

BRIDGING THE GAP: THE CLASSROOM AND THE “REAL WORLD”

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The Center for Applied Technology and Career Exploration in rural Franklin County, Virginia was created to improve students' career choices in an area with high unemployment. The Center is a unique endeavor because it represents a total community effort in preparing students for the American workforce of the 21st century. Community leaders, business and industry representatives, local colleges and universities, parents, and teachers have worked collaboratively to develop the curriculum used by the Center. Focused on problem solving, critical thinking, and rigorous study, this curriculum emphasizes advanced technology skills and hands-on learning.

Origins of the Center

Franklin County Virginia Public Schools—a system of 6,959 students and 509 teachers—serves a rural population. Forty percent of the population over 25 years of age does not have a high school diploma, and 32% of the students qualify for free or reduced meals. In order to address this issue, the voters of Franklin County approved a school bond referendum in November, 1994. This bond was \$14,684,000, of which \$6,000,000 was used to set up the Center for Applied Technology and Career Exploration. Local businesses, parents, professors, and community groups worked cooperatively with the school system to open the Center in 1997 with the purpose of integrating technology into the academic program, so that students at a critical age, specifically girls and minorities, could see the possibilities and long-term benefits of their educational efforts. In addition, the Center devotes a large majority of its focus to the female and minority populations.

Program Description

All Franklin County eighth graders spend one full semester at the Center. Those ninth graders who choose to continue studying at the Center select three areas of study from among eight career modules: arts, engineering/architectural design, environmental/natural resources, finance, health and human services, legal science, manufacturing, and media design. Each of the eight career modules includes technology skills specific to the selected career focus. The modules also integrate into each career investigation content outlined in the Virginia Standards of Learning [1] for core subjects: language arts, social studies, math and science. In the technology

field, students master skills in areas such as, understanding storage retrieval and transmission technology; becoming proficient in keyboarding and word processing; creating complex documents with databases and spreadsheets; using local and worldwide networks; developing hypermedia home page documents; and, applying technologies to problem solving and critical thinking activities. Within each curriculum module, students master applications specifically designed for the real-world workplace. The library is electronically based, and the Center has an interactive laboratory for distance learning and multimedia communication.

Modules

Some excerpts from our web site [2] and a short summarization of three of the modules, Engineering/Architecture Design, Finance, and Health and Human Services are given below.

Engineering and Architectural Design

Would you believe it if someone told you students understood how to do CAD designs before they reached their sophomore year in high school? Or perhaps that students even understood how to develop interior and exterior design layouts? What if someone told you that students were working on a transportation project with the Virginia Department of Transportation?

Students in this module gain practical and intimate knowledge of the challenges and opportunities offered in the fields of engineering and architecture, by using hands-on activities to solve real-life problems. The “interns” encounter a variety of problems that require them to work both individually and in teams, such as creating floor plans for a house and some new playground equipment. Through this activity, the interns: examine how structures influence the skyline in urban environments; explore interior design and tower design; and, look at dam and road construction. Their study of road construction consists of calculating route and construction costs of the alternatives with local engineers of the Virginia Department of Transportation, as well as examining the impact of the interstate on local economy and environment.

Finance

Did you ever think that someone at the age of fourteen could understand the principles behind finance? How about understanding how to manage their money? What if they could even understand the principle concept of consumerism, and how it affects jobs and international trade agreements?

Interns in this module explore three facets of finance—job acquisition skills, consumer skills, and money management skills— in order to bring to life realistic financial situations that they may well encounter as adults. Among some of the activities, they are required to write a résumé, complete a job application, attend classes on appropriate dress and deportment, and finally, participate in a job interview. As their studies progress, they receive a paycheck and are encouraged to open an account at the “First CATCE Finance Bank” where they receive personalized checks and statements, and are allowed to make deposits and withdrawals. By the end of their studies, the interns gain an intimate knowledge of reading financial documents, managing credit card debt, calculating net pay and withholding taxes, and evaluating insurance policies through their positions at the bank. Their daily progression through the chores and responsibilities associated with such concepts as corporate structure and the principles of sole proprietorship, brings this module to life.

Health and Human Services

What would happen if there was a tanker disaster on school property? How would you prepare for any mishaps on camping expeditions? And how do you educate the public about wellness?

These are just some of the aspects of a module aimed at preparing the interns for all the facets of the health and wellness field. The interns are trained in the areas of problem solving, crisis management, and wellness. Working with technology to determine the answers to complex problems, such as controlling infections and ecological disasters, requires the interns to effectively communicate their ideas through the use of spreadsheets, multi-media presentations, and parliamentary procedures used in town hall-like settings. From the larger situations, interns move on to the fundamentals of managing individual crises associated with emergencies; they are taught how to assess situations, make contact with emergency personnel, assist the victim(s), and provide solutions. Interns are shown that learning first aid and earning CPR certificates is not enough; they must also exercise the critical thinking skills necessary to become efficient, caring, and technologically prepared health care workers. To further their understanding of how some crises may be avoided, instructors teach the interns the value of nutrition. They learn the nutritional merits of foods, how to count fat grams and calories, and the long-term benefits of exercise. Running a health care facility not only emphasizes how many occupations are needed to maintain a well-run organization, but also that maintaining healthy lifestyles means happier, more productive employees.

Staff

Teachers serve as mentors and learning facilitators. All activities are based on the students' need to experience hands-on learning and develop critical-thinking and problem-solving skills. Teachers are committed to providing discovery learning through electronic research and multisensory experiences using presentation software. Innovative assessment procedures require students to develop electronic portfolios to showcase the work they do. Virtual environments, digitally performed original music compositions, animation clips, digitally generated images, web pages, composite drawings, and multimedia presentations are some of the products shown in students' portfolios.

Teachers have many opportunities for staff development, most of them in the world outside the school system. Many work directly with local businesses to learn the realities of the profession represented in the modules, and all attend conferences and take college courses in related fields. A typical example is the two-week trip to the New York Stock Exchange by the two teachers planning the finance module. Teachers receive extensive technology training through a five-year, \$1.5 million grant from the Department of Education Technology Innovation Challenge Grant program.

Technology Infrastructure

The Center provides one computer for every two students, and all classroom spaces are linked to the schools' intranet and other networks, such as the internet. A library-like virtual center replaces the traditional media center; and, a state-of-the-art interactive laboratory, equipped with a rear-screen projection system, interactive whiteboard capability, a document camera, outlets for laptop computers, and a touch panel lectern, is also available. Because of its advanced nature, local businesses, community groups, and higher education institutions also make use of this laboratory, thereby creating yet another link between the Center and real-world businesses and institutions.

Students use CD-ROMs, videodiscs, and numerous online and electronic resources to conduct research. Teachers discuss responsible use of these electronic resources, and students are trusted with unrestricted access. In each career module, students also work with software used in business and industry. For example, students analyze crime scenes in the Legal Science module with advanced image processing; they develop computer-generated composite images of their classmates. In the Media Design module, students use PageMaker and PhotoShop to create

brochures and flyers. High-end Macintosh workstations are available to create CD-ROMs and video segments for the web while studying television production.

Future Challenges

While implementation of the Center for Applied Technology and Career Exploration has progressed smoothly, it is not without its challenges. For example, the almost overnight creation of new software and equipment often does not allow the Center's teachers to learn to use the new materials in advance of their students. The evolving curriculum, team planning sessions, and the need to constantly update technology skills require a great deal of teachers' time off-contract.

Conclusion

At the Center for Applied Technology and Career Exploration, curriculum delivery is provided in an applied, hands-on fashion. Students are immersed in real problems posed in manageable units of study and projects, so that instructors may serve as facilitators, guiding students toward practical solutions. Along the way, students are also taught the value of skills that are implied, but not listed in a job description; such as, cooperation, listening, sharing information, being goal oriented, articulate, and organized. Thus, real-world applications of their studies are enhanced by the opportunity to directly apply learned content through technology and personal skills.

It is our mission statement at the Center that what students learn should: be relevant to family, community, and workplace; be student-centered and performance-based; and, stem from mastery of curriculum objectives jointly developed and maintained by community leaders and educators. Ultimately, the Center's efforts will bridge the gap between the classroom and the "real world" so that **all** students may become effective members of a dynamic workforce. ■

References

- [1] *Standards of Learning for Virginia Public Schools*, Board of Education, Commonwealth of Virginia, Richmond, VA, 1995.
- [2] Center for Applied Technology and Career Exploration Web Page, <http://www.frco.k12.va.us/catce1/cmain.htm>

INTERVIEW WITH PAUL STRICKLER

Q: What career path did you follow to reach your present position? Is this what you originally aimed for, or were there twists that brought you here?

A: I taught public education in North Carolina for seven years before going back to graduate school for a Master's degree and Ph.D. in Education Administration. The twist was that in teaching in a poor county in North Carolina, I saw how education for the poor folk was not what I got and being white, middle class and having a strong family in the city. I have always dreamed of a school that truly did for the children, loved the children, educated the children—no matter what—and provided that extra measure of "whatever" that we got. To me, it always seemed that the poor and the minorities in this country had to start the race about a hundred yards back from the starting line. And everyone else blamed them because they couldn't finish the race like the other people.

Q: Have you been involved in similar programs before? Was there a particular moment or stimulus that caused you to begin this project?

A: This is the biggest innovation for me and the one I have felt has come the closest to what I have dreamed about. The rest of my work has been trying to promote a climate of trust and goodwill toward children and have them believe that we are truly on their side, and not just saying that and doing something else. You can tell if a school is built around the children in a very short period of time once you enter the building. Children who are smiling and educators getting into instruction is very clearly seen. Learning is not a "neat" process of rows of desks and quiet children.

Q: Have there been any unique or unexpected consequences for you resulting from your project?

A: Unexpected consequence—NO!—I always said that innovation and being in front of the pack is difficult because the pack wants to pull you back or take shots at you until they catch up. The hardest group of people to win over is the middle-to-upper class white parents who got to where they are by traditional schooling and most likely being in the college-bound tracks, and wanting nothing less for their child.

Q: Are you able to identify the greatest lesson you have learned and the rewards you have gained through working with the Center for Applied Technology and Career Exploration? What is the greatest benefit you see coming to students—and teachers—through their engagement with this project?

A: The greatest lesson to learn in any innovation is to have strong support during the time one is trying to put the program in place. Next, would be that innovation is costly and again the support is necessary to success. A very supportive superintendent is a must!

Rewards are many: (1) I was there from the beginning and understand it like we wished it to be; (2) the staff has been great—true innovators and dreamers of what education could be in this country; and, (3) the faces of the children who are the winners in this. Until this past year, I have never had a child that came to me as principal and said, "Thank you for letting me be here."

What is the greatest benefit? That is easy--let's all hope that public education learns to do the right things in educating the children in this country and stop the politics. The politics are killing education. How would you like to have the governor of Virginia and friends telling your doctor how the by-pass surgery should be done?