October 2012

Trailblazers

Stepping Up to a *Nontraditional* Challenge

September Contents

Trailblazers Blog and Website are Now One

The original CTE Trailblazers website has been phased out and all of our material will now be available on a site that incorporates our blog. The old addresses remain valid, but the easiest way to reach us now is:

www.ctetrailblazers.org

Get Help Finding Data

New occupational employment projections for Virginia will be available soon. In the meantime, to learn more about how occupations are changing nationwide, check out the Career Cluster page on the Trailblazers blog at www.ctetrailblazers.org
Trailblazers can also provide more specific help using data for program and course planning, grant applications, and other purposes. Call us at **434-982-5582.**

Completer Follow-Up

Results for the CTE Completer Follow-Up Survey will be available soon. Keep an eye out for a notification email.

CTE™
Learning that works for Virginia

Key Industries for Virginia

To insure that Career and Technical Education programs are preparing students for real jobs of the future and not opportunities that have already passed by, it is important to target Virginia's key *industries* as well as key *occupations*. STEM Academies are already doing this. According to the Guidance Document, at least one of each of each academy's career pathways "must be in a field identified by a statewide authority or organization, such as the Virginia Economic Development Partnership or the Virginia Research and Technology Advisory Commission, as a strategic growth area for Virginia." While a requirement for the academies, this is good guidance for every school.

To help schools match their programs to industry needs, *Trailblazers* has been looking for industries highlighted by state agencies or organizations. The Virginia Research and Technology Advisory Commission hasn't published a list of targeted industries; however, Virginia's Economic Development agencies have.

The Virginia Economic Development Partnership now targets seven industries statewide and has developed specific marketing strategies to attract employers and to grow these sectors within the state. These sectors were identified using a combination of Virginia Employment Data, asset analysis of Virginia, and an analysis of industry and economic indicators including trend and growth projections. Virginia's seven target industries are:

1. Food Processing
2. Clean Energy
3. Biotechnology/R&D
4. Federal Security Agencies and Providers
5. Information Technology
6. Aerospace
7. Global Logistics

In addition to the statewide industry targets, local economic development organizations in many cities, counties, and regions have also developed targets of their own. For example, Montgomery County Economic Development is targeting six industries:

- Information Technology
- Materials & Chemistry
- Biotechnology & Life Sciences
- Advanced Manufacturing
- Research & Development
- Defense Technologies

Virginia's Gateway Region (the counties of Chesterfield, Dinwiddie, Prince George, Surry and Sussex and the cities of Colonial Heights, Hopewell, and Petersburg) is targeting a different list of industries:

- Advanced Materials
- Distribution & Warehousing
- Finance & Insurance
- Machinery & Equipment Manufacturing
- Metals & Related Manufacturing
- Wood Products & Furniture Manufacturing

You should be able to find more about the industries targeted for your area by contacting your city or county Office of Economic Development or searching for information on their website.

Virginia's Workforce Investment Areas have also developed lists of industries that are critical for Virginia's economy and are using these lists to guide their plans for workforce development. Their lists are based on calculations by the Virginia Employment Commission of the "value added" by each industry, a measure that includes employee compensation, rent, utilities, and services. They provide a list of the top 25 industries for Virginia as a whole and for each of its Workforce Investment Areas. You can download these lists here. (You can also download the WIA State Plan which includes further discussion of Virginia's critical industries.) These lists are also a good source of guidance on industries we should be targeting in CTE programs.

According to the WIA list, the 25 industries providing the most value to Virginia are:

1. Federal government, military
2. Federal government, non- military
3. Real estate establishments
4. State & local government, education

5. Wholesale trade businesses
6. Telecommunications
7. State & local government, non-education
8. Management of companies and enterprises
9. Credit Card and related industries (Nondepository credit intermediation and related activities)
10. Offices of physicians, dentists, and other health practitioners
11. Management, scientific, and technical consulting services
12. Food services and drinking places
13. Computer systems design services
14. Architectural, engineering, and related services
15. Banking (Monetary authorities intermediation activities and depository credit)
16. Private hospitals
17. Custom computer programming services
18. Insurance carriers
19. Construction of structures other new nonresidential structures
20. Electric power generation, transmission, and distribution
21. Legal services
22. Tobacco product manufacturing
23. Retail Stores - General merchandise
24. Construction of new nonresidential commercial and health care structures
25. Civic, social, professional, and similar organizations

Virginia CTE administrators and professionals should feel free to contact *Trailblazers* for help finding more information about industries targeted for their areas.

Dual Enrollment Improves Outcomes for California CTE Students

Virginia offers dual enrollment programs that allow students to earn transferable college credit while completing the requirements for a high school diploma. This can help students shave a full semester off their college degree and save thousands in expenses. In 2010-11, the most recent year for which VDOE publishes data, students in Virginia took over 20,000 dual enrollment courses, though, interestingly, this is down significantly from the 2009-10 school year when they completed 23,652 dual enrollment courses.

Career and Technical Education has been particularly eager to initiate dual enrollment programs, and most Virginia school divisions now have dual enrollment opportunities for CTE students. Consequently, new research on the effectiveness of dual enrollment in California CTE programs should be of interest to administrators across Virginia.

Recently, Concurrent Courses Initiative completed a three year study on whether dual enrollment provides academic benefits for CTE students. The study covered eight California high school-college partnerships with a range of CTE programs and focused on students who were from low income households, academically struggling, or from populations underrepresented in higher education. Overall, evaluation of the initiative found that those who participated had better academic outcomes than comparable non-participating students in the same districts. Participants were, on average,

- more likely to graduate from high school;
- more likely to transition to a four-year college (rather than a two-year college);
- less likely to take basic skills courses in college;
- more likely to persist in postsecondary education; and
- more likely to accumulate college credits than comparison students.

The dual enrollment programs studied varied in their effectiveness, and researchers found that three criteria were essential for program success:

- Building a strong connection and integration between high schools and postsecondary institutions;
- Embedding dual enrollment opportunities within career-focused, small learning communities (which encourages student participation by providing coursework with focus and relevance);
- Structuring classes so that they are perceived by students as an authentic college experience where they can "try on" the college student role and view themselves as capable of doing college work.

Simply adjusting course content to meet college-level standards without changing the way courses are structured or presented to students is not enough to improve outcomes for low income, struggling, or under-represented populations.

The report summarizes a number of course attributes that administrators should consider when trying to make dual enrollment programs more effective.

- Courses held on college campuses tend to be more effective because these courses give students a more highly authentic experience and access to college support services. This arrangement can be more expensive and difficult to manage, however, and some programs successfully locate dual enrollment classes at the high school.

- Instructors need help adjusting to this new format. College instructors teaching high school students for the first time often need help in understanding and connecting with them, while high school instructors teaching college courses may need to change their pedagogy to create an authentic collegiate environment.
- Students do better when courses are carefully selected to meet their needs. Classes that help students to develop study skills, establish career goals, and investigate colleges and majors give students tools for postsecondary success. Hands-on career-technical courses appeal to student interests and offer relevance to future employment.
- Dual enrollment students do better when they are in classes with regular college students. They are likely to display greater maturity and feel their college experience is authentic.
- The opportunity to receive credit for both high school and college is a significant incentive. Additionally, high schools should obtain student consent to view college transcripts, so they can play an active role supporting success.
- Timing of classes presents trade-offs. Integrating dual enrollment courses into the regular school day on the high school campus generally broadens the pool of students able to participate. However, in this arrangement, students may not strongly distinguish college courses from their high school courses. Offering courses after school on the college campus provides an authentic college experience but may conflict with students' other after-school responsibilities.

A detailed report on this research and policy briefs for educators are available from the Community College Research Center Publications page: http://www.concurrentcourses.org/publications.html

CTE and Urban Students

In recent years, education in the United States has experienced the dual problems of declining performance and global competition. Students' test scores in the U.S. have consistently fallen relative to students in other developed countries. Poor academic performance is the reason that over a million students fail to graduate from high school each year and forty three percent of postsecondary students fail to earn a degree within six years.

A number of educators have pointed out that the United States' low test scores are related to the number of schools with high poverty rates. Schools with fewer than 10% of students eligible for free or reduced lunch produce PISA reading test scores that are higher than any other country in the world. But in schools with 75% or more students eligible for free or reduced lunch, the average PISA reading test score was second to last among developed countries.

"CTE's Role in Urban Education," a paper released in August by the Association for Career and Technical Education, explores how our programs can help raise student achievement for low income students,

particularly in urban schools which have some of the highest concentrations of low income students. The paper observes that urban schools, on average, have a higher proportion of minority students and students with limited English proficiency. Both of these groups tend to score lower on tests and are much more likely to not complete high school or college. Additionally, the paper points out that it is not a coincidence that minorities, especially those in urban areas, have been disproportionally affected by the recent recession, experiencing much higher unemployment rates than other groups.

The paper argues strongly that CTE has a significant role to play in improving academic performance and completion rates in low income urban schools. The average high school graduation rate in urban schools is 53% compared to 73% in suburban schools. Studies have shown that the key cause of students performing poorly at school and dropping out is the lack of relevance. For example, the High School Survey of Student Engagement found that 42% of those considering dropping out didn't see the value of their schoolwork. 81% of dropouts said more "real world learning" could have kept them in school.

CTE can increase student engagement and help students in urban schools to gain more positive educational experiences. The combination of strong academic courses and technical training adds context to academic studies and gives coursework relevance to those at risk of dropping out of school. A number of studies have shown that the integration of academic coursework with CTE can result in students earning higher test scores than students taught through traditional methods.

In Virginia, more than two thirds of economically disadvanted students live in cities and urban counties. Nearly half of all students in Virginia's cities are economically disadvantaged. In larger cities such as Richmond and Roanoke, over seventy percent of students are eligible for free or reduced lunch. While urban counties have much smaller proportions of low income students, urban counties still have large numbers of low income students. Fairfax County alone serves nearly ten percent of all low income students in Virginia.

The large numbers and concentrations of low income students in Virginia's urban areas is a major challenge to teachers and administrators. But "CTE's Role in Urban Education" argues that urban school communities also offer many opportunities for expanding and improving CTE programs. The high concentration of businesses and organizations in urban areas provide urban schools with more potential partnerships. Partnerships can provide not only mentorships, internships and job opportunities for students, but also the important role of helping students experience the connection between their CTE coursework and the real workplace.

Free or Reduced Lunch Eligible Student Concentrations in Virginia

Locality	Total students	Low Income	Ratio	Total Population
Total cities & counties	**1,257,143**	**465,510**	**37%**	**7,992,781**

Locality	Total students	Low Income	Ratio	Total Population
Franklin city	1,271	996	78%	8,680
Roanoke city	13,094	9,820	75%	97,206
Danville city	6,330	4,690	74%	43,332
Hopewell city	4,284	3,171	74%	22,779
Martinsville city	2,317	1,645	71%	13,902
Richmond city	23,336	16,375	70%	206,238
Harrisonburg city	5,051	3,425	68%	50,057
Norfolk city	33,461	22,430	67%	243,985
Lynchburg city	8,688	5,595	64%	76,448
Portsmouth city	15,261	9,596	63%	96,368
Galax city	1,331	786	59%	7,125
Waynesboro city	3,274	1,822	56%	21,099
Winchester city	4,103	2,242	55%	26,167
Newport News city	29,948	16,321	54%	181,027
Manassas city	7,154	3,870	54%	39,060
Alexandria city	12,396	6,627	53%	143,464
Charlottesville city	4,175	2,210	53%	44,471
Staunton city	2,681	1,404	52%	24,222
Bristol city	2,409	1,209	50%	17,780
Hampton city	21,588	10,402	48%	137,372
Manassas Park city	3,019	1,366	45%	14,540
Suffolk city	14,420	6,450	45%	85,692
Fredericksburg city	3,270	1,456	45%	25,484
Radford city	1,573	657	42%	16,532
Petersburg city	4,534	1,857	41%	32,948
Norton city	904	353	39%	4,099
Colonial Heights city	2,902	1,091	38%	17,556
Buena Vista city	1,241	460	37%	6,881
Covington city	942	345	37%	6,092
Chesapeake city	39,468	12,604	32%	225,898
Virginia Beach city	70,978	21,531	30%	441,246
Williamsburg city	10,975	3,150	29%	14,256
Salem city	3,916	1,102	28%	24,970
Lexington city	521	86	17%	7,197
Poquoson city	2,232	299	13%	12,240

Locality	Total students	Low Income	Ratio	Total Population
Falls Church city	2,183	126	6%	12,567
Total Cities	**365,230**	**177,569**	**49%**	**2,448,977**
Sussex County	1,153	927	80%	12,056
Greensville County	2,612	1,873	72%	12,131
Cumberland County	1,478	1,043	71%	10,100
Highland County	217	153	71%	2,295
Northampton County	1,809	1,252	69%	12,433
Accomack County	5,132	3,545	69%	33,335
Lunenburg County	1,637	1,106	68%	12,967
Halifax County	5,840	3,747	64%	36,184
Buchanan County	3,310	2,120	64%	24,006
Henry County	7,463	4,779	64%	53,867
Essex County	1,627	1,041	64%	11,287
Brunswick County	2,030	1,283	63%	17,400
Grayson County	1,864	1,126	60%	15,470
Nottoway County	2,357	1,417	60%	15,907
Westmoreland County	1,726	1,029	60%	17,460
Mecklenburg County	4,791	2,840	59%	32,936
Lee County	3,594	2,128	59%	25,676
Prince Edward County	2,407	1,395	58%	23,518
Buckingham County	2,059	1,181	57%	17,143
Charlotte County	2,096	1,194	57%	12,565
King William County	757	431	57%	16,159
Patrick County	2,570	1,439	56%	18,635
Northumberland County	1,494	831	56%	12,449
Smyth County	4,810	2,670	56%	32,104
Surry County	928	503	54%	6,968
Wise County	6,246	3,329	53%	41,025
Pittsylvania County	9,245	4,891	53%	62,986
Scott County	3,922	2,055	52%	23,274
Carroll County	4,348	2,260	52%	29,748
Washington County	7,383	3,821	52%	55,179
Dickenson County	2,484	1,256	51%	15,762
Nelson County	1,983	988	50%	15,092

Locality	Total students	Low Income	Ratio	Total Population
Lancaster County	1,300	644	50%	11,463
Richmond County	1,177	579	49%	9,237
Alleghany County	2,728	1,340	49%	16,180
Page County	3,669	1,782	49%	24,155
Middlesex County	1,226	592	48%	11,065
Russell County	4,430	2,135	48%	29,014
Wythe County	4,401	2,121	48%	29,391
Tazewell County	6,552	3,153	48%	45,276
Pulaski County	4,590	2,175	47%	34,635
Amherst County	4,526	2,140	47%	32,496
Rockbridge County	2,796	1,320	47%	22,155
Franklin County	7,500	3,481	46%	56,300
Appomattox County	2,310	1,071	46%	15,021
Louisa County	4,706	2,138	45%	33,456
Southampton County	2,880	1,308	45%	18,714
Bath County	674	303	45%	4,797
Giles County	2,445	1,093	45%	17,279
Shenandoah County	6,177	2,705	44%	42,114
Amelia County	1,831	800	44%	12,841
Dinwiddie County	4,453	1,912	43%	28,018
Caroline County	4,317	1,846	43%	28,826
Floyd County	2,042	866	42%	15,484
Craig County	708	299	42%	5,241
Campbell County	8,371	3,451	41%	54,759
Culpeper County	7,808	3,168	41%	47,144
Mathews County	1,187	479	40%	8,937
Warren County	5,442	2,170	40%	37,688
Bland County	866	340	39%	6,748
Greene County	3,014	1,168	39%	19,042
Henrico County	49,654	18,361	37%	310,742
Montgomery County	9,610	3,515	37%	94,996
Orange County	5,239	1,891	36%	33,715
Augusta County	10,743	3,770	35%	73,792
Prince George County	6,438	2,247	35%	35,828
Isle of Wight County	5,519	1,908	35%	35,457

Locality	Total students	Low Income	Ratio	Total Population
Rockingham County	11,802	4,069	34%	77,297
Charles City County	804	272	34%	7,290
Madison County	1,847	621	34%	13,424
Spotsylvania County	23,817	7,988	34%	123,997
Prince William County	81,937	27,469	34%	414,531
King George County	2,252	741	33%	23,333
Bedford County	10,562	3,446	33%	69,379
Arlington County	21,892	6,771	31%	214,373
Frederick County	13,137	3,989	30%	79,156
Gloucester County	5,795	1,703	29%	36,987
Fluvanna County	3,800	1,106	29%	25,989
King and Queen County	4,176	1,191	29%	7,049
Chesterfield County	59,200	16,707	28%	319,641
Rappahannock County	898	250	28%	7,410
Albemarle County	13,104	3,579	27%	100,780
Stafford County	27,333	7,016	26%	131,067
Goochland County	2,399	600	25%	21,753
Fairfax County	177,606	41,035	23%	1,096,023
Botetourt County	5,051	1,025	20%	33,399
Fauquier County	11,244	2,180	19%	65,780
York County	12,547	2,323	19%	65,973
Clarke County	2,065	360	17%	14,211
New Kent County	2,938	472	16%	18,827
Powhatan County	4,436	705	16%	28,290
Roanoke County	14,454	2,222	15%	92,687
Loudoun County	65,585	9,546	15%	324,337
Hanover County	18,531	2,631	14%	100,704
Total counties	**891,913**	**287,941**	**32%**	**5,543,804**

Source: Virginia Department of Education, Fall Membership 2011-2012