

January 1, 2004

SECTION: COVER STORY; Pg. 26

LENGTH: 4426 words

HEADLINE: School to Career: Reworking the Model

BYLINE: Barry Burke

HIGHLIGHT:

Vocational education, once the noncollege prep track, has evolved with the times and the changing work force. Now called career and technology education, it's playing a major role in driving high school reform toward smaller learning communities and more focused futures for students. Here, we look at one district's approach.

BODY:

Once the high school track for kids who might lack the aptitude, interest, or economic means to pursue a higher education, vocational education solely focused on preparing students for industrial jobs. But with today's understanding that all individuals will have a career—a major shift in thinking from the past—the nature of what is now commonly termed career and technology education has changed. Part of this new way of thought is to view college not as an end, but as a beginning of learning, and it is the high school's mandate to both train and teach all students through programs that pair technical training with higher-order thinking skills.

Thirty years ago, students in auto mechanics classes learned how to fix a car. In today's auto technology classes, they blend practical skills with more complex thought, applying math concepts, for instance, to problems in an automobile's electrical system. By the same token, the straightforward drafting or architecture courses of the past have become a CAD (computer-aided design) training ground, where students apply geometry, physics, design constructs, and material science to make decisions about roof shapes and the best materials to resist weather.

Another significant evolution is the physical change schools have undergone in the past 30 years. American high schools today are bigger and more impersonal than ever before, with approximately 70 percent with more than 1,000 students enrolled and nearly 50 percent with more than 1,500 students. Isolation, apathy, and a feeling of alienation from peers, the school, and the community is often the fallout for students. Indeed, research confirms that smaller learning communities create environments for students that are more personal in nature and more focused on their futures.

But how do we go about instituting change in our schools, and what might the new model look like? Montgomery County Public Schools in Rockville, Md., is a pioneer of the academy model. What follows is their blueprint for a first phase of reform.

Relevance-

Organizing by Career Clusters

The smaller learning communities model is a nationwide, research-based school restructuring design that supports the development of small, safe, and focused learning environments in high schools. Career clusters are the foundation of the smaller learning communities and are grouped by common academic and technical skill sets needed for postsecondary education and employment in each category. The model supports a blending of the rigorous academic and applied learning tracks to ensure that all students have a sense of the opportunities in their future and are prepared to pursue those interests upon graduation from

high school. These career clusters provide the basis for developing smaller learning communities around career-themed programs in high schools, and a continuum of themed activities in middle school. For a sampling of cluster topics, see Montgomery County Public Schools Career Clusters, page 29.

Rigor - The Themed Approach

It is no secret that students who see a reason and a purpose for learning are far more engaged than those just going through the motions of attending class to fulfill graduation requirements. A recent follow-up MCPS study of graduates six years after high school found that students that completed programs in career and technology education were better prepared for their future

http://www.mcps.k12.md.us/departments/accountability/pdf/surveys/Career_Ed_report.pdf

However, it is important to visualize the approach to developing student potential as a small, safe, and focused learning environment that utilizes the skills of a team. In the past, instruction was delivered in an isolated environment where students rarely made connections between what they did in their academic courses and their career and technical courses. The concept of the themed approach combines both types of courses so that each teacher has an equal role in the class cluster. For example, if a student is enrolled in an information technology academy, then the teachers of core academic courses and the teachers of technical courses are all delivering instruction structured around that theme.

Academies - A Fancy Name for Vocational Education?

Hardly! Academies are an organizational structure within a school - a school within a larger school environment. For instance, a high school of 2,100 students may have seven academy themes, based on the career clusters, to choose from. This places roughly 300 students in an academy-and hence the smaller learning community. The schools decide upon their own themes based on the strengths of their school, the interests of their students, and needs of the local work force. A school may choose to have an academy of law and government, biotechnology, information technology, business and finance, travel and tourism, or a host of other themes. Each, however, is focused around a career cluster, and will have at least two pathways that a student may choose. The figure below shows the relationship between a career cluster and a pathway.

The Restructuring Challenge

When one considers the complexity of a high school today, it is mind-boggling to think about changing the structure to create smaller learning communities for students. The task does not need to be that daunting. Here are some tips to get started.

1) Recognize the need for school-wide change: Often, the principal will set out to develop a program for kids who are not college-bound. Through exposure to models in the National Academy Foundation, which offers built-in programs that schools might customize to their individual needs, the principal can see the components of a successful model. Beginning small, like instituting a single starter academy for ninth graders, is the best way to show the community and staff that student achievement can increase using the academy model.

2) Involve the community: As with any team building exercise, the principal must engage the community to get their feedback. The most successful changes have occurred where the community plays an active role in the reform effort. Bringing the PTA in after the fact is a sure formula for failure.

3) Build staff capacity: Teachers and building support staff are critical to the success of the initiative. In the Maryland State Department of Education model, the most successful process has been to bring together the leadership staff-administrators, counselors, teachers, PTA representatives, core academic teachers, and career and technology teachers-to actively discuss and brainstorm ways to create career academies in the school.

4) Identify appropriate career themes and challenges: For example, schools might identify their current outstanding programs as computer science, math, business, and social studies. From there, they might identify corresponding careers, such as information technology, business management and finance, engineering, international studies, and biotech. These themes do not have to be set in stone, and changes can be made in the future. The staff should also assess their needs based on the nine defining features

listed on page 28. For some schools, the biggest challenge maybe be the physical layout; for others, the challenge may be in scheduling seven different career cluster academies in the same building.

5) Develop advisory boards around the career themes: These boards should be comprised of representatives from the industries that the school has identified as the career themes. The advisors will help guide the development of blended instruction, give advice on course content and structure, and provide work-based opportunities for students throughout their high school experience.

6) Focus on professional development: The blending of instruction between academic and technical teachers is probably the biggest challenge. Most core academic teachers are familiar with the course format for instruction, while career and technical teachers are familiar with the program format—a sequence of courses that prepares the student in a focused area of study. Bringing the two methods of instruction together to create a program of study that includes all the courses necessary to graduate is a mind shift that all teachers must make in order for the academy to be successful. For example, if the theme of the academy is engineering, then all the courses that a student is enrolled in must deliver the standards of engineering. One approach is to have teacher teams visit a range of businesses relevant to the clusters in which they'll be teaching, and to develop lessons and a common vocabulary together. For example, a summer program in Montgomery County had teacher teams visit Bell Atlantic, the Nuclear Regulatory Agency, the National Institute for Standards in Technology, a biotech firm, and the zoo for a firsthand look at the work environments their students are preparing to enter.

What's Next?

For institutions as slow to change as the American high school, imagining that broad reform will transpire with any haste is naive. But with the sweeping changes we've seen in business models and the economy in recent years, the outsourcing of service professions overseas, and the wild fluctuations in technology-related enterprises, it cannot be denied that all students need the best preparation we can offer. The academy approach—with its incorporation of the practical and the conceptual—is one of many models that focus on teamwork, individual responsibility, and a personalized educational experience. With these skills as a basis, it's likely students will enter the work force armed with assurance, the ability to apply knowledge, and a realistic idea of what it takes to succeed.

Barry Burke (barry_burke@

mcpsmd.org) is the director of career and technology education in Montgomery County Public Schools in Rockville, Md. In 2000, he served as the president of the International Technology Education Association, and has been on the writing teams of the Standards for Technological Literacy and the Advancing Excellence in Technology Education Program Standards.

The Changing Workforce

As the global workforce has changed, so has the definition of the well-prepared worker.

According to the Bureau of Labor Statistics, the number of skilled jobs rose 45 percent from 1950 to 2000. These skilled jobs require more specialized training than a high school diploma, but not necessarily a four-year college degree. The U.S. Department of Labor claims that "another challenge is the long-term shift from goods-producing to service-producing employment associated with a dramatic increase in the demand for knowledge workers—people whose jobs require formal and advanced schooling. Knowledge workers now account for a third of the American workforce, outnumbering factory workers two to one." This fact alone calls for a dramatic change in the way we prepare students for their futures.

Research: Smaller Schools Are Better

Here is a sampling of the research findings driving current high school reform efforts.

- Small learning environments are a condition for boosting student achievement (Williams, 1990).

- School size has positive effects on student outcomes as evidenced by students' attendance rates, frequency of disciplinary actions, school loyalty, use of alcohol or drugs, satisfaction with school, and self-esteem (Raywid, 1995; Klonsky, 1995).

- Studies have confirmed that students learn more in high schools with enrollments of about 600 students (Williams, 1990).

- Enrollment size has a stronger effect on learning in schools with large concentrations of poor and minority children (Cotton, 1996).

- Research ultimately confirms what parents intuitively believe: that smaller schools are safer and more productive because students feel less alienated, more nurtured and more connected to caring adults; and teachers feel that they have more opportunity to get to know and support their students (Fowler and Walberg, 1991; Gregory, 1992; Stockard and Mayberry, 1992).

- Making schools smaller provides the environment that enables school staff and students to more easily implement and adjust effective practices (USDE, 2001).

- Students in smaller learning environments have better attendance, are less likely to drop out, have fewer discipline problems, and many perform better academically (Northwest Regional Educational Laboratory, 2002).

In fact, the growing body of research supporting the small school as the preferable learning environment is beginning to catch the attention of educators nationwide. Federal, state, and regional school leaders, more concerned than ever with student achievement as mandated under NCLB, are seeing this as a first serious trend in the direction of school reform.

See a bibliography of the research studies at <http://www.techlearning.com>.

What Does an Academy Look Like?

Academies may take on many different configurations depending on the size of the school and the commitment of the school staff and the community. In general, there are nine defining features of an academy. These defining features, or organizational concepts, must be addressed in an academy in order to be fully functional and ensure student success.

Nine defining features of a career-themed academy

- Sequence of academic, technical, and elective courses leading to advanced training/education
- Quality career and technology education completer offerings and non-CTE sequences
- Related work-based learning opportunities
- Exploration activities prior to high school
- Entrance, transfer, and exit policies
- System of guidance, advisement, and mentoring
- School staffing organized to support academies
- Physical structure and schedule modifications
- Opportunities for staff development (professional learning communities)

For additional information and descriptions of each defining feature, visit the Maryland State Department of Education Web site (<http://www.msde.state.md.us>).

Montgomery County Public Schools Career Clusters

- Arts, Humanities, Media, and Communications

- Biosciences, Health Science, and Medicine
- Business Management and Finance
- Construction and Development
- Education, Training, and Child Studies
- Engineering, Scientific Research, and Manufacturing Technologies
- Environmental, Agricultural, and Natural Resources
- Human and Consumer Services, Hospitality, and Tourism
- Information Technologies
- Law, Government, Public Safety, and Administration
- Transportation, Distribution, and Logistics

Rethinking Our Roles

In Montgomery County, the academy model has had a significant impact on changing the roles of educators and other stakeholders at every level in the district. Here, we take a look at the core skills that district has identified.

What Every Principal Should Know About Career-Themed Academies

- Know your community
- Know the strengths of your staff
- Involve all staff in deciding which academies to offer
- Commit the resources to have academic and technical teachers working together
- Understand that to reform the school will take time
- Some teachers will not like the change-help them find academies that match their interests
- Build strong business partnerships that provide support first and funding second
- Develop professional learning communities around the academy's nine defining features
- Stay on course-it's not easy and the transformation takes time

What Every Counselor Should Understand About Career-Themed Academies

- Believe that all children will have a career
- Work with parents to interpret academies as opportunities for students to achieve at a higher level
- Develop background knowledge of the work force needs of the community in order to leverage student internship and work-based learning opportunities
- When scheduling students, it is critical that students be given the opportunity to explore their career possibilities
- Help all children see themselves in their future
- Build relationships and actively participate with teachers in professional learning communities about academies

Building Relationships Between Academic and Technical Teachers

- All teachers are responsible in helping students develop skills appropriate for the career theme
- Believe that all children will have a career

- Develop lessons around career themes
- Provide opportunities that are career focused for all students
- Work together to find appropriate work-based experiences for students
- Help students to develop their strengths and understand their weaknesses with regard to their career aspirations

The Role of the Business Community

- Work with elementary, middle, and high schools to promote opportunities in the career clusters
- Provide mentoring and internship opportunities for students at all levels
- Build relationships with teachers to develop authentic learning activities
- Encourage employees to get involved with schools that adopt the career theme of their industry
- Help schools develop their strengths and understand their weaknesses with regard to their career offerings

- Provide guidance and validation for school curricula

What Every Parent Should Know About Career-Themed Academies

- Every child will have a career
- College is a means to a career-not a goal in and of itself
- It is just as important for students to know what they don't want to do as it is for them to know what they do want to do
- Smaller learning communities and career academies are the best possible learning environment for their child
- A work-based experience related to a child's high school experience strengthens their understanding of the relevance of education

What We Can Expect Every Student to Learn

- The application of what is learned in high school can help a student to be successful in their future
- College is a means to an end-not the end to learning
- Education is a lifelong endeavor
- It is just as important to experience what they don't want to do as well as what they enjoy doing
- Each student will have at least three different jobs in their lifetime-some of which may not even be a career in today's world
- The computer is a tool and technological literacy is a lifelong skill
- The ability to access information and make informed decisions is a required skill
- The ability to see themselves in their future is the best road map to success

Learn More About Careers

Check out the following eclectic sampling of career-related resources, among the latest to cross our desktops.

Online

AutoDesk offers a range of CAD and other software products and also regular Webcasts. The company's Design Academy seminars focus on architecture and building design, GIS and mapping, mechanical design

and engineering, visualization and animation, and more.
usa.autodesk.com/adsk/servlet/index?siteID=123112&id=1011767

The Career Voyages Web site, a collaboration between the Departments of Labor and Education, provides a variety of resources to students to explore careers. Included are tools for viewing the fastest growing careers in the United States, careers with the most job openings, and state-by-state information on the hottest jobs. <http://www.careervoyages.com>

EdGate Career and Technical Center is a new online resource that helps prepare students for a wide range of careers and technical positions by providing current interactive information on today's workplace opportunities. Included are career WebQuests, job preparation tools, classroom curricula and best practices, and college and career FAQs. <http://www.edgate.com>

Publications

Diversity/Careers in Engineering & Information Technology is a bimonthly national magazine that covers technical and career issues that are geared toward disabled, minority, and women engineers and information technology professionals. <http://www.diversitycareers.com>

Products

Immersion Corporation is creating a range of products using haptics, which enables people to feel realistic tactile sensations using technology. Student designs from a haptics course, developed through a partnership of Immersion and the Academy of Art College in San Francisco, include a walking stick for the blind with built-in direction cues, a dog collar that "virtually" pets the animal, and more. <http://www.immersion.com>

Several companies offer CAD software. TekStar International (<http://www.tekcad.com>) makes TekCAD 2 and TekKit. Archway Systems (<http://www.versacad.com>) makes VersaCAD 2003.

Programs

From Macromedia and Washington State OSPI comes Digital Design: Foundations in Web Design. The two-semester course teaches professional Web design fundamentals to high school students, with a focus on work skills, project management, design, technical skills, and research and communication. The program is published by Course Technology. <http://www.course.com>

SolidWorks Corporation offers educators a full curriculum on 3-D CAD. Courseware includes project-based exercises, design projects, lesson plans, homework, assessment and correlations to math and science curricula. <http://www.solidworks.com>

C-Tech Associates offers certified training programs in communications networking for the education market. Among them is C-Tech Prep, where students work in a cooperative learning environment, thinking critically and solving problems through project-based activities about copper and fiber optic cabling systems. <http://www.c-techtraining.com>

Read about additional certification programs from: Apple, Certiport, 3Com, Cisco, Element K, Microsoft, Oracle, Student Tech Corps, and Sun at techlearning.com/story/showArticle.jhtml?articleID=15202086.

Web Sites of Interest

- Career Futures (<http://www.career-futures.net>)
- Career Clusters (<http://www.careerclusters.org>)
- Educational Resources Information Center-Career Clusters (ericacve.org/docgen.asp?tbl=tia&ID=161)
- Information Technology Education Association (<http://www.iteawww.org>)
- National Academy Foundation (<http://www.naf.org>)
- Northwest Regional Educational Laboratory (<http://www.nwrel.org>)

- Serving Small Learning Communities (<http://www.nwrel.org/scpd/sslc/index.shtml>)
- Schools Making Progress (<http://www.nwrel.org/scpd/sslc/decsriptions/index.asp>)
- Project Lead the Way (<http://www.pltw.org>)
- U.S. Department of Education (<http://www.ed.gov>)
- Smaller Learning Communities (<http://www.ed.gov/programs/slcp/index.html>)
- Comprehensive School Reform Program (<http://www.ed.gov/programs/compreform>)
- Other Online Resources (<http://www.ed.gov/about/contact/gen/othersites/index.html>)
- Education Publication Center (<http://www.ed.gov/about/ordering.jsp>)

Other Resources

- Annenberg Institute for School Reform at Brown University (<http://www.annenberginstitute.org>)
- Coalition for Essential Schools (<http://www.ael.org/rel/csr/catalog/coalition.htm>)
- Education Week (<http://www.edweek.org>)
- New American Schools (<http://www.naschools.org>)
- Regional Resource and Federal Center Program for Special Education (<http://www.dssc.org/frc/rffc.htm>)
- The Small Schools Workshop (<http://www.uic.edu/depts/educ/ssw>)
<http://www.techlearning.com>

Copyright (c) 2004 CMP Media LLC

LOAD-DATE: January 8, 2004