example of cross-program collaboration is a new Blueprint Reading class that was started in 2009-2010. The drafting instructor initiated this nine-week class, which is offered to 10th grade students in the Carpentry, Drafting, Machine Shop and Welding programs. The instructor explained that there is a “general understanding that students need to interact with other related shops.” In the class, he uses blueprints from all disciplines as tools to teach students fractions, measuring and blueprint reading skills.
Provide Extra Help to Strengthen Academic and/or Technical Achievement

Approximately 31 percent of students at Jeff Tech have Individualized Education Programs (IEPs). The instructors and staff place a strong emphasis on meeting the individual needs of students with special needs. A parent complimented the school’s support services by saying, “There is a great support system for students who are academically challenged.”

To support these students, Jeff Tech has a unique arrangement with one of its sending schools, DuBois Area School District. The eight special education instructors at Jeff Tech are employees of DuBois, but their services are provided on-site at Jeff Tech and are available to all students, regardless of their sending school district. Instructors, along with four full-time aides, provide a continuum of support services, including participation in regular education classes with support, co-teaching and pull-out classes.

According to the special education instructor all instructors make sure the needs of struggling students are met, and she added that Jeff Tech has a philosophy that “good accommodation for special ed students will help the other students too.”

Be Intentional and Systemic About Change

One of the most important philosophies at Jeff Tech is to try new ideas and approaches, and if they don’t work, learn from the experience and try something else. For example, in the past, Jeff Tech received state grant funding for English and math tutoring. The administrators found that the terms of the grant limited their flexibility about when students could enter and exit the tutoring program. As a result, starting in the 2009-2010 school year, Jeff Tech now operates the program with local funds, allowing them flexibility to reach more students and to better motivate the students to succeed.

The administration also solicits input from students and instructors when appropriate. In an effort to help students improve their PSSA scores, the leadership team created a student committee in 2009 to make recommendations on how to improve the test-taking experience.

Make Program and Instructional Decisions Based on Data

Administrators at Jeff Tech recognize the importance of accessing and analyzing data to drive key program and instructional decisions in order to meet the needs of students and the community. They are taking steps to increase instructors’ access to and understanding
of student performance data on the NOCTI (technical skill assessment) and PSSA (state academic assessment) exams.

The assistant principal has placed special emphasis on making testing resources such as test blueprints (which describe the key skills and knowledge included in a test), sample tests and student performance results available to students, parents and instructors. Many of these materials are available on the Jeff Tech website under the newly created “Testing Resources” section.

During the 2009-2010 school year, the assistant principal met individually with all CTE instructors to review their students’ NOCTI and PSSA scores. All instructors were trained to analyze data from the 4Sight tests in relation to PSSAs. 4Sight tests are diagnostic reading and math assessments that are designed to predict student performance on the PSSA tests. The 4Sight tests can be administered multiple times to track student progress prior to taking the one-time PSSA in 11th grade. As a result of these conversations, some instructors are making changes to improve their curriculum and its alignment to the NOCTI and PSSA exams. For example, one CTE instructor has begun formatting his tests in the style of the PSSA and also incorporates some PSSA questions into his tests. Reviewing the test blueprints with instructors helps them to focus their curriculum.

A similar review process was conducted with the NIMS, a national assessment of machining skills and knowledge. As a result of the review, the machine shop instructor determined that it would be better to test seniors twice (once after the winter break and again at the end of the year) rather than just once at the end of the year. This way, he can adjust his curriculum based on the pre-test results and students will have a second opportunity to pass the exam.

Administrators and instructors at Jeff Tech have built a strong support network among the local community and businesses. Business partners, such as the North Central Workforce Investment Board, described their role as “making sure instructors are teaching to industry standards and current technology and have the tools and materials they need.” They also promote Jeff Tech to the general public and provide opportunities for students to learn hands-on skills and gain exposure to a real-world workplace.

Students enrolled in the LPN (licensed practical nursing) program participate in work-based learning at a local nursing home. A representative from the nursing home indicated that most of the facility’s LPNs are graduates of Jeff Tech.

Jeff Tech offers the only Lumbering-Logging program in Pennsylvania. A local wood products company offers students in the program the unique opportunity to gain hands-on experience working in the forest. Students are given a work-based learning experience through the company, and many have been hired as full-time employees after graduation.
RESULTS

Students who have met the required proficiency level on an end-of-program NOCTI assessment are awarded the Pennsylvania Skills Certificate. Of the 88 students who graduated in the Class of 2007, 63 earned the Pennsylvania Skills Certificate on the following occupational assessments: NOCTI – 41, NIMS – 6, NATEF – 8 and PA Cosmetology Exam – 8.

**Cosmetology State Board Exam** (Cosmetology Students)
- Out of 8 seniors in the class of 2010, 6 are licensed, 1 is waiting to test in theory exam and 1 chose not to test.

**Nurse Aide State Board Exam** (Health Assisting Students)
- 2 students took the exam and passed receiving their PA Nurse Aide Certification.

**NIMS Exam** – National Institute of Metalworking Skills (Machine Shop Students)
- 1 student passed 7 sections, 1 student passed 5 sections, 1 student passed 4 sections, and 2 passed 3 sections.

**Jeff Tech Testing Results***

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<tr>
<th>11th Grade PSSA Scores Percentage of Students Achieving at Proficient and Advanced</th>
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<tbody>
<tr>
<td>2008-2009</td>
<td>2009-2010 (preliminary)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading</td>
<td>40.6%</td>
<td>43.5%</td>
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<tr>
<td>Math</td>
<td>28.1%</td>
<td>31.7%</td>
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<tr>
<th>12th Grade NOCTI Scores Percentage of Students Scoring at Each Level</th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Advanced</td>
<td>Competent</td>
<td>Basic</td>
<td>Below Basic</td>
</tr>
<tr>
<td>2008</td>
<td>43%</td>
<td>6%</td>
<td>13%</td>
<td>38%</td>
</tr>
<tr>
<td>2009</td>
<td>46%</td>
<td>15%</td>
<td>15%</td>
<td>23%</td>
</tr>
<tr>
<td>2010 (preliminary)</td>
<td>58%</td>
<td>13%</td>
<td>12%</td>
<td>17%</td>
</tr>
</tbody>
</table>

* Data provided by Jeff Tech

FUTURE GOALS / NEXT STEPS

The school leadership team and staff at Jeff Tech will continue to build upon their efforts in CTE and academic integration, support for special needs students and using data as a tool to improve programs. One specific goal is to provide instructors with a planning period at the beginning of each day specifically to work on integration activities.

As a comprehensive school that offers both academic and CTE programs to students beginning in the ninth grade, there is great potential at Jeff Tech for significantly impacting student academic gains and achievement on technical skill assessments. The leadership and staff will continue working to reflect on achievement data, and make concerted efforts to impact student achievement, graduation rates and successful transitions to postsecondary education and skilled employment.
THIS CASE STUDY WAS PREPARED BY HANS MEEDER AND JENNIFER GRAMS OF MEEDER CONSULTING, LLC (WWW.MEEDERCONSULTING.COM), A FIRM SPECIALIZING IN LEADERSHIP AND ALIGNING EDUCATION SYSTEMS WITH WORKFORCE NEEDS, ON BEHALF OF THE PENNSYLVANIA BUREAU OF CAREER AND TECHNICAL EDUCATION.


INFORMATION ABOUT CTE IN PENNSYLVANIA CAN BE FOUND AT WWW.EDUCATION.STATE.PA.US/PORTAL/SERVER.PT/COMMUNITY/CAREER_&_TECHNICAL_EDUCATION/7335/.

LAST UPDATED NOVEMBER 18, 2010

Resources
Jeff Tech • www.jefftech.org
4Sight Testing• www.successforall.net/elementary/4sight.htm
Pennsylvania Department of Education - Bureau of Career and Technical Education
www.education.state.pa.us/portal/server.pt/community/Career_&_Technical_Education/7335/

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The Pennsylvania Department of Education does not discriminate in its educational programs, activities or employment practices based on race, color, national origin, sex, sexual orientation, disability, age, religion, ancestry, union membership, or any other legally protected category. This policy is in accordance with state law, including the Pennsylvania Human Relations Act, and with federal law, including Title VI and Title VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Age Discrimination in Employment Act of 1967 and the Americans with Disabilities Act of 1990.

The following persons have been designated to handle inquiries regarding the non-discrimination policies:

FOR INQUIRIES CONCERNING NON-DISCRIMINATION IN ALL OTHER PENNSYLVANIA DEPARTMENT OF EDUCATION PROGRAMS AND ACTIVITIES
Pennsylvania Department of Education
School Services Unit Director
333 Market Street, 5th Floor
Harrisburg, PA 17126-0333
Voice Telephone (717) 783-3750
Text Telephone (717) 783-8445
Fax (717) 783-6802
Pennsylvania provides a critical state investment of approximately $62 million in funding for CTE, including some funding for competitive equipment grants, adult training and about $5 million for high school reform efforts including teacher preparation.¹

Pennsylvania supports 85 career and technical centers, 141 school districts and 44 postsecondary institutions offering Career and Technical Education. These career and technical centers, colleges, universities and private postsecondary institutions offer over 2,100 secondary approved programs, over 1,000 postsecondary programs and over 500 adult programs.

¹ Pennsylvania Area Career and Technical Education Schools 2009 Report

To strengthen the impact of the state’s investment, the Pennsylvania Department of Education is implementing a multi-faceted improvement plan. This plan addresses critical issues facing career and technical education in Pennsylvania, including workforce development and academic preparation.

For more information on Pennsylvania CTE and the Best Practices Initiative, visit the Pennsylvania Department of Education – Bureau of Career and Technical Education website at: www.pde.state.pa.us/portal/server.pt/community/Career_&_Technical_Education/7335/

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