



## TRAILBLAZERS BLOG

There is more to say about Trailblazers' topics than will fit in our newsletter, so we're writing a blog now. Take a look: <http://ctetrailblazers.blogspot.com/>

## NONTRADITIONAL BEST PRACTICE

This spring we are visiting schools that been successful in recruiting female students to pre-engineering & other STEM courses & male students to health sciences & teacher preparation courses. If you would be interested in talking to us about one of your courses or if you have advice to offer others, please get in touch with us. We would love to talk to you.

## COMPLETER FOLLOW-UP

The 2011 Follow-up of 2010 CTE completers will be starting in March. The system will run very much the same way it did last year, though with luck, even more smoothly. Please get in touch if you have any questions. [CTEcompleters@virginia.edu](mailto:CTEcompleters@virginia.edu)

## EMPLOYMENT NEEDS DATA

New occupational employment projections are available for Virginia's LWIAs from the Virginia Employment Commission. Administrators can use these data to prepare new courses, complete local plans, & prepare plans of study. Excel files are available on the [Trailblazers website](#).

We can help you use the projections for program planning. Call or email us. [Trailblazers@virginia.edu](mailto:Trailblazers@virginia.edu) 434-982-5582

## WORKPLACE READINESS SKILLS

CTE has a new list of 21 workplace readiness skills that must be taught in every course. The resources you need to implement this change in the curriculum are online at [Virginia's CTE Resource Center](#) website. To view these, click on Verso, then a program area, then a specific course. You will see the skills list & instructional resources for each skill.

Copyright ©2011  
Rector & Visitors of the University of Virginia

## CTE: A Model For Education Reform

Career & technical education has a key role to play in the reform that our education system requires, according to a new report from the Harvard Graduate School of Education, [Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century](#).

"Cutting-edge career & technical education (CTE) bears little relationship to the old vocational education programs that were often little more than dumping grounds for students who couldn't cut it in college-prep. Today's best CTE programs do a better job of preparing many students for college & career than traditional academics-only programs." (p. 25)

For the past forty years, education reform has focused primarily on increasing academic rigor with the goal of sending selected students into four-year colleges. This is a model that has not succeeded, according to this report. Despite enormous effort & financial investment, we:

- have failed to see dramatic gains in college graduation,
- have the highest college dropout rate in the industrialized world,
- have a widening gender gap in educational attainment, and
- are falling behind the industrialized world in our high school & college graduation rates.

During this time, CTE with its focus on careers & employment for students with a wide range of educational ambitions, has been, in the words of the report "demeaned & disparaged, especially among the nation's elites." (p. 28) This troubled history has resulted in an inconsistent quality of CTE programs & has made it difficult to expand the best initiatives to all schools. Despite these issues, however, the authors of this report see the model provided by CTE as one that should be emulated across the educational system.

The best CTE programs are valuable models for future reforms because they:

- prepare students for both post-secondary education & a career;
- provide continuous career guidance & instruction in career pathways so that students can plan a career & appropriate further education;
- and engage employers in school programs & seek ways to expose students to the real world of the workplace.

Our current crisis of employment — in which jobs are scarce yet employers struggle to find workers with the necessary skills — has caused many to rethink what we need from public education. In this process, CTE is beginning to receive more positive attention than it has for many decades past. This Harvard report is a notable example of CTE's rising profile.

[See ACTE's discussion of this report](#)

## Reasons For Gender Segregation Are Complex

Men and women are frequently segregated into different jobs. Math and hard science jobs are dominated by men, while jobs working with people tend to be dominated by women. Why this happens has long been the subject of debate. Discrimination -- in hiring, job assignments, and promotion -- is one possible reason for gender segregation and for the fact that women on average earn less than men do. However, a number of researchers have begun to argue that

## Gender Segregation (continued)

straightforward discrimination is not the major cause of these differences, and remedies that focus solely on addressing discrimination are doomed to fail. Recent [research on women in math-intensive fields](#) of science makes just this point.

Women have made dramatic gains in science employment over the past 40 years. They earn the majority of advanced degrees in medicine, life sciences, social sciences, psychology, and veterinary medicine. However, they have made significantly smaller gains in math-intensive fields like engineering and computer science. An article published this month in the *Proceedings of the National Academy of Sciences* publication reviews studies on women in math-intensive jobs at colleges and universities which find that outright discrimination against women in publishing, grant funding, and hiring is now almost non-existent. Despite the equality of opportunity in these areas, women have different job and salary outcomes. These differences arise because men and women build different research and work histories through the choices they make - either freely or with social constraint. Three factors are particularly important:

- Adolescent girls often prefer careers focusing on people instead of things; consequently, they are attracted to fields like medicine and biology but not computer science, engineering and chemistry;
- Women do not develop their math skills as intensively as men. Far fewer women than men earn top scores on national exams such as the SAT, even though they earn higher math and science grades in school and college than male students do.
- Women in academic jobs are concentrated in lower-paying community college and non-tenure track university positions. The tenure system presents strong disincentives for women to have children, and many women avoid these positions.

If we value increasing the number of women in math-intensive careers, then we need to consider a broad range of remedies. It may be important to remain vigilant about discrimination; however, this is not the only step to be taken. The authors argue that, “continuing to advocate strategies successful in the past to combat shortages of women in math-based fields today mistakes the current causes of women’s underrepresentation.” To address these current causes:

- Girls need experience with and exposure to math-intensive fields like engineering and computer science, so that they are making informed choices about fields of study.
- Girls need to develop their skills in mathematics in order to compete on an equal footing in these fields.
- Changes need to be made to allow for child rearing and a greater balance of work and home life.

Career and technical education can play a significant part in broadening young women's awareness of technology careers and encouraging development of math skills. Unfortunately, there is not much CTE educators can do to improve the work-home balance of academic or other high-intensity science careers, though this may be the only way to remedy the wage inequalities that women still experience in these fields.

<b>Occupational Employment &amp; Weekly Earnings, 4th Quarter 2010</b>				
<b>Occupational Groups</b>	<b>Percent</b>		<b>Earnings</b>	
	Male	Female	Male	Female
Management, business, & financial	55%	45%	\$1,363	\$971
Professional and related	45%	55%	\$1,179	\$900
Service	51%	49%	\$543	\$423
Sales & related	55%	45%	\$805	\$516
Office and administrative support	27%	73%	\$656	\$612
Farming, fishing, and forestry	79%	21%	\$438	\$369
Construction and extraction	98%	2%	\$710	\$646
Installation, maintenance, and repair	96%	4%	\$799	\$683
Production	74%	26%	\$664	\$481
Transportation & material moving	87%	13%	\$618	\$447

Source: US Bureau of Labor Statistics, Usual Weekly Earnings

The [latest 2010 data](#) from the U.S. Bureau of Labor Statistics show that male and female imbalance remains in many occupations, not just the math-intensive academic jobs discussed in this article. The natural resources, construction, maintenance, transportation and material moving occupational groups are heavily dominated by men. Service occupational groups are heavily dominated by women. Other major occupational groups have a roughly even split, though within these are many smaller gender-segregated occupations.

Although overt discrimination may be part of the cause for this continuing gender segregation, other factors like those that influence math-intensive academic jobs may be at work in these occupations as well. Lack of exposure to and experience with nontraditional work may help keep students from considering fields in which they might have the potential to excel. And lack of early skill development may prevent students from succeeding if they do consider a nontraditional career. CTE can help insure that all of our students have a chance for success by providing them with career exposure and skill development.