Career and Technical Education
in the Commonwealth

July 2011

July 10, 2011

TO: The Honorable Robert F. McDonnell, Governor of Virginia

and

Members of the Virginia General Assembly

At the Commission's meeting on May 29, 2009, the Commission directed staff to conduct a gap analysis of career and technical education programs in the Commonwealth to determine whether the existing career and technical education structure was meeting the needs of students and Virginia communities. System improvements were also to be identified.

At the December 7, 2009 meeting, the Commission on Youth approved the recommendations for this study. These recommendations are included in the final report, which is enclosed for your consideration.

This final report represents the work of several government and private agencies and individuals who provided input to the study effort. The Commission gratefully acknowledges their contributions to this effort.

Respectfully submitted,

Yvonne B. Miller

Yvonne B. Miller
Chair

MEMBERS OF THE VIRGINIA COMMISSION ON YOUTH

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I. Authority for Study

Section 30-174 of the *Code of Virginia* establishes the Commission on Youth and directs it to "…study and provide recommendations addressing the needs of and services to the Commonwealth's youth and their families." This section also directs the Commission to "…encourage the development of uniform policies and services to youth across the Commonwealth and provide a forum for continuing review and study of such services."

At the Commission's meeting on May 29, 2009, the Commission directed staff to conduct a gap analysis of career and technical education programs in the Commonwealth. In conducting this analysis, the Commission was to identify resources and system improvements that may be needed to ensure that career and technical education meets current and evolving needs of students and communities. Staff was to identify career and technical education options available in a student's educational career and report findings and recommendations to the Commission prior to the 2010 General Assembly Session.

II. Members Appointed to Serve

The Commission on Youth is a standing legislative commission of the Virginia General Assembly. It is comprised of twelve members: six Delegates, three Senators and three citizens appointed by the Governor.

Members of the Virginia Commission on Youth are:
Senator Yvonne B. Miller, Norfolk, Chair
Senator Harry B. Blevins, Chesapeake
Senator R. Edward Houck, Spotsylvania
Delegate Mamye E. BaCote, Newport News
Delegate Robert H. Brink, Arlington
Delegate Mark L. Cole, Fredericksburg
Delegate Anne B. Crockett-Stark, Wytheville
Delegate Christopher K. Peace, Mechanicsville, Vice Chair
Delegate Beverly J. Sherwood, Winchester
The Hon. Gary L. Close, Esq., Culpeper
Mr. Anthony Dale, Alexandria
Ms. Joy Meyers, Arlington

III. Executive Summary

At the December 3, 2008 meeting, the Commission on Youth approved the following recommendation from the first year of the Study of Truancy and School Dropout Prevention:
The Commission on Youth shall conduct a study/gap analysis of career and technical education in the Commonwealth. This study will investigate when it is most effective to identify career and technical options. Potential linkages with the Tobacco Commission, the Virginia Manufacturers Association, the Virginia

Community College system and the Virginia Workforce Council for workforce training will also be explored, along with the *Jobs for Virginia Graduates* program. Commission staff will apply for relevant funding opportunities.

Specifically, the Commission was to conduct a gap analysis of career and technical educational programs in the Commonwealth and identify resources and system improvements necessary to ensure that career and technical education is meeting the current and evolving needs of students and communities.

At the Commission on Youth's May 29, 2009 meeting, the Commission adopted the work plan for this study. As part of the study, the Commission established an Advisory Group consisting of stakeholder representatives, including members of the Commission, the Virginia Department of Education, Virginia Council for Career and Technical Education, local business representatives, industry and manufacturing associations, professional associations, local school officials, regional career and technical education officials, community college representatives and parent/teacher organizations. The Advisory Group helped identify issues and develop recommendations for the Commission on Youth.

At the December 7, 2009 meeting, the Commission on Youth approved the following study recommendations:

Recommendation 1
Support the Department of Education and the Board of Education's Career Advisory Committee's plans to work with local Career and Technical Education advisory committees to continue to educate the business community about the benefits of industry certifications, including National Occupational Competency Testing Institute (NOCTI).

Recommendation 2
Request the Secretary of Education and the Virginia Career Pathways System Working Group identify those credentials and certificates valued by Virginia employers and are appropriate for inclusion in Virginia's Career and Technical Education Pathways. Regional variation in demand and program offerings will be acknowledged in this review. A report on the status of this review will be submitted to the Virginia Commission on Youth, the Board of Education and the Council on Career and Technical Education prior to the 2011 General Assembly Session.

Recommendation 3
Introduce a resolution to support the update of Virginia's Workplace Readiness Skills (WRS) and test revision. Request that the status of the update to the WRS, and its accompanying assessment instrument, be shared by the Department of Education with Virginia's network of career and technical education administrators and school counselors during all upcoming conferences and trainings. Also, encourage local school divisions to communicate regularly with and invite the participation of the local employer community about workplace readiness initiatives and results from student testing on this and other credentialing tests.

Recommendation 4
Request the Virginia Community College System, the Virginia Workforce Council and the Department of Education include the Career Readiness Certification (CRC) with the Academic and Career Plans for Career and Technical Education Pathways, as appropriate.

Recommendation 5
Support the Board of Education's Career and Technical Education Advisory Committee's efforts to advocate and market career and technical education.

Recommendation 6
Support the Department of Education revisions to the *R U Ready Parent's Guide* and request that it be shared with parents of 7th grade, rather than 8th grade, students and request that the Department consider making the *R U Ready Guide for Students*, which provides information about students' educational opportunities, available to high school students in their sophomore, rather than junior, year.

Recommendation 7
Request that the Virginia Association of School Counselors Association and Virginia PTA/PTSO include information on Virginia's rising labor force needs, as well as the benefits of Virginia's Career and Technical Education programs, in all trainings, newsletters and appropriate media. Also request that this message be shared with parents of kindergarteners.

Recommendation 8
Support the Virginia Workforce Investment Council and the local workforce boards' work with local school divisions to communicate the value of Virginia's Career and Technical Education programs.

Recommendation 9
Request the Department of Education include in the training materials for Academic and Career Plans, as well as in the sample plan:
a. the value of work-based learning for students, such as cooperative education, internships, job shadowing, mentorships, projects, service learning or a combination;
b. the value of skilled occupations for students; and
c. information for students and parents regarding the importance of having an industry credential or certification.

Recommendation 10
Support the Department of Education's efforts to promote private-public partnerships which offer real-world experiences to students. These partnerships include, but are not limited to, 4-H, Ag in the Classroom and Junior Achievement.

Recommendation 11
Support the Governor's Career and Technical Academies in Virginia as programs designed to expand options for the general student population to acquire Science, Technology, Engineering and Math (STEM).

Recommendation 12
Request the Virginia Broadcasters Association to develop a public service campaign to inform the public of the benefits and value of career and technical education.

Recommendation 13
Request the Chancellor of the Virginia Community College System (VCCS) provide guidelines on the requirements for credentials career and technical education instructors need to satisfy the requirements to teach courses qualified for dual enrollment credit. Request that, once these guidelines are completed by VCCS, they be shared with the Department of Education and the Board of Education's Advisory Council for Career and Technical Education, Virginia CTE Resource Center and Virginia Association for Career and Technical Education (VACTE).

Recommendation 14
Request the Secretary of Education provide an update to the Commission on Youth on the progress of developing a template for statewide articulation agreements for Career and Technical Education as recommended in House Document 33 (2005, HJR 125) and to provide a report addressing the feasibility of establishing a unified agreement of dual enrollment in the Commonwealth, the barriers of pursuing uniform implementation of dual enrollment, and the costs of standardizing dual enrollment offerings.

Recommendation 15
Support the Department of Education's efforts to address the shortage of Career and Technical Education teachers in the Commonwealth.

Recommendation 16
Support the efforts of the Board of Education's Advisory Committee for Career and Technical Education (efforts to address teacher shortages, including teacher recruitment and the involvement of local career and technical education advisory committees.

Recommendation 17
Support the continuation and expansion of Virginia Community College System (VCCS) Career Coaches program and request the Virginia Association of School Superintendents, the Virginia Association of Secondary School Principals and the Virginia School Board Association include information on the effectiveness of the Virginia Career Coach Program in upcoming conferences and trainings, as appropriate.

Recommendation 18
Support the Department of Education and the Virginia Community College System (VCCS) plan to integrate and implement the Academic and Career Plan (ACP) with the Virginia Education Wizard.

Recommendation 19
Support the Department of Education's efforts to provide information in upcoming training and training materials on Virginia's Career Coaches, including ways Career Coaches can assist in the implementation of the Academic and Career Plan (ACP) and school divisions may establish partnerships with the Virginia Community College System (VCCS) and parents to support the Career Coaches.

Recommendation 20
Request the Board of Education's State Special Education Advisory Committee address barriers to appropriate placements of students with special needs into Career and Technical Education programs by developing (or sharing) written guidelines for use by school personnel.

IV. Study Goals and Objectives

At the Commission on Youth's meeting on May 29, 2009, Commission staff was directed to focus on the following goals and objectives during the course of the study:

I. Conduct a gap analysis of career and technical options available in the Commonwealth.
    - Identify and outline the existing career and technical education delivery system in the Commonwealth.
    - Analyze the service population accessing career and technical education as well as whether there are any barriers to serving students.
    - Identify gaps in the delivery system including classroom needs, professional development, staffing needs, curriculum needs, facility needs and partnerships.
    - Investigate how career and technical education can help improve Virginia's graduation rate by keeping students at-risk of dropping out connected to school.
    - Research various career and technical education models, including the career academy model, to ascertain if it would be appropriate for Virginia's career and technical education program.
    - Determine the need and appropriateness of increasing career and technical education in the public high schools in Virginia, as well as the cost.

II. Identify resources and system improvements that may be needed at the state and local level to ensure that career and technical education meets current and evolving needs of students and communities.
    - Assess if career and technical education programming in Virginia is sufficient to meet the changing economic and labor market needs of the Commonwealth.
    - Assess funding for career and technical education initiatives, including regional and local technical centers, equipment, and career and technical education-business partnerships.
    - Examine if existing partnerships with business and industry, school divisions, higher education institutions and workforce and economic development entities are fully utilized.
    - Assess whether the career clusters represented by career and technical education is adequate and if the supply of skilled labor is meeting the demand.
    - Review if career and technical education completers are job-ready and meeting industry demands.
    - Review the Standards of Learning (SOLs) for career and technical education students and the impact of the requirements of *No Child Left Behind Act of 2001* for the program's expanded curriculum.

III. Identify career and technical education options available in a student's educational career.
    - Review student participation in career and technical education.
    - Determine when career and technical education is most beneficial in the student's educational career and whether students can easily access career and technical education.

- Review the entry points and pathways to career and technical education and to postsecondary education and careers.
- Review if Virginia has adequate programming that emphasizes career education and exploration for all students.
- Monitor the Board of Education's proposal for establishing personal Academic and Career Plan, as established by the Virginia Board of Education, for each seventh and eighth grade student.

V. Methodology

The findings of this report are based on the cumulative results from several distinct study activities: research and analysis by the Commission staff, input from the Advisory Group, site visits, regional roundtables, special presentations and guest speakers.

A. RESEARCH AND ANALYSIS

Commission on Youth staff reviewed data, reports, statutes and regulations in order to research career and technical education offerings in Virginia. Staff conducted a review of federal statutes, including the *Carl D. Perkins Career and Technical Education Improvement Act of 2006* (Perkins),[1] the *Workforce Investment Act* (WIA),[2] and the *No Child Left Behind Act of 2001*.[3] Sections of the *Code of Virginia* addressing career and technical education programs[4] and Virginia's Standards of Learning (SOLs) pertaining to career and technical education[5] were also reviewed.

Commission staff further analyzed Virginia's regulations regarding licensure and program components.[6] [7] Reports (and accompanying data) published by the Virginia Department of Education, along with comparable reports from the U.S. Department of Education, were used to analyze career and technical education practices from both state and national levels. Reports published by the Association for Career and Technical Education (ACTE) and the National Association of State Directors of Career Technical Education Consortium were also reviewed. Finally, information compiled by Virginia's local and state advisory councils, as well as statewide business associations, was analyzed to help present a picture of challenges facing career and technical education.

B. ADVISORY GROUP

The Commission established a Career and Technical Education Advisory Group to help further the study's goals and objectives. A complete listing of Advisory Group membership is provided as Appendix A. In 2009, the Advisory Group met on July 24, October 28 and November 23.

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[1] 20 U.S.C. §2301, et seq. (2006).
[2] 29 U.S.C. §2801, et seq. (1998).
[3] 20 U.S.C. §6301, et seq. (2001).
[4] Va. Code §§ 22.1-227 through 22.1-237.
[5] Va. Code § 22.1-253.13:1.
[6] 8VAC20-22-220 through 8VAC20-22-300.
[7] 8VAC20-120-10 through 8VAC20-120-170.

The Advisory Group represented the following agencies and organizations:
- Alliance for Construction Excellence;
- Associated Builders & Contractors – Virginia Chapter;
- Automotive Youth Education Systems;
- Career and Technical Education Administrators;
- Chesterfield County Schools;
- Chesterfield Technical Center;
- Colonial Farm Credit;
- Gundlach Plumbing & Heating;
- Hanover County Schools;
- Henrico County Schools;
- Henry County Schools;
- Jobs for Virginia Graduates Program;
- King William County School Board;
- Office of the Secretary of Education;
- Plumbing & Mechanical Professionals of Virginia;
- School Principals;
- Sentara CarePlex;
- Shenandoah Valley Regional Program for Special Education;
- State Farm Insurance;
- University of Virginia Weldon Cooper Center for Public Service;
- Virginia Association for Career and Technical Education;
- Virginia Association of Counties;
- Virginia Automotive Association;
- Virginia Beach City Schools;
- Virginia Chamber of Commerce;
- Virginia Manufacturers Association;
- Virginia Municipal League;
- Virginia Parent Teacher Association;
- Virginia's Regional Career & Technical Education Centers;
- Virginia's CTE Resource Center;
- Virginia Board of Education;
- Virginia Department of Education;
- Virginia Community College System; and
- Virginia Commission on Youth Members.

Although students did not serve on the Advisory Group, the Commission sought student input by inviting them to participate in the Commission's site visits and regional roundtables.

C. SITE VISITS

Commission on Youth staff examined the scope of career and technical education in Virginia through site visit and interviews with administrators and personnel at various school divisions and regional technical centers.

During the first year of the study, Commission staff visited the following facilities:
- Hanover Center for Trades and Technology – Hanover County
- Chantilly Academy – Fairfax County
- Virginia Beach Advanced Technology Center – City of Virginia Beach
- Massanutten Technical Center – Harrisonburg City and Rockingham County
- Crossroads Institute – City of Galax
- Governor's Career & Technical Academy for Engineering Studies, L.C. Bird High School – Chesterfield County

D. REGIONAL ROUNDTABLES

To satisfy the study mandate, Commission staff sought feedback from impacted stakeholders about the Commonwealth's career and technical education needs. The Commission hosted seven regional roundtables to solicit input from impacted parties, including business and industry, small business owners, community colleges, local government, local school officials and parents. With funding through a State Farm Insurance Good Neighbor grant, the Commission on Youth was able to involve key players from both the public and private sectors and thus strengthen the resulting study findings and recommendations. In collaboration with State Farm, the Commission held regional roundtables for legislators, local government officials, industry leaders, business officials, education representatives and other impacted stakeholders in the following regions of Virginia:

- Central Virginia – Hanover Center for Trades and Technology
- Northern Virginia – Chantilly Academy
- Tidewater – Virginia Beach Advanced Technology Center
- Shenandoah – Massanutten Technical Center
- Galax – Crossroads Institute
- Henry County – Virginia Museum of Natural History
- Southwest Virginia – Washington County School Board Office

A listing of regional roundtable participants is provided as Appendix B. A summary of the issues identified and discussed is included as Appendix C.

E. PRESENTATIONS AND GUEST SPEAKERS

The Advisory Group invited subject-matter experts to speak on various career and technical education topics and initiatives. Virginia Beach school officials discussed Virginia's Workplace Readiness Credentials. Officials with the Virginia Community College System shared information about the Virginia Education Wizard and Virginia's Career Coaches program. Representatives from the University of Virginia's Weldon Cooper Center for Public Service presented on Virginia shifting workplace needs.

VI. Background

The Commission on Youth conducted a two-year study of truancy and dropout prevention during the 2008 and 2009 study years. A significant study finding was that career and technical education had a positive impact on school divisions' graduation rates. Findings indicated that students commonly leave school due to disengagement.[8] Many students lose interest and motivation because they believe that their high school curriculum does not have a real-world application. Students may not recognize the link between education and career development. An array of education strategies to connect school and the real world were found to be essential to helping bridge this gap, thus the Commission adopted study recommendations that addressed these findings.[9]

A review of literature on effective dropout prevention programs revealed that career and technical education could help high school students remain connected to, and thus

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[8] Virginia Commission on Youth. (2010). *Study of Truancy & School Dropout Prevention. Report Document 392.* [Online]. Available: http://leg2.state.va.us/dls/h&sdocs.nsf/By+Year/RD3922010/$file/RD392.pdf. [June 2011].
[9] Ibid.

graduate from, high school.[10] High-risk students are 8 to 10 times less likely to drop out in the 11th and 12th grades if they enroll in a career and technical program instead of a general education program.[11] A quality career and technical program can reduce a school's dropout rate by as much as 6 percent.[12] Career and technical students are also less likely than general-track students to fail a course or to be absent.[13]

At the December 3, 2008 meeting, the Commission on Youth approved the following recommendation from Year 1 of the Study of Truancy and School Dropout Prevention:

The Commission on Youth shall conduct a study/gap analysis of career and technical education in the Commonwealth. This study will investigate when it is most effective to identify career and technical options. Potential linkages with the Tobacco Commission, the Virginia Manufacturers Association, the Virginia Community College system and the Virginia Workforce Council for workforce training will also be explored, along with the *Jobs for Virginia Graduates* program. Commission staff will apply for relevant funding opportunities.

A major component of this study included information-gathering on Virginia's existing career and technical education structure in order to identify the issues which affect the delivery of its programming. This examination was also designed to provide a sense of the shifting career and technical education needs within the Commonwealth. This section summarizes the results of the research and analysis conducted by Commission staff.

The information which follows is from the Association for Career and Technical Education.[14] Career and technical education represents an array of courses and programs offered by Virginia's public schools to help students prepare for a workplace that has become increasingly oriented toward highly skilled jobs. Students may begin career development in high school through a variety of career and technical education programs. Courses are offered in the following areas:

- Agriculture;
- Business and Information Technology;
- Career Connections;
- Family and Consumer Sciences;
- Health and Medical Sciences;
- Marketing;
- Technology; and
- Trade and Industrial Education.

These programs often offer advantages, such as:
- Industry certifications or professional licenses;
- Dual-credit courses with community colleges;

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[10] Ibid.

[11] Association for Career and Technical Education. (2007). *Career and Technical Education's Role in Dropout Prevention.*

[12] Ibid.

[13] Ibid.

[14] Association for Career and Technical Education. (2009). *Virginia CTE State Profile.* [Online]. Available: http://www.acteonline.org/profile_va.aspx. [September 2009].

- Leadership development through career and technical education student organizations; and
- Scholarships available through student organizations and professional organizations.

Course offerings, program structure and industry certifications are discussed in the following paragraphs.

A. DELIVERY OF CAREER AND TECHNICAL EDUCATION IN VIRGINIA

Career and technical education in Virginia is provided in high schools, specialized schools and community colleges.[15] There are 302 high schools, 23 community colleges, 14 four-year colleges and universities, and 117 private colleges and universities authorized to operate in Virginia.[16] At the secondary level, career and technical education courses are offered in nine jointly operated career and technical centers, which are listed below.

- Amelia-Nottoway Technical Center
- Charlottesville-Albemarle Technical Education Center (CATEC)
- Jackson River Technical Center
- Massanutten Technical Center
- New Horizons Career and Technical Education Center
- Northern Neck Technical Center
- Pruden Center for Industry & Technology
- Rowanty Technical Center
- Valley Vocational Technical Center

According to Virginia Department of Education data, Virginia had 598,029 students in career and technical education programs in the 2008-2009 school year.[17] [18] During this same reporting period, there were 38,341 career and technical education completers.[19] [20]

B. VIRGINIA'S CAREER CLUSTERS AND PATHWAYS

A Career Cluster is a grouping of occupations and broad industries based on commonalities.[21] Career Clusters help students investigate careers and design their courses of study to advance their career goals. Virginia has adopted the nationally accepted structure of Career Clusters.[22] The Virginia Department of Education and

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[15] Association for Career and Technical Education. (2009). *Virginia CTE State Profile*. [Online]. Available: http://www.acteonline.org/profile_va.aspx. [March 2011].

[16] Ibid.

[17] Virginia Department of Education. (2011). *CTE Program Enrollment Report.* [Online]. Available: http://www.doe.virginia.gov/instruction/career_technical/statistics_reports/enrollment.shtml. [March 2011].

[18] This is a duplicated count and includes middle and high school students who are enrolled in one or more CTE course.

[19] Ibid.

[20] Completers are students who complete a career and technical education program and graduate.

[21] Virginia Department of Education. (2011). *Career Clusters.* Career & Technical Education. [Online]. Available: http://www.doe.virginia.gov/instruction/career_technical/career_clusters/index.shtml. [March 2011].

[22] Association for Career and Technical Education. (2009). *Virginia CTE State Profile*. [Online]. Available: http://www.acteonline.org/profile_va.aspx. [March 2011].

Virginia Community College System (VCCS) have collaborated in the process of identifying the Career Clusters most critical to Virginia's economic future.[23]

Career Clusters, the broadest category, group careers that share basic characteristics. Each Career Cluster is further divided into Career Pathways, which contain specific occupations. Within each Career Cluster, Career Pathways represent a common set of skills and knowledge, both academic and technical, necessary to pursue a full range of career opportunities within that pathway – ranging from entry level to management, including technical and professional career specialties. Based on the skill sets taught, all career and technical education courses are aligned with one or more Career Cluster and Career Pathway. Sixteen Career Clusters provide an organizing tool for schools, small learning communities, academies and magnet schools:[24]

1. Agriculture, Food & Natural Resources
2. Architecture & Construction
3. Arts, Audio/Video Technology & Communications
4. Business, Management & Administration
5. Education & Training
6. Finance
7. Government & Public Administration
8. Health Science
9. Hospitality & Tourism
10. Human Service
11. Information Technology
12. Law, Public Safety, Corrections & Security
13. Manufacturing
14. Marketing Sales & Service
15. Science, Technology, Engineering & Mathematics
16. Transportation, Distribution, & Logistics

A more detailed listing of Virginia's Career Clusters and accompanying Career Pathways is included as Appendix D.

C. FINANCING FOR CAREER AND TECHNICAL EDUCATION IN VIRGINIA
Career and technical education in Virginia is financed through a combination of federal, state and local funding.

Federal Funding
The *Carl D. Perkins Career and Technical Education Act* (Perkins) was most recently reauthorized in August 2006.[25] Perkins supports the academic, vocational, and technical skills of secondary students and postsecondary students by:
1. building on the efforts of states and localities to develop challenging academic skills;
2. promoting the development of services to integrate academic, vocational and technical instruction and link secondary and postsecondary education for participating students;
3. increasing state and local flexibility in providing services and activities designed to develop, implement, and improve vocational and technical education, including tech-prep education; and
4. disseminating national research, and providing professional development and technical assistance.[26]

In 2008, federal funds allocated for career and technical education for Virginia totaled $25,221,860.[27] Of this amount, $18,222,494 was appropriated to secondary

[23] Association for Career and Technical Education. (2009). *Virginia CTE State Profile.*
[24] Virginia Department of Education. (2011). Career Clusters.
[25] Association for Career and Technical Education. (2011). *Carl D. Perkins Act Implementation.* [Online]. Available: http://www.acteonline.org/perkins.aspx. [March 2011].
[26] Ibid.

programs.[28] The Virginia Department of Education is the recipient of the Perkins grant funds for the Commonwealth. The Virginia Board of Education is tasked with carrying out the provisions set forth in Perkins.

Perkins Basic State Grant Funds are allocated by formula to secondary school divisions and postsecondary institutions. States have control over the distribution of funds between secondary and postsecondary levels; however, states must distribute at least 85 percent of the grant funds to local programs using a statutorily designed formula.[29] States also receive a Tech Prep Grant that can be folded into Basic State Grant Funds or used to provide grants to consortia of secondary and postsecondary partners that develop articulated pathways.[30] Federal grant funds for innovation and program improvement help drive state support through a maintenance-of-effort provision in the federal law.[31]

The Virginia Department of Education allocates 10 percent for state leadership and 5 percent for state administration. Local school divisions and community colleges receive 85 percent, which is then split 85/15: 85 percent is allocated to secondary programs in local education agencies; 15 percent is allocated to postsecondary programs at community colleges.[32] The VCCS received $3,315,786 (or 15 percent of the total federal grant funds) for the postsecondary component of the program.[33] The majority of that amount is distributed to 23 community colleges across Virginia.[34]

State and Local Funding

The Commonwealth of Virginia annually allocates state funds to support career and technical education entitlements. In FY 2009, the Commonwealth reimbursed local districts and the nine regional career and technical education centers for approximately 27.5 percent of expenditures for career and technical education in the previous fiscal year. In FY 2009, about $5.6 million in state funds was distributed using the entitlement formula.

State and local funds are also allocated for career and technical education infrastructure. Infrastructure expenses include equipment, credentialing, curriculum and materials. These are discussed in the paragraphs which follow.

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[27] Virginia Department of Education. (2008). *Virginia's Five Year State Plan for the Carl D. Perkins Career and Technical Education Act of 2006.* [Online]. Available: http://www.careertech.org/uploaded_files/Virginia.pdf. [March 2011].
[28] Ibid.
[29] Association for Career and Technical Education. (2011).
[30] Ibid.
[31] Ibid.
[32] Association for Career and Technical Education (2011).
[33] Virginia Department of Education. (2008). *Virginia's Five Year State Plan for the Carl D. Perkins Career and Technical Education Act of 2006.* [Online] Available: http://www.careertech.org/uploaded_files/Virginia.pdf. [March 2011].
[34] National Association of State Directors of Career Technical Education Consortium. (2010). *State Profile for Virginia.* [Online]. Available: http://www.careertech.org/state_profile/show/Virginia. [March 2011].

➢ Equipment
The state funding for secondary career and technical education equipment was $1,800,000 for the 2009-2010 school year.[35] A base allocation of $2,000 was appropriated for each school division and regional center, with the remainder of funding distributed on the basis of student enrollment in secondary career and technical education courses. State funds received for secondary career and technical education equipment are used to supplement, not replace, any funds currently provided for secondary career and technical education equipment within the division. School divisions and regional centers are reimbursed 100 percent for local equipment expenditures claimed, up to the approved state funds entitlement amount. School divisions must expend their entire state equipment allocation prior to using Perkins Federal Equipment Funds.

➢ Credentialing
State funding for student credentialing for career and technical education was $1,065,133 for school year 2009-2010.[36] The initial allocation is $4.79 per student enrolled in career and technical education classes eligible for industry certification examinations, licensure tests and occupational competency assessments (nationally standardized assessment measuring technical skills/knowledge in a specific career and/or technical area.[37] [38] (Credentialing is also discussed in the *Technical Skills Assessments Section.*)

➢ Curriculum and Materials
State funds are appropriated for Virginia's Career and Technical Education (CTE) Resource Center, which is administered by Henrico County Public Schools. The CTE Resource Center oversees the development of curriculum-related publications which address specific courses or programs, encourages collaboration between career/technical and academic disciplines, correlates with national standards and industry certification requirements and enhances comprehensive school improvement efforts.[39] Staff members perform research, facilitate business/industry input, and produce the following materials:
- validated task lists;
- student competency records;
- curriculum frameworks;
- instructional aids;
- program marketing/recruitment aids; and
- administrative guides.

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[35] Virginia Department of Education. (2009). *Superintendent's Memo #192-09.* [Online]. Available: http://www.doe.virginia.gov/administrators/superintendents_memos/2009/192-09.shtml. [September 2009].
[36] Virginia Department Of Education. (2010).*Career And Technical Education (CTE) Funding.* Presentation to New Administrators Workshop. [Online]. Available: http://www.doe.Virginia.Gov/Instruction/Career_Technical/Administration/Presentations/New_Administrators/Cte_Funding.ppt. [March 2011].
[37] Virginia Department of Education. (2008). *Superintendent's Memo #189.* [Online]. Available: http://www.doe.virginia.gov/administrators/superintendents_memos/2008/inf189.html. [September 2009].
[38] Virginia Department of Education. (2008). *The Virginia Credentialing Initiative: Questions and Answers.* [Online]. Available: http://www.doe.virginia.gov/instruction/career_technical/path_industry_certification/cte_credentials/faq.pdf. [March 2011].
[39] Association for Career and Technical Education. (2009).*Virginia CTE State Profile.* [Online]. Available: http://www.acteonline.org/profile_va.aspx. [March 2011].

The CTE Resource Center also organizes and offers career and technical education resources in Virginia's Education Resource Center Online (known as "Verso").[40] Verso offers 121 instructional frameworks for use by Virginia educators, including links to collaborative lesson plans.

In FY 2010, Virginia appropriated $262,611 for the CTE Resource Center to provide vocational curriculum and resource instructional materials free of charge to all school divisions.[41]

D. STATE STANDARDS FOR CAREER AND TECHNICAL EDUCATION

Virginia's Board of Education regulations specify that local career and technical education programs must meet state-established standards.[42] These may be modified for students with disabilities who are covered by an Individualized Education Program (IEP) or a Section 504 Plan. Virginia has developed detailed instructional frameworks for 121 of its career and technical education programs. Local school divisions are required to submit data on labor market and/or employment needs and student interests. To ensure that programs and courses offered by a locality are consistent with employment demand and opportunities, local program/course approval is based on labor-market data secured from the Virginia Employment Commission.[43] When competencies require skill development from two or more concentrations (e.g., advanced electronics and entrepreneurship), school divisions are encouraged to integrate career and technical education curriculum offerings.

E. TECHNICAL SKILLS ASSESSMENTS

The Virginia Department Education promotes *The Path to Industry Certification: High School Industry Credentialing* initiative, which encourages students to work towards a selected industry credential or state license while pursuing a high school diploma. Students who earn a credential by passing a certification or licensure examination may earn up to two student-selected verified credits to meet graduation requirements.

Virginia is one of only a few states approved to use the levels of credentialing as a component to meet the federally-mandated technical assessment of students. The *Carl D. Perkins Career and Technical Education Act of 2006* includes eight performance standards that states' career and technical education programs are required to meet.[44] One of the performance standards requires states to measure their career and technical education graduates' technical skills attainment. Virginia accomplished this goal by requiring that local school divisions test all career and technical education completers by the 2010-2011 academic year. The divisions are to add one-third of their completers each year in order to reach the goal of 100 percent by the 2010-2011 school year.[45]

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[40] Ibid.

[41] Item #139 F of Chapter 872 of the *2010 Virginia Acts of Assembly*.

[42] 8VAC20-120-110.

[43] Virginia Department of Education. (2008). *Virginia's Five Year State Plan for the Carl D. Perkins Career and Technical Education Act of 2006.* [Online]. Available: http://www.careertech.org/uploaded_files/Virginia.pdf. [March 2011].

[44] Virginia Board of Education. (2008). *First Review of Plan for Increasing Number of Students Obtaining Industry Certification and Licensures.* [Online]. Available: http://www.doe.virginia.gov/boe/meetings/2008/09_sep/agenda_items/item_g.pdf. [March 2011].

[45] Ibid.

During the 2009 school year, students earned 5,873 industry certifications, 593 state licenses and 3,376 NOCTI assessments.[46] The number of industry certifications earned by Virginia students through career and technical education programs has increased by 66 percent since 2006.[47]

As of January 2008, Virginia assesses in 151 different areas using a mixture of industry certifications and National Occupational Competency Testing Institute (NOCTI) assessments, and annually goes before the Virginia Board of Education to add/delete appropriate assessments and certifications.[48] Virginia contracts with NOCTI for an end-of-year report that covers all of the assessment activities across the Commonwealth.

To ensure that career and technical education completers will be successful in the workplace, Virginia has established Virginia's Workplace Readiness Skills (WRS). These 13 elements were identified in 1997 by the University of Virginia's Weldon Cooper Center for Public Service and compiled based on interviews with 500 employers representing 54 occupations.[49] Virginia's original Workplace Readiness Skills are listed in Table 1.

Table 1

Virginia's Workplace Readiness Skills

- Reading
- Math
- Writing
- Speaking & listening
- Computer literacy
- Reasoning, problem-solving, & decision-making
- Understanding the "big picture"
- Strong work ethic
- Positive attitude
- Independence & initiative
- Self-presentation
- Attendance
- Teamwork

Source: Virginia Department of Education Office of Career, Technical, and Adult
   Education (1999). *Virginia's Workplace Readiness Skills.*
   www.pvcc.edu/docs/va_workplace_readiness_skills.pdf.

Virginia's WRS incorporate the entry-level skills most desired by employers, including basic reading and writing, a strong work ethic and positive attitude,

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[46] Virginia Department of Education. (2011). *State Report Card.* [Online]. Available: https://p1pe.doe.virginia.gov/reportcard/. [March 2011].

[47] Virginia Department of Education. (2010). *Agency Strategic Plan for 2010-2012.* [Online]. Available: http://vaperforms.virginia.gov/agencylevel/stratplan/spReport.cfm?AgencyCode=201. [March 2011].

[48] Techniques. (2009). *Improving Technical Competence: How the CTE Community is Responding.* [Online]. Available: http://goliath.ecnext.com/coms2/gi_0199-12038289/Improving-technical-competence-how-the.html. [March 2011].

[49] Virginia Beach City Public Schools. (2009). *About Virginia's Workplace Readiness Skills.* [Online]. Available: http://www.vbschools.com/TCE/workplace.asp. [January 2010].

communications, teamwork and self-presentation. They are fully integrated as performance standards in all of Virginia's career and technical education courses. A performance standard for demonstrating a skill accompanies each skill in the list.

To verify student mastery of WRS, Virginia uses the NOCTI Workplace Readiness Skills (WRS) exam. This exam must be accompanied by one of three IC^3 tests to measure technological competence and fulfill Virginia's industry credential requirement. These exams have been approved by the Virginia Board of Education so that students may earn verified credits.

In order for school divisions to be reimbursed for testing costs, students must complete <u>both</u> the NOCTI WRS exam and an IC^3 exam.[50] WRS assessments administered as stand-alone tests or in combination with tests other than the IC^3 and Digital Literacy Certification do not meet the requirements established by the Virginia Board of Education. Although a single, unified exam is the ideal, the Virginia Board of Education required both exams in order to measure mastery.

School divisions have three resources to assist in paying for the industry certifications and licensure for students: state allocation for industry credentials, local Perkins allocations, and state Perkins funds.[51] (See also Section C, *Financing for Career and Technical Education in Virginia*, in this report.)

F. OTHER CAREER AND TECHNICAL EDUCATION ACTIVITIES IN VIRGINIA

The paragraphs which follow discuss the many diverse career and technical education activities offered in Virginia:
- Governor's Career and Technical Academies [Science, Technology, Engineering And Mathematics (STEM)]
- Technical Diplomas
- Virginia's Academic and Career Plans
- Career Readiness Certificate
- Virginia's Education Wizard
- Virginia Community College Career Coaches Program
- Tech Prep
- Dual Enrollment
- Career Guidance and Advisement in Career and Technical Education
- Business and Industry Involvement
- Educator Development

Governor's Career and Technical Academies [Science, Technology, Engineering and Mathematics (STEM)]

In 2008, the Virginia Board of Education approved the criteria to establish Governor's Career and Technical Academies.[52] These academies offer programs

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[50] This requirement was in effect during the 2009-2010 school year.
[51] Virginia Beach City Public Schools. (2009). *About Virginia's Workplace Readiness Skills.* [Online]. Available: http://www.vbschools.com/TCE/workplace.asp. [January 2010].
[52] Virginia Department of Education. (2011). *Virginia's Governor's Career and Technical Academies. Established Career and Technical Academie*s. [Online]. Available: http://www.doe.virginia.gov/instruction/career_technical/gov_academies/academies/index.shtml. [March 2011].

designed to expand options for the general student population to acquire science, technology, engineering and mathematics (STEM) literacy, as well as other critical skills to prepare them for high-demand, high-wage and high-skill careers. STEM is an interdisciplinary area of study that bridges the four areas of science, technology, engineering and mathematics.

Virginia's STEM model utilizes programs in career and technical education to expand options for the general population of students to acquire STEM literacy and other critical knowledge, skills and credentials to prepare them for high-demand, high-skill and high-wage careers in Virginia.[53] These programs represent partnerships of business and industry, public schools, community colleges and universities and local government, including regional workforce and economic development officials. The Virginia Board of Education has also approved criteria that will allow other school divisions to establish Governor's Career and Technical Academies. The following STEM Academies have been established:[54]

- Governor's Career and Technical Academy for Renewable Resources and Agricultural Sciences – Halifax County
- The Governor's Academy for Innovation, Technology and Engineering (GAITE) – Hampton
- Governor's Career and Technical Academy in Arlington (GCTAA) – Arlington County
- Fostering Innovation and Relevance Through STEM and Trades (FIRST) – Suffolk
- STEM for LIFE (Science, Technology, Engineering, and Math for Life-Long Initiatives for Future Education) – Russell County
- Stafford Academy for Technology (STAT) – Stafford County
- Loudoun Governor's Career and Technical Academy – Loudoun County
- Governor's Career and Technical Academy for Engineering Studies – Chesterfield County

Technical Diplomas

In 2007, legislation was passed which directed the Virginia Board of Education to establish the requirements for a technical diploma.[55] The diploma must meet or exceed the requirements of a standard diploma and include a concentration in career and technical education. The academic requirements for the two technical diplomas meet or exceed the requirements for the Standard and Advanced Studies Diplomas. These requirements are outlined below:

- Standard Technical Diploma – a student must earn four standard credits in career and technical education in a career concentration approved by the Virginia Board of Education.
- Advanced Technical Diploma – a student must earn three standard credits in career and technical education in a career concentration approved by the Virginia Board of Education. For this diploma, students also have the option to take either one additional credit in career and technical education or one credit in fine arts.

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[53] Association for Career and Technical Education. (2009). *Virginia CTE State Profile.* [Online]. Available: http://www.acteonline.org/profile_va.aspx. [March 2011].
[54] Virginia Department of Education. (2011*). Virginia's Governor's Career and Technical Academies. Established Career and Technical Academies.* [Online]. Available: http://www.doe.virginia.gov/instruction/career_technical/gov_academies/academies/index.shtml. [March 2011].
[55] Virginia Department of Education. *Proposed Changes to the Regulations Establishing Standards for Accrediting Public Schools in Virginia – 2009 Update.* Presentation to the Virginia Commission on Youth Study of Truancy and Dropout Prevention Advisory Group. April 20, 2009.

During the 2007-2008 school year, 19,462 students obtained the Career and Technical Education Diploma and 1,067 students obtained the Advance Mathematics and Technology Diploma.[56]

Virginia's Academic and Career Plans

Also impacting participation in Virginia's career and technical education programs is the requirement that all schools must develop a personal Academic and Career Plan for each seventh grade student by the fall of their eighth grade year. In 2009, the Virginia Board of Education revised the *Regulations Establishing Standards for Accrediting Public Schools in Virginia* to mandate that each middle and high school student have a personal learning plan that aligns academic and career goals with the student's course of study.[57] This requirement will take effect in the 2011-2012 school year.[58]

The Academic and Career Plan lays out the student's program of study for high school graduation and identifies a postsecondary pathway, based on the student's academic and career interests.[59] As directed, the student, parent or guardian, and school staff create a plan agreed upon by all parties to ensure that everyone is focused on working towards the same goals for middle and high school, in preparation for postsecondary and career readiness.[60] Throughout the process, the plan is maintained by school professionals who work cooperatively to guide the student towards the identified academic and career path. The plan can be adjusted in response to new information to meet the needs of the student and is, by design, a working, student-driven document.

Career Readiness Certificate

Virginia's Career Readiness Certificate (CRC) is an assessment-based credential that gives employers and career seekers a uniform measure of key workplace skills.[61] The opportunity to earn a CRC is available through Virginia's Community Colleges and local One-Stop Career Centers.[62] The CRC, based on the Work Keys Assessments of the American College Testing (ACT) program, is a portable skills credential which ensures employers of a job seeker's skills.[63] Over the past decade, WorkKeys has become widely accepted nationwide among employers, educators and employees as providing a common language for skills definition. The assessments are based on job profiles identifying the basic employability skills for over 17,500 jobs. Included in the certification are three WorkKeys assessments: Reading for Information; Applied

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[56] Virginia Department of Education. (2010). *Agency Strategic Plan for 2010-2012*. [Online]. Available: http://vaperforms.virginia.gov/agencylevel/stratplan/spReport.cfm?AgencyCode=201. [March 2011].
[57] 8 VAC-20-131-5 et. seq.
[58] 8 VAC 20-131-140.
[59] Virginia Board of Education. (2009). *Guidelines for Academic and Career Plans*.
[60] Virginia Board of Education. (2009). *Guidelines for Academic and Career Plans*. [Online]. Available: http://www.doe.virginia.gov/boe/guidance/assessment_accreditation/guidelines_academic_career_plans.pdf. [November 2009].
[61] Virginia Community College System. (2011). *Career Readiness Certificate*. [Online]. Available: http://www.vccs.edu/WorkforceServices/CareerReadinessCertificate/tabid/256/Default.aspx. [March 2011].
[62] A One-Stop Career Center, known locally as the Virginia Workforce Center, is a location where a wide range of employment, training, and career education services are available to employers, workers, job seekers and youth. Additional information on One-Stop Career Centers can be found at http://vwn.vccs.edu.
[63] Ibid.

Mathematics; and Locating Information. Certificates are awarded at the Gold, Silver and Bronze levels, depending on the assessment scores. Skill-gap training is available to assist individuals to improve their award levels.

The CRC verifies that an individual can handle duties that are required by at least 85 percent of all jobs profiled by ACT WorkKeys in the United States. The CRC assists both the employer and the job seeker beyond the secondary or postsecondary degree. In Virginia, the CRC is supported by the Virginia Workforce Council, Chamber of Commerce, the Virginia Manufacturers Association and many Virginia businesses. As of November 2009, the CRC was not included on the Virginia Board of Education's listing of recognized industry credentials for Virginia's career and technical education program.[64]

Virginia's Education Wizard

In March 2009, Virginia's community colleges unveiled an online tool to guide prospective students and their families in making informed career and college choices.[65] The Virginia Education Wizard is an online resource created to help students launch, track and complete personal profiles based on their career interests or selected degree programs.

The Wizard (version 1.0) provides students with the ability to:
- assess their career interests and work values;
- find specific occupations in demand, how much education is required, how much those jobs pay, and the top employers within their local area and other regions of Virginia;
- find community college majors and programs that match students' location and career interests;
- compare the cost of colleges and universities throughout Virginia;
- find and apply for financial aid; and
- identify transfer pathways to the baccalaureate degree.[66]

Wizard 2.0, which was released in early 2010, makes it possible for students to:
- assess their skills and explore associated career clusters;
- prepare for college admission and attendance;
- explore public and private colleges and universities throughout Virginia; and
- build resumes and prepare for interviews.[67]

An early release of the Skills Assessment will allow students to take the assessment and receive their results in the form of Career Clusters that match their self-reported

[64] Virginia Board of Education. (2009). *Board of Education Approved Industry Certifications, Occupational Competency Assessments, and Licensures.* [Online]. Available: http://www.doe.virginia.gov/instruction/career_technical/path_industry_certification/cte_credentials/industry_certifications_2009.pdf. [March 2011].
[65] Virginia Community College System. (2011). *Fact Sheet. Virginia Education Wizard.* [Online]. Available: http://www.vccs.edu/Portals/0/ContentAreas/WizardDocs/Wizard%20-%20Wizard%20Fact%20Sheet.pdf. [November 2009].
[66] Virginia Department of Education. (2009). Superinte*ndent's Memo #307-09.* [Online]. Available: http://www.doe.virginia.gov/administrators/superintendents_memos/2009/307-09.shtml. [March 2011].
[67] Ibid.

skills. Wizard 2.0 will enable students to save their assessment results. Wizard 3.0, which was released during the 2010-2011 school year, makes it possible for students to create and store personalized academic and career plans.

Virginia Community College Career System Coaches Program

Virginia Community Colleges Career Coaches are community college employees who are based in local high schools to assist high school students define their career aspirations and identify community college and other postsecondary programs and services.[68] The fundamental purpose of the program is to help students make informed decisions about their career and educational plans. While the day-to-day functions of a Career Coach vary according to local needs, major responsibilities include:

- facilitating the development of individual career plans and portfolios;
- relating information on careers and career pathways;
- connecting students to early college programs such as Tech Prep and dual enrollment; and
- easing the transition of students from high school to postsecondary education and training and the skilled workforce.[69]

The Virginia Community College System launched the Career Coaches program in January 2005 with 11 coaches based at 13 high schools.[70] In 2009, more than 120 Career Coaches serve students in more than 170 high schools throughout the Commonwealth. During the 2008-2009 school year, Career Coaches:

- provided one-on-one or small group coaching services to 58,397 students;
- guided 28,537 students into early college programs; and
- assisted 28,350 students to develop career and educational plans.

Data on the Career Coaches program collected by the VCCS demonstrates:

- 80 percent or greater satisfaction rate of students receiving coaching services in making career and college plans;
- 67 percent change in students without plans to continue postsecondary education prior to meeting with the Coach to having plans to continue to postsecondary education after meeting with a Coach;
- 89 percent of high school principals indicating that the Career Coach program met or exceeded overall expectations;
- 7 percent increase in community college enrollments from high schools with a Career Coach when compared to high schools without a Coach; and
- 5 percent increase in dual enrollments in high schools with a Career Coach, compared to high schools without a Coach.

Tech Prep

Tech Prep is a sequence of study in a technical field that typically provides students the opportunity to earn postsecondary credit towards a technical certificate or diploma.[71] Tech Prep is funded under the *Carl D. Perkins Vocational and Technology Education*

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[68] Virginia Community College System. (2009). *VCCS Career Coach Overview.* Presentation to the Virginia Commission on Youth Study of Career and Technical Education Advisory Group, October 29, 2009.
[69] Ibid.
[70] Ibid.
[71] American Youth Policy Forum. (n.d.) *Issue Brief: Post Secondary Access and Success.* [Online]. Available: http://www.aypf.org/programs/briefs/PostsecondaryAccessandSuccess.htm. [June 2011].

Act through federal grants to states.[72]   Tech Prep incorporates secondary and postsecondary education elements while including academic, career and technical content in a coordinated progression of courses.

Virginia's Tech Prep program develops Career Pathways in four- to six-year programs of study that begin in high school and end with a postsecondary credential, such as an associate degree or baccalaureate degree, industry certification or a state licensure.[73]   Each Tech Prep Career Pathway contains academic and career and technical education courses at the secondary and postsecondary level. All Tech Prep Career Pathways prepare participants for high demand occupational fields, such as Engineering Technology and Allied Health. Tech Prep programs are aligned with national career clusters and pathways. Additional features of Tech Prep programs in Virginia include:
- college credits through dual-enrollment;
- early college placement testing;
- certifications and licensures;
- business-based learning, including internships, cooperative education, and project-based learning; and
- career coaching.

Virginia's Tech Prep students are initially identified as high school career and technical education students currently or previously enrolled in a dual enrollment course.

VCCS is the lead agency which administers Tech Prep and Tech Prep grant awards. These awards enable community colleges to develop, expand, and promote career pathways.[74]   Tech Prep funds are targeted to high school→community college pathways or high school→community college→university pathways. Only high school career and technical education programs with an articulation or dual enrollment agreement in place with a locally approved postsecondary education institution or college programs are eligible for Tech Prep funding.[75]

Dual Enrollment

Dual enrollment allows high school students to meet the requirements for high school graduation while simultaneously earning college credit.[76] The *Virginia Plan for Dual Enrollment* provides a framework for dual enrollment arrangements between the public schools and community colleges. These arrangements may be made at the local level between the representatives of boards of the participating public schools and the participating community colleges authorized to contract such agreements.[77] (Not every high school, however, participates in a dual-credit program.)[78]

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[72] Ibid.

[73] Virginia Community College System. (2011). *Tech Prep*. [Online]. Available: http://www.vccs.edu/WorkforceServices/TechPrep/tabid/154/Default.aspx. [March 2011].

[74] Association for Career and Technical Education. (2009). *Virginia CTE State Profile*. [Online]. Available: http://www.acteonline.org/profile_va.aspx. [March 2011].

[75] Ibid.

[76] Virginia Department of Education. (2008). Virginia's Revised Plan for Dual Enrollment Between Virginia Public Schools And Community Colleges. *Superintendent's Memo #153*. [Online]. Available: http://www.doe.virginia.gov/administrators/superintendents_memos/2008/inf153a.pdf. [March 2011].

[77] Ibid.

[78] State Council for Higher Education. (2011). Academic Preparation for College. [Online]. Available: http://www.schev.edu/students/HSclassroomPrep.asp. [March 2011].

Arrangements may be formed in three distinct ways.
1. High school students may be enrolled in the regularly scheduled college credit courses with the other students taught at the community college.
2. High school students may be enrolled in specially scheduled college credit courses conducted exclusively for high school students taught at the high school.
3. High school students may be enrolled in specially scheduled college credit courses conducted exclusively for high school students taught at the community college.

In the latter two cases, where the college credit courses are specially scheduled for high school students, these courses have the same academic rigor as the regularly-scheduled college credit courses and meet all of the college accreditation standards.[79] Courses are taught by full- or part-time faculty who meet VCCS credentialing requirements. The faculty are selected and employed by the participating community college and are required to meet the minimum requirements set by the State Board for Community Colleges. Accordingly, faculty teaching dual enrollment courses are to have a master's or doctoral degree in the teaching discipline or a master's degree with a concentration in the teaching discipline (a minimum of 18 graduate semester hours in the teaching discipline).[80] In all instances, course offerings are to be determined through the mutual agreement of a participating local education agency and corresponding community college.

The 2004 Virginia General Assembly directed the Virginia Board of Education, the State Board for Community Colleges and the State Council of Higher Education of Virginia (SCHEV) to develop a statewide template for articulation agreements for career and technical education.[81] In 2008, in a move to increase portability of college credits earned through early college programs to all 23 community colleges, dual enrollment became the primary vehicle of awarding early college credits in career and technical education program areas.

Career Guidance and Advisement in Career and Technical Education
Information on all career and technical education programs/courses is accessible to students, parents, counselors, teachers and administrators through the online Career Planning Guide, the *r u Ready* magazine provided to 11th graders, and the *r u Ready* parent brochures distributed to parents of 8th graders.[82] Students may also search Virginia's Career Planning Guide to determine their most effective career and technical education course of study for a variety of career goals.

One of the online resources available to all citizens is Virginia VIEW, a Career Information System which provides information about educational and career opportunities in the Commonwealth. Another is *KnowHowVirginia*, a long-term public awareness campaign.

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[79] Virginia Department of Education. (2008). Virginia's Revised Plan for Dual Enrollment Between Virginia Public Schools And Community Colleges. *Superintendent's Memo #153*. [Online]. Available: http://www.doe.virginia.gov/administrators/superintendents_memos/2008/inf153a.pdf. [March 2011].
[80] Ibid.
[81] Association for Career and Technical Education. (2009). *Virginia CTE State Profile*. [Online]. Available: http://www.acteonline.org/profile_va.aspx. [March 2011].
[82] Association for Career and Technical Education. (2009). *Virginia CTE State Profile.* [Online]. Available: http://www.acteonline.org/profile_va.aspx. [March 2011].

This campaign is designed to
- inform students and their parents, teachers and counselors of rewarding career opportunities, particularly in high-demand and emerging fields;
- promote quality career and technical education in middle and high schools to support career exploration and preparation; and
- ensure a larger pool of qualified, motivated applicants for Virginia businesses and industries.

Business and Industry Involvement

Regulations for career and technical education issued by the Virginia Board of Education require that each local education agency or region establish a general career and technical education advisory council to provide recommendations about current job needs and the relevancy of career and technical education programs.[83] These advisory councils also provide a broader perspective about the relevance and effectiveness of career and technical education programs offered within the local education agency or region.

Virginia also has a state-level Advisory Committee for Career and Technical Education, comprised of 14 members with subject-matter expertise about career and technical education. Members serve three-year, staggered terms. The Career and Technical Education Advisory Committee assists the Board of Education and Department of Education in providing information about the needs of career and technical education students and programs and in making recommendations regarding career and technical education. The Advisory Committee also submits an annual report to the Board of Education on career and technical education activities in the Commonwealth.

In addition, each local education agency or region is required to submit to the Department of Education a local career and technical education plan for review and approval.[84] The local plan is to be submitted pursuant to the *Carl D. Perkins Career and Technical Education Improvement Act of 2006*. Further, an annual budget funding application is submitted to the Department of Education for review and approval.

Educator Development

Virginia is working on a concerted effort to help teachers and administrators succeed in their roles. The Department of Education sponsors workshops for academic and career and technical education teachers to develop integrated lesson plans based on state-mandated Standards of Learning (SOLs) correlated to the career and technical education competencies.[85] As noted earlier, Virginia has created the Virginia Career and Technical Education Resource Center to offer services to assist the Department in preparing students for career and lifelong learning. The extensive resources of the Center are available to career and technical education teachers and administrators.

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[83] 8VAC20-120-50.
[84] 8VAC20-120-40.
[85] Association for Career and Technical Education. (2009). *Virginia CTE State Profile*. [Online]. Available: http://www.acteonline.org/profile_va.aspx. [March 2011].

The Virginia Department of Education provides teacher training and industry certification through academies and/or virtual online training. Virginia's local school divisions may utilize their Perkins dollars to support training and testing for the teachers. For programs where state licensure is appropriate for the student, Virginia's teacher licensure regulations require that the teacher also be licensed.[86]

VII. Study Issues

Career and technical education is extremely valuable because it connects academics to specific careers. This connection between learning and workforce training keeps students engaged in school, while providing them with real-world skills.

In Virginia, several issues were identified as barriers to implementing and operating career and technical education programs. Many of these issues were identified by Commission on Youth staff in their literature review and/or discussed at the seven Regional Roundtables the Commission convened for this purpose. A summary of the issues identified in the Regional Roundtables is included as Appendix C. These issues are also discussed in the following section.

A. PERCEPTION OF CAREER AND TECHNICAL EDUCATION

While career and technical education programs serve a diverse population, students, parents and policymakers have a negative image of career and technical education. Misconceptions surround career and technical education programs, suggesting that they lack academic rigor, lead to low-paying jobs, limit entry to colleges and serve low-performing students.[87] This bias is not based in fact; career and technical education can be effectively used to increase student engagement, improve high school attendance and graduation, allow students to earn college credit while in high school and prepare for their postsecondary education and ultimately the workplace.[88] Research indicates that students who take career and technical education courses perform as well or better than students not in career and technical education programs, have lower dropout rates, and earn more money in the labor market.[89] Research supported by the U.S. Department of Education has shown that students who take math-enhanced career and technical education courses perform at higher levels than students who do not. Despite comprehensive efforts and statewide publicity campaigns to change public perception about manufacturing and trade positions, teachers, parents and guidance counselors are reluctant to encourage students to pursue high-skilled manufacturing and other technical occupations.

Within career and technical education circles, it is perceived that "outsiders" hold to inaccurate stereotypes of career and technical education programs. Moreover, teachers and students may lack a basic understanding of career and technical education, with the former being a reflection of the latter. Often parents and educators

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[86] Ibid.

[87] American Youth Policy Forum. (2008). *Supporting High Quality Career and Technical Education through Federal and State Policy.* [Online]. Available: http://www.aypf.org/documents/SupportingHighQualityCTE.pdf. [November 2009].

[88] Ibid.

[89] Ibid.

place a higher value on other educational programs, believing they better prepare students for college, typically considered a prerequisite to success in life.

These stereotypes, which are also perpetuated by school counselors, lead to judgments which negatively affect perceptions of career and technical education programming. [90] [91] Stigma persists for the following reasons:
- career and technical education is still viewed as vocational education;
- counselors do not understand the rigor and relevance of career and technical education;
- teacher requirements for career and technical education programs make it difficult to hire personnel;
- students have to convince parents and counselors that career and technical education will help them prepare for the workplace; and
- the image of career and technical education programs needs to be improved.[92]

Career and technical education programs can help students remain in and be successful in high school. A quality career and technical program can reduce a school's dropout rate by as much as six percent.[93] High-risk students are eight to ten times less likely to drop out in the 11th and 12th grades if they enroll in career and technical programs in conjunction with a general education program.[94] Research shows that disabled students who have participated in secondary career and technical education programs are also less likely to drop out and more likely to be employed, have paid jobs and work full-time after high school. In addition, career and technical education is part of the national movement encouraging students to earn college credit while in high school. Many courses qualify students for dual enrollment credit, which encourages them to graduate from high school and makes further education affordable.

Of the Virginia students who completed career and technical education programs in 2007:
- 36 percent are in full-time employment;
- 28 percent are employed and in school;
- 77 percent have participated in formal education since graduation;
- 19 percent attend community college full time;
- 36 percent attend a four year university full time;
- 18 percent received an industry certification in high school; and
- 17 percent are currently working for a certification. [95]

[90] Virginia Advisory Committee for Career and Technical Education. (2010). *Minutes from June 17, 2010 Meeting*. [Online]. Available:
http://www.doe.virginia.gov/boe/committees_advisory/career_teched/2010/minutes_06_17_10.pdf. [March 2011].
[91] Gordon, 2003, as cited by the American Youth Policy Forum. (2008). *Supporting High Quality Career and Technical Education through Federal and State Policy.* [Online]. Available:
http://www.aypf.org/documents/SupportingHighQualityCTE.pdf. [November 2009].
[92] Virginia Advisory Committee for Career and Technical Education. (2010). *Minutes from November 3, 2010 Meeting*. [Online]. Available:
http://www.doe.virginia.gov/boe/committees_advisory/career_teched/2010/minutes_11_03_10.pdf. [March 2011].
[93] Association for Career and Technical Education. (2007) *Career and Technical Education's Role in Dropout Prevention.* [Online]. Available:
http://www.acteonline.org/uploadedFiles/Publications_and_Online_Media/files/Dropouts.pdf. [November 2009].
[94] Ibid.
[95] The University of Virginia Weldon Cooper Center for Public Service. (2009). Presentation to the Virginia Commission on Youth Study of Career and Technical Education Advisory Group, July 24, 2009.

Because job growth in skilled trades is expected to surpass employment growth in other occupations, a career and technical education can provide current students with the tools necessary to participate in the growing workplace. Career and technical education provides relevance to students and creates a strong relationship between students and learning in order to engage students and thus keep them in school.[96]

B. VIRGINIA'S SHIFTING LABOR MARKET

Preparing students for the real world of work is becoming more important every year. The traditional educational model was limited to academic courses designed for those who are planning to pursue a postsecondary degree. In the past, there was a trend to disapprove of direct preparation for work during high school, even though advances have been made in integrating academics into career and technical education.[97] However, this traditional education model does not match what employers desire for entry-level workers. According to a survey conducted by the National Association of Manufacturers, the three elements employers most value for entry-level workers are:
1. an understanding of the workplace;
2. workplace readiness skills; and
3. work experience.[98]

Employers rank attitudes and communications skills at the top of the list. Work experience, recommendations, and industry credentials come next and factors related to school are ranked last. Even for young workers, characteristics related to schooling do not rank first.[99]

Educators, parents, community leaders and policymakers at the local, state, and federal levels have become aware of the need to address this "skills gap" detailed by U.S. employers. A major survey conducted in 2005 by the National Alliance of Manufacturing asked companies whether K-12 schools were doing a good job preparing students for the workplace; 84 percent of the 800 participating companies indicated "no."[100] The Aerospace and Defense segment reported "no" 93 percent of the time. The top three most frequently-cited deficiencies of the education system were:
1. basic employability skills;
2. math and science; and
3. reading and comprehension.

This gap challenges the Commonwealth's ability to maintain a competitive advantage among other states and with industrialized nations, although career and technical

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[96] Association for Career and Technical Education. (2007). *Career and Technical Education's Role in Dropout Prevention and Recovery.* [Online]. Available:
www.acteonline.org/uploadedFiles/Publications_and_Online_Media/files/Dropouts.pdf. [November 2009].
[97] Educational Testing Service. (2006). *High Schools that Work: Facing Labor Market Realities.* [Online]. Available:
http://www.acteonline.org/uploadedFiles/About_CTE/files/HSRWORK-2.pdf. [November 2009].
[98] Ibid.
[99] The University of Virginia Weldon Cooper Center for Public Service. (2009). Presentation to the Virginia Commission on Youth Study of Career and Technical Education Advisory Group, July 24, 2009.
[100] National Association of Manufacturers, Manufacturing Institute's Center for Workforce Success & Deloitte Consulting. (2005). *2005 Skills Gap Report - A Survey of the American Manufacturing Workforce.* [Online]. Available:
http://www.doleta.gov/wired/files/us_mfg_talent_management.pdf. [March 2011].

education has always been a prime supplier of skilled entry-level workers for local communities throughout the Commonwealth.[101]

Middle-skill jobs—those requiring training in addition to a high school education but less than a four-year degree—make up the largest part of America's labor market. Unfortunately, many Virginia employers are unable to find enough sufficiently trained workers to fill these jobs. As a result, job creation and economic growth are stifled.[102] Chart 1 illustrates the most significant source of education in Virginia that will be required for employment between 2006 and 2016.

Chart 1

**Most Significant Source of Education
Virginia Average Annual Job Openings 2006-16**
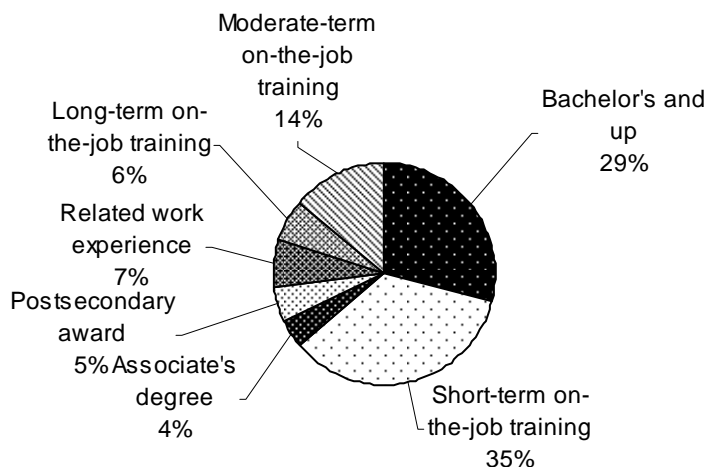
Source: The University of Virginia Weldon Cooper Center for Public Service. (2009). *Presentation to the Commission on Youth's Advisory Group for the Study of Career and Technical Education,* July 24, 2009.

The *2008-2009 Occupational Outlook Handbook* from the Bureau of Labor Statistics projected that the fastest growing careers would be in career and technical education fields such as healthcare and trade and industrial occupations.[103] However, in order to promote a workforce to fill these jobs, students will require training from quality secondary and postsecondary career and technical education teachers.

Manpower Group, a national company specializing in workforce solutions, conducts an annual study on employer demand. Table 2 outlines the top ten "hard to fill" jobs in

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[101] Virginia Department of Education. (2007). *Credentialing in Career and Technical Education in Virginia.*

[102] The Workforce Alliance, as cited by the University of Virginia Weldon Cooper Center for Public Service. (2009).

[103] National Association of State Directors of Career and Technical Education Consortium. (2009). *Teacher Shortage Undermines CTE.* [Online]. Available:
http://www.careertech.org/uploaded_files/Teacher_Shortage_Undermines_CTE.pdf. [March 2011].

the U.S. in 2009.[104]   Analysis conducted by the University of Virginia Weldon Cooper Center for Public Service has indicated that Virginia's career and technical education programs provide pathways for all ten of these occupations.

Table 2

Top 10 "Difficult to Fill" Occupations
Reported by U.S. Employers – 2009

1.	Engineers
2.	Nurses
3.	Skilled Trades
4.	Teachers
5.	Sales Representatives
6.	Technicians
7.	Drivers
8.	IT Staff
9.	Laborers
10.	Machinists

Source: The University of Virginia Weldon Cooper Center for Public Service. (2009). *Presentation to the Commission on Youth's Advisory Group for the Study of Career and Technical Education,* July 24, 2009.

Career and technical education programs provide multiple pathways to postsecondary education and careers and offers differentiated education to help make learning more effective. Many communities are using career and technical education as a framework for designing these pathways, since it provides the opportunity for applied learning, and connects students to postsecondary programs and employment opportunities. Career and technical education offers students direct connections with employers at the state, regional, and local levels. Employer advisory boards serve at all levels and contribute insights and advice about careers and programs. Moreover, career and technical education does not end in high school. Programs lead students toward further education at the postsecondary level to programs that are affordable and in demand. Industry certifications, licensures or occupational competency assessments may not guarantee entry-level employment. However, many employers recognize that skill set verification through credentialing is a good predictor of employee success in a specific job role.[105]   The value of credentials is greatly enhanced by successful completion of the related career and technical education program. Although students' preparation for entry into the world of work has often been invisible in the traditional high school model, career and technical education programs are highly regarded as effective in bridging the gap between school and the workplace.

C. SHORTAGE OF CAREER AND TECHNICAL EDUCATION TEACHERS

The Virginia Department of Education compiles an annual report of the critical teaching shortage areas in Virginia.[106]   Data was obtained from Virginia's school

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[104] The University of Virginia Weldon Cooper Center for Public Service. (2009). *Presentation to the Virginia Commission on Youth 'Study of Career and Technical Education Advisory Group,* July 24, 2009.

[105] Virginia Department of Education. (2007). *Credentialing in Career and Technical Education in Virginia.*

[106] Item 139, paragraph H.1, Chapter 879 of the *2008 Virginia Acts of Assembly.*

division superintendents in January 2008.[107]   In Virginia, the top ten critical shortage teaching endorsement areas were determined based on a prescribed methodology outlined by the U.S. Department of Education.   For statewide teacher shortages, endorsement areas were ranked according to the most severe academic teaching shortage areas.   Career and technical education instructors (family and consumer sciences; technology education) ranked sixth of the top ten critical shortage teaching endorsement area assignments for 2008-2009:[108]

This problem is not limited to Virginia; there is a nationwide shortage of career and technical education teachers.   Between 1994 and 2004, approximately 2.25 million teachers were hired in the U.S. but, in that same period, 2.7 million teachers left the profession, the majority leaving prior to retirement.[109]   During the 2008 Virginia General Assembly Session, legislation passed which identified career and technical education as one of the top three critical teacher shortage areas.[110]   In 2006-2007, specific career and technical education teacher shortages occurred in Business and Information Technology, Family and Consumer Sciences, Trade and Industrial Education, and Technology Education.   The only critical shortages ranking higher than career and technical education were in special education and mathematics.[111]   Local school divisions face increasing difficulty in finding qualified teachers for career and technical education programs, and this shortage is predicted to become more serious within the next five years.   Career and technical education administrators collectively project 613 openings within five years, more than eight times as many as in 2006-2007.[112]   Student enrollment in career and technical education programs will rise as Virginia businesses make workforce readiness skills an increasingly clear priority.   Highly qualified career and technical education teachers must be available to meet the demand.

Credentialing also affects career and technical education teachers.   Career and technical education teachers must become trained (certified) in at least one credential for the career and technical education programs that they teach.   Industry certification with related training expands a teacher's content background in the skill set areas and job roles for which they train students.   It also enables them to explain the requirements of specific jobs in related career pathways, as well as to put into perspective for their students the relative "market value" of industry certifications as well as other credentials.[113]   Unfortunately, there is a lack of clarity and consistency with the requirements for teacher credentials in career and technical education, particularly for dual enrollment.   There is a misconception that that dual enrollment instructors for career and technical education must have a master's degree and 18 credit hours in their subject area, which is the same qualification required for a community college instructor.

[107] Virginia Department of Education. (2008). *Commonwealth of Virginia Critical Shortage Teaching Endorsement Areas for the 2008-2009 School Year*. [Online]. Available:
http://www.doe.virginia.gov/teaching/workforce_data/shortage_areas/2008-2009.pdf. [March 2011].
[108] Ibid.
[109] National Association of State Directors of Career and Technical Education Consortium. (2009). *Teacher Shortage Undermines CTE*. [Online]. Available:
http://www.careertech.org/uploaded_files/Teacher_Shortage_Undermines_CTE.pdf. [March 2011].
[110] Chapter 48 of the *2008 Virginia Acts of Assembly*.
[111] Virginia Association for Career and Technical Education. (2009). *Issues and Solutions for Career and Technical Education in Virginia 2009.*
[112] Ibid.
[113] Virginia Department of Education. (2007). *Credentialing in Career and Technical Education in Virginia.*

While this is true for dual enrollment for core academic courses, this is not always the case for career and technical education dual enrollment course offerings. Other qualifications, such as advanced industry experience, industry experience or additional bachelor's level courses, may suffice.

VIII. Findings and Recommendations

At the December 7, 2009 meeting, the Commission on Youth adopted the following study recommendations.

Finding
Lack of recognition of certain industry credentials offered by career and technical education
Virginia's Career and Technical Education program is nationally recognized for its broad offering of industry credentials and for the rate of Virginia student attainment of these credentials. The Virginia Board of Education, as of October 2009, approved 265 credentials including three types:
  ➢ *State Licensure;*
  ➢ *NOCTI (National Occupational Competency Testing Institute); and*
  ➢ *Pathway Exams*

Virginia employers report that industry certifications, particularly state licensure, are an extremely valuable component of career and technical education programs. However, some industry credentials offered by career and technical education programs, while valuable, are not familiar to or acknowledged by employers or Virginia's community colleges or universities. For example, the NOCTI exam receives limited recognition among employers. Educating employers about the value of these credentials, as well as input from labor and industry to prioritize the credentials to be offered would be helpful to bridge this gap.

Recommendation 1
Support the Department of Education and the Board of Education's Career Advisory Committee's plans to work with local Career and Technical Education advisory committees to continue to educate the business community about the benefits of industry certifications, including National Occupational Competency Testing Institute (NOCTI).

Recommendation 2
Request the Secretary of Education and the Virginia Career Pathways System Working Group identify those credentials and certificates valued by Virginia employers and are appropriate for inclusion in Virginia's career and technical education Pathways. Regional variation in demand and program offerings will be acknowledged in this review. A report on the status of this review will be submitted to the Virginia Commission on Youth, the Board of Education and the Council on Career and Technical Education prior to the 2011 General Assembly Session.

Finding
Employers value "Workplace Readiness Skills" for students entering the workplace.
According to research conducted by the University of Virginia's Weldon Cooper Center, employers desire entry-level workers who come ready to work. Employers want workers who display a range of "workplace readiness skills". The top priority skills identified by

employers include: understanding the workplace, demonstrating a positive attitude and work ethic, and having appropriate skills for communication, teamwork, and self-presentation. Employers also highly value applicants who come with prior work experience and industry credentials. Accomplishment school may actually rank last. Roundtable participants and those interviewed in the Cooper Center studies report difficulty finding workers with these skills for work in the trades, manufacturing, technology, health and even white-collar professions. Roundtable participants also noted that, once employers conduct a credit check, a criminal background check and a drug screen, as many as 80 percent of all applicants may be eliminated.

Virginia's Workplace Readiness Skills (WRS), which included 13 skills identified in 1997 by Cooper Center research, were fully integrated as performance standards in all of Virginia's career and technical education courses. The Virginia Career and Technical Education (CTE) Resource Center developed curriculum materials and resources for educators to assist them teach the skills so highly-rated by Virginia employers from all sectors. The WRS help teachers and students understand the demands of the workplace and, through resource materials, help students achieve validated competencies considered essential for success in the world of work.

Career and Technical Education offers an exam to verify student mastery of the skills. The Virginia Board of Education approved the use of the NOCTI WRS exam, accompanied by one of three IC3 tests (to measure technological competence), to allow students to obtain verified credit. In order for school divisions to be reimbursed for testing costs, both the NOCTI WRS test and an IC3 test must be completed. A single, unified test is the ideal, and work toward that end is underway.

In 2008, the process of updating the list of Virginia's workplace readiness skills commenced, including national research and comments from employers from across the Commonwealth. The skills list is being refined and expanded from 13 to 21 skills, and will be fully implemented as part of the career and technical education curriculum in the fall of 2010. A revised NOCTI WRS to replace NOCTI WRS + IC3 test will be presented to the Board of Education in January 2011 for their consideration for verified credit. Once the new test is approved by the Board, it can be used immediately in the 2010-2011 school year and school divisions will receive reimbursement from the state for tests administered.

Recommendation 3

Introduce a resolution to support the update of Virginia's Workplace Readiness Skills (WRS) and test revision. Request that the status of the update to the WRS, and its accompanying assessment instrument, be shared by the Department of Education with Virginia's network of Career and Technical Education administrators and school counselors during all upcoming conferences and trainings. Also, encourage local school divisions to communicate regularly with and invite the participation of the local employer community about workplace readiness initiatives and results from student testing on this and other credentialing tests.

Finding
Virginia's Career Readiness Certification, although endorsed by employers, is not an approved credential in Virginia career and technical education.
Virginia's Career Readiness Certification (CRC) is a nationally recognized certification of three specific workplace skills (Reading, Math, and Locating Information). The CRC, which

has been in place in Virginia since 2004, measures a portion of the full range of workplace readiness skills and is a well-recognized and concise addition to the menu of available certifications across all programs and regions in the state. The CRC verifies to employers that job applicants have essential core employability skills. Employers associate the CRC with productivity, quality, business processes, and profitability. Its use is endorsed by the Virginia Workforce Council, Chamber of Commerce, AFL-CIO and the Virginia Manufacturers Association. A major healthcare system, Inova Health System, now requires the CRC for all prospective new hires in allied health positions (clinical care tech, CNA, patient transport, etc.). Certification is required by the Virginia Council on Advanced Technology Skills (VCATS) initiative for Advanced Manufacturing Technician positions in biotech and semi-conductor manufacturing, both are high growth areas in Virginia's economy.

As of fall 2009, CRC is currently not included on the Board of Education's list of recognized industry credentials for Virginia's career and technical education program.

Recommendation 4
Request the Virginia Community College System, the Virginia Workforce Council and the Department of Education include the Career Readiness Certification (CRC) with the Academic and Career Plans for Career and Technical Education Pathways, as appropriate.

Finding
Career and technical education has a persisting negative perception among students, parents and education officials.
The traditional education model in Virginia places a tremendous amount of emphasis on college preparatory classes and liberal arts and, in so doing, runs the risk of ignoring the realities of the labor market. The educational system has focused on, and been rewarded and recognized for offering academic courses that prepare students to enter four-year colleges often at the expense of meeting the needs of all students, some who will not go directly on to postsecondary education – and some who perhaps never will, but who can nonetheless achieve career and economic success and contribute to their local communities and the Virginia economy. This college-focused approach also runs the risk of ignoring the needs of Virginia employers, including the skilled trades, manufacturing, or other career and technical education pathways. These pathways lead to jobs that are likely found in every community in Virginia and can generate strong earnings and a diverse workforce. The U.S. Department of Labor tells us that, while many jobs in the future may require some study after high school (including apprenticeships), 76 percent of the jobs created over the next 20 years will not require completion of a four-year college degree. Job growth in skilled trades is expected to surpass employment growth in most other occupations. According to the Virginia Manufacturers' Association, there may be a shortfall as high as 12,000, in trained workers between 2007 and 2012.

In addition, students very much need workplace preparation in high school because they are not obtaining workplace experience outside of school. The employment rate for teens is the lowest ever recorded in post-World War II history. Since employers increasingly value applicants who have work experience, this puts Virginia youth at risk of not being able to compete effectively for good entry-level jobs.

Career and technical education provides pathways for young people to attend college, to secure good jobs, and to be life long learners. In fact, 77 percent of career and technical education completers pursue formal education of some form after high school. Finally,

offers challenging courses for careers that did not exist until recently and that may be essential to keep the Virginia economy at the forefront.

Recommendation 5
Support the Board of Education's Career and Technical Education Advisory Committee's efforts to advocate and market career and technical education.

Recommendation 6
Support the Department of Education revisions to the R U Ready Parent's Guide and request that it be shared with parents of 7th grade, rather than 8th grade, students and request that the Department consider making the R U Ready Guide for Students, which provides information about students' educational opportunities, available to high school students in their sophomore, rather than junior, year.

Recommendation 7
Request that the Virginia Association of School Counselors Association and Virginia PTA/PTSO include information on Virginia's rising labor force needs, as well as the benefits of Virginia's Career and Technical Education programs, in all trainings, newsletters and appropriate media. Also request that this message be shared with parents of kindergarteners.

Recommendation 8
Support the Virginia Workforce Investment Council and the local workforce boards' work with local school divisions to communicate the value of Virginia's Career and Technical Education programs.

Recommendation 9
Request the Department of Education include in the training materials for Academic and Career Plans, as well as in the sample plan:
- **the value of work-based learning for students, such as cooperative education, internships, job shadowing, mentorships, projects, service learning or a combination;**
- **the value of skilled occupations for students; and**
- **information for students and parents regarding the importance of having an industry credential or certification.**

Recommendation 10
Support the Department of Education's efforts to promote private-public partnerships which offer real-world experiences to students. These partnerships include, but are not limited to 4-H, Ag in the Classroom and Junior Achievement.

Recommendation 11
Support the Governor's Career and Technical Academies in Virginia as programs designed to expand options for the general student population to acquire Science, Technology, Engineering and Math (STEM).

Recommendation 12
Request the Virginia Broadcasters Association to develop a public service campaign to inform the public of the benefits and value of career and technical education.

Finding
Dual enrollment course offerings vary among Virginia's school divisions. One reason is that school divisions may not be aware that dual enrollment instructor credentials for career and technical education instructors are more flexible from those established for core academic courses.
Dual enrollment is a viable and low cost pathway to a job or to further education, and many career and technical education courses qualify students for dual enrollment credit. Dual enrollment credit encourages students to graduate from high school and continue on to college with some already-earned credits, which makes further education more affordable. However, there is no regularity in the processes for dual enrollment across the Commonwealth. While there is an overall plan for dual enrollment between Virginia's public schools and the VCCS, there is still confusion about the requirements and the framework for establishing dual enrollment arrangements.

In 2005, there were over 426 articulation course agreements in effect between school divisions and community colleges; however, these agreements generally do not extend beyond a single community college service region. Also, there are significant differences in both the requirements of community colleges for students to receive articulated credits and the intake processes through which community colleges advise and award credits to students qualified to receive college credits for high school course work. Career and technical education administrators, school officials and business representatives, assert that it would be helpful to have portability of credentials and transparency. However, it is important to acknowledge the significant local variability among the course offerings within the Commonwealth's high schools and community college system.

There is also a lack of clarity and consistency with the requirements for teacher credentials pertaining to dual enrollment. It is perceived that dual enrollment instructors for career and technical education must have a master's degree and 18 credit hours in their subject area, which is the same qualification required for a community college instructor. While this is true for dual enrollment for core academic courses, this is not always the case for career and technical education dual enrollment course offerings. Other qualifications, such as advanced industry experience, industry experience or additional bachelor's level courses, may suffice.

Recommendation 13
Request the Chancellor of the Virginia Community College System (VCCS) provide guidelines on the requirements for credentials career and technical education instructors need to satisfy the requirements to teach courses qualified for dual enrollment credit. Request that, once these guidelines are completed by VCCS, they be shared with the Department of Education and the Board of Education's Advisory Council for Career and Technical Education, Virginia CTE Resource Center and Virginia Association for Career and Technical Education (VACTE).

Recommendation 14
Request the Secretary of Education provide an update to the Commission on Youth on the progress of developing a template for statewide articulation agreements for career and technical education as recommended in House Document 33 (2005, HJR 125) and to provide a report addressing the feasibility of establishing a unified agreement of dual enrollment in the Commonwealth, the barriers of pursuing uniform implementation of dual enrollment, and the costs of standardizing dual enrollment offerings.

Finding
Career and technical education is experiencing significant shortages of qualified teachers.
Career and technical education is now, and will in the future, suffer from significant shortages of qualified teachers. The availability of teachers in critical shortage areas and hard-to-staff schools continues to be a major challenge in the nation and in Virginia. According to the VACTE, in 2006-2007, specific career and technical education teacher shortages occurred in Business and Information Technology, Family and Consumer Sciences, Trade and Industrial Education, and Technology Education. The only critical shortages ranking higher than career and technical education were in special education and mathematics. This shortage is predicted to become more serious within the next five years. Career and technical education administrators collectively project 613 openings within five years–more than eight times as many as in 2006-2007. As student enrollment in career and technical education programs continues to grow and workforce readiness skills become an increasingly clear priority for Virginia business, highly qualified career and technical education teachers must be available to keep pace with the demand.

Recommendation 15
Support the Department of Education's efforts to address the shortage of Career and Technical Education teachers in the Commonwealth.

Recommendation 16
Support the efforts of the Board of Education's Advisory Committee for Career and Technical Education (efforts to address teacher shortages, including teacher recruitment and the involvement of local career and technical education advisory committees.

Finding
Virginia's Career Coaches effectively facilitate the short and long-term educational goals of students.
Virginia's Career Coaches are community college employees based in local high schools, with the mission of helping students define their career aspirations and recognize post-secondary programs and services that can help them achieve their goals. The Virginia Community College System (VCCS) administers the Career Coach program, which targets high school students who most need career planning services and those middle students who will comprise the mainstay of Virginia's workforce but who often graduate from high school without a definitive plan or resources for postsecondary education and training. Currently, Coaches are located in all community college service areas. The types of services provided align with the VCCS Career Coaching model and include: contacting students, providing individual/small group coaching, administering career assessments, developing career plans, providing assistance with college placement, and referring students to early college placement programs, such as dual enrollment or Tech Prep. Coaches also connect students to local employers who serve as career advisors and

mentors to students. The Career Coaches program is funded by both VCCS and local educational institutions.

Since its inception in December 2004, the program has increased dramatically from 11 coaches in 13 high schools to approximately 120 coaches in over 170 high schools. Analysis of data indicates that the Career Coach program positively impacts short and long term education goals of students and the high schools that coaches work in. Some of the impacts of the program in 2007-08 include:
- *increased enrollments in postsecondary education;*
- *increased enrollments in early college programs such as dual-enrollment and Tech Prep;*
- *increased enrollments in postsecondary career and technical education programs; and*
- *increased completion of postsecondary education programs.*

Students would likely realize major benefits if Career Coaches were situated in every Virginia high school, but there is currently not funding available to accomplish this.

Recommendation 17
Support the continuation and expansion of Virginia Community College System (VCCS) Career Coaches program and request the Virginia Association of School Superintendents, the Virginia Association of Secondary School Principals and the Virginia School Board Association include information on the effectiveness of the Virginia Career Coach Program in upcoming conferences and trainings, as appropriate.

Finding
The Virginia Education Wizard is an effective resource to help students identify and map their academic and career goals
During the 2011-2012 academic year, all schools in Virginia are to develop a personal Academic and Career Plan (ACP) for each seventh-grade student. These ACPs are to be completed by the fall of the student's eighth-grade year. The components of the ACP will include the student's program of study for high school graduation and a postsecondary career pathway based on the student's academic and career interests. The ACP will be developed based on guidelines established by the Board of Education and signed by the student, student's parent or guardian, and school official(s) designated by the principal. The ACP is to be included in the student's record and may be reviewed and updated before the student enters the ninth and eleventh grades.

While the ACP is designed to maximize student achievement by helping students identify their goals and begin to map out a plan to accomplish them while in middle and high school, school divisions are concerned about the implementation of the ACP with budget shortfalls and the burden already placed on school staff and guidance counselors. However, the VCCS has developed a tool that will help school divisions achieve the goals set forth in the ACP. The Virginia Education Wizard (www.vawizard.org) is a one-stop, online resource that brings together information about careers, curriculum and financial assistance. Users can visit the Wizard to get tailored information about where they are in their career journey and create a path that will get them to future goals. On Wizard, students can identify career paths; curriculum choices, including potential transfers to four-year institutions; and financial assistance. The student may utilize the Virginia Education Wizard to construct a personal profile linking their career interests with selected degree programs. The Wizard provides comprehensive, real-time information. While the Virginia Education Wizard is currently

available online, Wizard 3.0, which will be launched in the summer of 2010 and is being developed in conjunction with the Department of Education, will allow school divisions to create ACPs for their students. The ACP guidelines will be merged with the Virginia Education Wizard 3.0 to offer school divisions a user-friendly, comprehensive tool. The Wizard will offer a comprehensive strategy to fulfill the requirements of the ACP without any additional programming costs.

Recommendation 18
Support the Department of Education and the Virginia Community College System (VCCS) plan to integrate and implement the Academic and Career Plan (ACP) with the Virginia Education Wizard.

Recommendation 19
Support the Department of Education's efforts to provide information in upcoming training and training materials on Virginia's Career Coaches, including ways Career Coaches can assist in the implementation of the Academic and Career Plan (ACP) and school divisions may establish partnerships with the Virginia Community College System (VCCS) and parents to support the Career Coaches.

Finding
Career and technical education can benefit students with disabilities.
Students with disabilities in special education may benefit from participation in career and technical education programs. National Transition Network research shows that students with disabilities in secondary career and technical education programs were less likely to drop out, more likely to be employed, to have paid competitive jobs, and to work full time after high school. Those students with work experience had better employment outcomes, higher wages, more hours and more continuous employment. Furthermore, those who mainstreamed into regular career and technical education or academic classrooms secured competitive jobs more often and felt better prepared to keep their jobs. While there are challenges to coordinating the distinct requirements of career and technical education and special education, bridging this gap can help students with disabilities obtain higher levels of independence and economic stability. Career and technical education should be part of the solution for educating students with disabilities.

Recommendation 20
Request the Board of Education's State Special Education Advisory Committee address barriers to appropriate placements of students with special needs into career and technical education programs by developing (or sharing) written guidelines for use by school personnel.

Acknowledgments

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Study of Career and Technical Education Programs
REGIONAL ROUNDTABLES

CENTRAL VIRGINIA ROUNDTABLE — **September 21, 2009**
Hanover County Center for Trades and Technology — **Mechanicsville, Virginia**

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Hanover County Public Schools
Ashland, Virginia 23005
    Stewart D. Roberson, Ed.D., Division Superintendent
    Charles Hurd, Principal, Center for Trades & Technology
    Don Monroe, Asst. Dir. of Career & Technical Education

Lane Hopkins, Vice President of Human Resource & Capital
    One University
Capital One
Richmond, Virginia 23228

Junior Achievement of Central Virginia, Inc.
Glen Allen, Virginia 23060
    Anne Marie McHugh, President
    Daphne Swanson

King William County Public Schools
King William, Virginia 23086
    Kathy H. Morrison, School Board Member
    Mark Jones, Ed.D., Division Superintendent
    Charles Clare, Asst. Supt. Of Personnel & Operations

The Honorable Jennifer L. McClellan
Virginia House of Delegates
Richmond, Virginia 23218

Michael W. Matthews, P.E.
President, ACEC/Virginia
Hankins and Anderson, Inc.
Glen Allen, Virginia 23060

Kay Pangraze, Senior Vice President, Eastern Region
Holladay Properties
Ashland, Virginia 23005

Patrick Pontiac Buick GMC Inc.
Ashland, Virignia 23005
    Michael Patrick, General Manager
    David Smith, Service Manager

The Honorable Christopher Peace
Virginia House of Delegates
Mechanicsville, Virginia 23111

Lindsay Reames, Assistant Director of Governmental
    Relations
Virginia Farm Bureau
Richmond, Virginia 23261-7552

J. Michael Rose
Executive Principal of Career & Technical Education
Chesterfield County Public Schools
Chesterfield, Virginia 23832

Elizabeth Russell, Director, Office of Career and
    Technical Education Services
Virginia Department of Education
Richmond, Virginia 23218-2120

Teresa G. Simpson, Vice President, Va. Assn. of CTE
    Administrators
Career and Technical Education Coordinator, Essex
    County Public Schools
Essex High School
Tappahannock, Virginia 22560

Peggy L. Watson, Administrative Coordinator
CTE Resource Center
Richmond, Virginia 23226

Marc Weiss, Director
Hanover County Economic Development
Mechanicsville, Virginia 23116

NORTHERN VIRGINIA ROUNDTABLE ⎯ **September 30, 2009**
Chantilly Academy ⎯ **Chantilly, Virginia**

The Honorable Robert H. Brink
Virginia House of Delegates
Arlington, Virginia 22207

Caroline Brooks
Office of Delegate Adam P. Ebbin
Arlington, Virginia 22204

Ruthe D. Brown, Coordinator, Dual Enrollment
Director, Northern VA Tech Prep Consortium
Annandale, Virginia 22003

The Honorable Chuck Caputo
Virginia House of Delegates
Chantilly, Virginia 20153-2154

Chantilly High School
Chantilly, Virginia 20151
  James J. Kacur, Principal
  Douglas Wright, Academy Administrator
  Joan Ozdogon, Academy Career Experience Specialist

Fairfax County Department of Vehicle Services
Fairfax, Virginia 22037
  James Osborne, Assistant Superintendent
  Rob Singhaas

Fairfax County Public Schools
Falls Church, Virginia 22042
  Diane Pruner, Director, Career & Technical Education
  Sandy Jones, Coordinator, Family & Consumer
    Sciences
  Cara Kirby, Career Experience Specialist
  Anne-Marie Glynn, Coordinator, Health & Medical
    Sciences
  De-De McCoy, Special Projects.
  Gwen Plummer, Career Specialist, Fairfax Academy

Angie Gutenson
Associated Builders and Contractors, Inc.
Northern Virginia Office
Chantilly, Virginia 20151

John Honig
Launch Systems Integration
General Dynamics Advanced Information Systems
Fairfax, Virginia 22033

David Kerrigan, President & CEO
Bilmin Company, Inc.
Gaithersburg, Maryland 20877

Daniel J. McGuire, President
Clover Contracting Inc. Plumbing & Mechanical
Fairfax, Virginia 22030

Kris Martini, Director, Career, Technical, and Adult Education
Arlington Public Schools
Arlington, Virginia 22201

Northern Virginia Community College
Miles Hayward, Special Assistant for Career and Technical
    Education, Annandale Campus
Dee Martin, Ed.D., Dean, Applied Sciences and Technology,
    Manassas Campus

Eniko Zs. Rózsa, Director of Training
HITT Contracting Inc.
Fairfax, Virginia 22031-4904

Lynn Terhar, Member
Career and Technical Educaiton Advisory Committee
Fairfax County Council of PTAs

Westwood College (Annandale Ballston Campus)
Annandale, Virginia 22003-2632
  Jane Starr, Director of Career Services
  Heather Carey, Asst Director of Career Services
  Jennifer Gates, Office of Career Services
  Sheena Moton, General Employment Advisor

Jeb Wilkerson
Office of Delegate L. Scott Lingamfelter
Woodbridge, Virginia 22195

John Wittman, Member
Career and Technical Education Advisory Committee
Fairfax County Public Schools
Falls Church, Virginia 22042

TIDEWATER REGIONAL ROUNDTABLE ⎯ **October 2, 2009**
Advanced Technology Center ⎯ **Virginia Beach, Virginia**

Gail V. Bess, Coordinator
Career and Technical Education & Adult Education
Suffolk Public Schools
Suffolk, Virginia 23439-1549

The Honorable Harry B. Blevins
Senate of Virginia
Chesapeake, Virginia 23605

Johnny Cates, General Manager
Automotive Youth Education Systems (AYES)
Virginia Automobile Dealers Association
Richmond, Virginia 23220

Rhonda S. J. Doak, Business and Information
    Technology Coordinator
Virtual Enterprise Virginia State Coordinator
Virginia Beach, Virginia 23453

Ethlyn M. Gibson, RN, MSN, Interim, VP/Nurse Executive
Sentara CarePlex Hospital
Hampton, Virginia 23666

Hampton City Schools
Hampton, Virginia 23669
    Jesse W. White, CTE Curriculum Leader
    Brinda Greenwood, CTE Curriculum Leader

Jody Hibbs, Executive Director
Plumbing & Mechanical Professionals of Virginia/
Virginia Association of PHCC
Suffolk, Virginia 23433-0143

Jim Howe
Evan Hibbs Plumbing
Member, PMPV-VAPHCC
Portsmouth, Virginia 23707

J. Joseph Johnson, Executive Director
New Horizons Regional Education Centers
Hampton, Virginia 23666

Robert P. Leber, EdD, Director, Education and Workforce
  Development
Northrop Grumman Shipbuilding, Newport News
  Operations
Chairman, Virginia Workforce Council & Member, Virginia
  P-16 Council`
Newport News, Virginia 23607

Michael W. Matthews, PE, President
Hankins and Anderson, Inc.
Glen Allen, Virginia 23060

The Honorable Yvonne B. Miller
Senate of Virginia
Norfolk, Virginia 23510

Barbara Simmons, Med, Career & Technical Education
  Coordinator
Williamsburg/James City County Schools
Williamsburg, Virginia 23187

STIHL Incorporated
Virginia Beach, Virginia 23452
    B. Scott Tilley, General Counsel
    Debbie Kremers, Human Resources Director

Tidewater Community College (Norfolk Campus)
Norfolk, Virginia 23510
    Michael Summers, EdD, Provost
    Barbara Murray, Program Director, Apprenticeship
      Academic Instruction

Tidewater Community College (Va. Beach Campus)
Virginia Beach, Virginia 23453
    Amy Wisilosky, Member, General Advisory Council for
      Career and Technical Education
    John Ledgerwood, Coordinator, Engineering &
      Technology, Advanced Technology Center

Virginia Beach Public Schools
Virginia Beach, Virginia 23456
    Esther Monclova-Johnson, PhD
    Director of Equity Affairs

Virginia Manufacturers Association
Richmond, Virginia 23219
    Brett A. Vassey, President & CEO
    Alice Scott, Member Services Associate

SHENANDOAH REGIONAL ROUNDTABLE — October 20, 2009
Massanutten Technical Center — Harrisonburg, Virginia

Gayl Brunk, Vice Chair
Rockingham County School Board
Singers Glen, Virginia 22850

Sherri Chapman, CTE Coordinator
Harrisonburg City Schools
Harrisonburg, Virginia 22801

Debra Cooper, Director of Secondary Education
Shenandoah County Public Schools
Woodstock, Virginia 22664

Pablo Cuevas, Board Chair
Massanutten Technical Center Foundation
Vice Chair, Rockingham County Board of Supervisors
Broadway, Virginia 22815

Donald J. Ford, Ed.D., Superintendent
Harrisonburg City Schools
Harrisonburg, Virginia 22801

Bill Gamble, Member
Rockingham County School Board
Bridgewater, Virginia 22812

Lorrie Gore
Gundlach Plumbing & Heating Co.
Richmond, Virginia 23230-1228

Jonathan Harrison
Rockingham Redi-Mix
Harrisonburg, Virginia 22803

Steve Hedrick, Senior Workforce Analyst
Human Resources
James Madison University
Harrisonburg, Virginia 22807

Jody Hibbs, Executive Director
Plumbing & Mechanical Professionals of Virginia/Virginia
  Association of PHCC
Suffolk, Virginia 23433-0143

Joan Hollen, Workforce Coordinator
Shenandoah Valley Partnership
Harrisonburg, Virginia 22801

Jeremy Holloway, Assistant Chief
Rockingham County Fire & Rescue
Harrisonburg, Virginia 22801

Byron K. Hinton, Chairman
Stafford County Career & Technical Education Committee
Member, Virginia CTE Committee
Fredericksburg, Virginia 22405-2323

Sharon H. Johnson, CPLP, CPT, CWDP
Project Director, 21st Century Workforce Transitions
Director, Regional Workforce Development
Shenandoah Valley Partnership, Inc.
Shenandoah Valley Workforce Investment Board, Inc.
Harrisonburg, Virginia 22801

Jennifer Kester, Recruitment Specialist
James Madison University
Harrisonburg, Virginia 22807

Stephen King, Deputy County Administrator
Rockingham County Administration Center
Harrisonburg, Virginia 22802

Marianne E. LaRocco, Assistant Director
Massanutten Technical Center
Harrisonburg, Virginia 22801

Sharon Lovell, Ph.D., Interim Dean
Associate Professor of Psychology
College of Integrated Science and Technology
James Madison University
Harrisonburg, Virginia 22807

Marshall Price, Director
Massanutten Technical Center
Harrisonburg, Virginia 22801

Riddleberger Brothers, Inc.
Mt. Crawford, Virginia 22841
    R.J. Ceely
    Wayne Gibson

Ed Smith, Assistant Superintendent of Instruction
Rockingham County Schools
Harrisonburg, Virginia 22802

Lester A. Smith, Director
Tech Prep Consortium
Blue Ridge Community College
Weyers Cave, Virginia 24486

Jeff Stapel, Director of Human Resources
Shickel Corporation
Bridgewater, Virginia 22812

Steve Straight, Supervisor of Career and Technical
   Education
Frederick County Public Schools
Winchester, Virginia 22601

Mary Sullivan, Coordinator of Workforce Development
   and Continuing Education
Blue Ridge Community College
Weyers Cave, Virginia 24486

GALAX REGIONAL ROUNDTABLE — November 10, 2009
Crossroads Institute — Galax, Virginia

Chris Bedsaul, Executive Director
Rooftop of Virginia CAP
Galax, Virginia 24333

Judy A. Brannock, Executive Director
Twin County Regional Chamber of Commerce
Galax, Virginia 24333

Kim G. Brown, Coalition Coordinator
Twin County Prevention Coalition
Galax, Virginia 24333

Pat Burkholder, Career Coach
Hillsville, Virginia 24343

Mark Burnette, Ed.D., Director, Middle and Secondary
   Education
CTE Coordinator
Carroll County Public Schools
Hillsville, Virginia 24343

The Honorable Charles Carrico
Virginia House of Delegates
Independence, Virginia 24348

The Rev. Ronnie G. Collins, Associated Pastor
First United Methodist Church
Hillsville, Virginia 24343

Lorraine Crawford, Ed.D., Director of Instruction
Radford City Schools
Radford, Virginia 24141

Galax High School
Galax, Virginia 24333
    Bill Sutherland, Principal
    Becky Howell, CTE Director

Barry Glenn, President & CEO
Jobs for Virginia Graduates
VCU Center for Public Policy
Richmond, Virginia 23284-3061

Galax Regional Roundtable (*cont.*)

Goodwill Industries
    Pat Burkholder
    Megan Hess, Adult/Youth Case Manager
New River Community College
Christiansburg, Virginia 24073

Grayson County
Independence, Virginia 24348
    Erin M. Kvach, Extension Agent
    Kevin Spurlin, Agriculture & Natural Resources
      Educator

Grayson County Public Schools
Independence, Virginia 24348
    Elizabeth Thomas, Ed.D., Division Superintendent
    Karen H. Blevins, Technology Coordinator
    Stephen Cornett, Director of Instruction &
      Assessment
    Katie Thornton

Roland Hall, Assistant Principal
Carroll County High School
Hillsville, Virginia 24343

Alan R. Hawthorne, Ph.D., State CTE Advisory
   Committee
Executive Director, Joint Industrial Development
   Authority of Wythe County
Wytheville, Virginia 24382

Marty Holliday, Program Planner
New River/Mount Rogers Workforce Investment
   Board
Radford, Virginia 24141

Rhonda Keen, Regional Site Manager
Wytheville Community College at The Crossroads
   Institute
Galax, Virginia 24333

Oliver A. McBride, Ed.D., Executive Director
Crossroads Institute
Galax, Virginia 24333

Kenneth McFadyen, Regional Director
Economic & Entrepreneurial Development
Blue Ridge Crossroads Economic Development Authority
The Crossroads Institute
Galax, Virginia 24333

The Honorable C.M. Mitchell, Mayor
City of Galax
Galax, Virginia 24333

Pulaski County High School
Dublin, Virginia 24084
    Peter Anderson, Assistant Principal & CTE Coordinator
    Calvin Andrews, Teacher
    Toni Bowman, Teacher
    John Johnson, Teacher
    Lee Newby, Teacher

Jackie Rochford, CTE Coordinator
Danville Public Schools
Danville, Virginia 24541

Deborah R. Stone, Adult and CTE Director
Wythe County Schools
Wythe County Technical Center
Wytheville, Virginia 24382

Wytheville Community College
Wytheville, Virginia 24382
    Stacy Edward Thomas, Ed.D., Dean, Workforce
      Development, Continuing Education and Technical
      Programs
    Roger G. Halsey, Coordinator. Workforce Development
      Services
    Mary Ann Gillock, Career Coach

HENRY COUNTY — November 11, 2009
Virginia Museum of Natural History — Martinsville, Virginia

James Barnett, President
Barnett Commercial Realty, Inc.
Martinsville, Virginia 24112

Kathy Duncan
City of Roanoke
Noel C. Taylor Municipal Building
Roanoke, Virginia 24011

Henry County Public Schools CTE Advisory Council
   Terri Flanagan, School Board
   Steve Keyser, New College Institute
   Jeannie Lowery, Administrative Assistant
   Gail Minter, Henry County Administration
   Kathy Rogers, United Way (also School Board)
   Sharon Sheppard, MHC Chamber of Commerce

Henry County Public Schools
Collinsville, Virginia 24078
   Anthony D. Jackson, Division Superintendent
   DeWitt House, Asst. Supt. of Instruction
   Linda Dorr, Asst. Supt. of Administration & Human
     Resources
   Rebecca Wells, Director, Special Education
   Wanda Cart, Guidance
   Karen Cecil, Guidance
   Mary Davis, Guidance
   Donna Hicks, Middle & High School Curriculum Specialist
   Bill Bullins, Director, Elementary Education
   Melany Stowe, Coordinator, Communication & Career
     Development
   Janet Copenhaver – Director, Technology
   Debbie Bliss
   Rebecca Wells

Henry Regional Roundtable (*cont.*)

Chris Hewett
Floyd County Public Schools
Floyd, Virginia 24091

Celeste Janson, Commonwealth Scholars Coordinator
Danville Community College
Danville, Virginia 24540

Angela R. Logan, Program Officer
The Harvest Foundation
Martinsville Virginia 24115

Martinsville City Public Schools
Martinsville, Virginia 24115
   Scott Kizner, Superintendent
   Stelia Wilbourn, Asst. Supt. of Instruction
   Sandy M. Forrest, Director of Technology & CTE

Michael W. Matthews, P.E., President
Hankins and Anderson
Glen Allen, Virginia 23060

The Honorable Donald Merricks
Virginia House of Delegates
Danville, Virginia 24540

Patrick Henry Community College
Martinsville, Virginia 24115
   Nolen Browning, Vice President, Academic & Student
    Development Services, Ed.D.
   Jeff Fields, CTE Advisory Council

The Honorable W. Roscoe Reynolds
Senate of Virginia
Martinsville, Virginia 24114

Maury Sharp, Lead Teacher
Radford High School
Radford City Public Schools
Radford, Virginia 24141

Debbie Stone, CTE Coordinator
Wythe County Public Schools
Wytheville, Virginia 24382

Jimmie Tickle, Principal
Pittsylvania Career Technical Center
11700 U.S. Highway 29
Chatham, Virginia 24531

Doloris E. Vest, President
Western Virginia Workforce Development Board
Roanoke, Virginia 24016

SOUTHWEST REGIONAL ROUNDTABLE ⎯ November 30, 2009
Washington County School Board Office ⎯ Abingdon

Alpha Natural Resources, Inc.
Abingdon, Virginia 24212
   George Owens, Vice President, NexGen & Leadership
    Effectiveness
   Judy Kipler, NexGen Specialist
   Chris Matras, Recruitment Coordinator

George G. Brown, Secondary and CTE Supervisor
Tazewell County Public Schools
Tazewell, Virginia 24651

Betty Lou Domjahn, M.Sc., Tech Prep Director
Highlands Tech Prep Consortium
Virginia Highlands Community College
Abingdon, Virginia 24210

Rebecca Dye
Russell County Schools
Lebanon, Virginia 24266

Forest Fowler, Career & Technical Education Director
Giles County Schools
Pearisburg, Virginia 24134

James Graham, Principal
Lee County Career and Technical Center
Lee High School
Jonesville, Virginia 24263

The Honorable Terry G. Kilgore
Virginia House of Delegates
Gate City, Virginia 24251

Bruce L. Kravitz, Chief Executive Officer
Southwest Virginia Alliance for Manufacturing, Inc.
Abingdon, Virginia 24210-4747

Brenda D. Long, Ed.D., Director
2009 Virginia CTE Summer Institute
Blacksburg, Virginia 24060

Southwest Regional Roundtable (*cont.*)

Sam McKinney, Principal/CTE Director
Smyth Career and Technology Center
Marion, Virginia 24354

Mountain Empire Community College
Big Stone Gap, Virginia 24219
   Connie Rhoton, Tech Prep/FCCLA Director
   Sherry Shreve, Career Coach
   Brandi Barnette, Career Coach

Christianne E. Parker, Washington County Asst. County
   Administrator
Community and Economic Development
Abingdon, Virginia 24210

The Honorable Phillip P. Puckett
Senate of Virginia
Tazewell, Virginia 24651

Pulaski County Public Schools
Dublin, Virginia 24084
   Thomas Brewster, Ed.D., Asst. Supt for Administration
   Peter Anderson, Assistant Principal & CTE Coordinator
   Pulaski High School: Toni Bowman; Gregg Hawks;
   Jennifer Lyons; and Georgette Yakman

Virginia Highlands Community College
Abingdon, Virginia 24210
   Karen Cheers
   Jim Kroll

Washington County Public Schools
Abingdon, Virginia 24210
   Alan Lee, Ed.D., Superintendent
   Barry Yost. Ed.D., CTE Coordinator
   Kenneth Litton, Principal, Adult Skill Center

Washington County Career and Technical Education
  Centers
William N. Neff Campus
Abingdon, Virginia 24210-2326
   Brian Johnson, Principal
   Barbara Lucy, Career Coach
   Sherrie Spiegler, Career Coach
   Melinda Leland

Rick Weaver
Montgomery County Schools
Christiansburg, Virginia 24073

Study of Career and Technical Education Programs
REGIONAL ROUNDTABLES

<u>Central Virginia Roundtable – Hanover Center for Trades and Technology</u>

➢ Virginia has a strong CTE program. CTE provides pathways for young people to be life long learners.

➢ There is a need for a well-trained workforce, particularly true in Hanover. This drove the creation of the Hanover Center for Trades and Technology.

➢ Currently, there is much emphasis on college and liberal arts which may generate "paper-pushers". Not as much emphasis for trades, manufacturing or other CTE pathways. These jobs are actually more secure and generate strong earnings and a strong workforce.

➢ Localities may be focusing more on demand and not as much on supply. For example, many students may want to pursue Forensic Science (e.g. CSI) but maybe there will only be ten jobs per year in this field.

➢ Another example is Qimonda, which was a major driver of the workforce in Central Virginia, but now that it is out of business, there is a serious need for workforce retraining.

➢ Workforce Investment Act, local Workforce Investment Boards, these entities deal with issues of workforce training. However, there may be overlap with other agencies. Look at funding and coordination with other agencies.

➢ Another issue is that manufacturing jobs are available but manufacturing is a hard sell for students. Assembly line perception but this is not accurate. Manufacturing concrete pipe is now an automated process. There is a need to show this to students; particularly while they are young.

➢ Engineering must not be overlooked. The biggest challenge is finding and training engineers. Significant need for engineers.

➢ CTE certifications need to be aligned with actual employers' needs. Some certifications received through CTE may not be what employees need and school divisions are covering the cost of students receiving industry credentials, which may not match what employers want.

➢ Students need to have "workplace readiness skills", these are skills that are crucial such as punctuality, work ethic, how to count out change, etc.

➢ Hard to find qualified and reliable workforce. Once employers conduct a credit check, a criminal background check and a drug screen, 80 percent of all applicants can be eliminated.

➢ Work ethic is also an issue for employers. For example, gutter installers can potentially earn $70,000 per year but employees do not want to work 40 hour weeks, may not be dependable and do not always show up for jobs. Employers cannot maintain and grow their business unless they have a skills and reliable workforce.

➢ Customer service is also not emphasized. Very difficult to obtain employees with adequate customer service skills. Difficult skill to master.

- It is important to remember that schools can teach skills, employers can teach the basics but it is not all up to the schools. Parents have a role.

- Some industries are suffering from an aging workforce and are having difficulty attracting new talent because the perception is that these jobs (e.g., HVAC mechanic) are not "sexy".

- Outreach to students and parents on CTE may be too late to attract them to CTE. Students may not find out about CTE until 9th or 10th grade. They may have other electives they want to pursue instead of CTE.

- Add to the "wish list" – more time built into the day and into the curriculum for CTE.

- Academic and Career Plans (ACP) may help with earlier planning and the provision of CTE to students at an earlier age.

- Financial Literacy Classes are important but negatively impact CTE because school administrators may use class time that could be used for CTE to fulfill these requirements. Must compete with another elective.

- There is a need for advocacy/PR describing the benefits of CTE. Schools, counselors and parents have no clue on the benefits of CTE and how their children can access it.

- Need to identify those occupations with shortages of qualified workers and incorporate into CTE (e.g., large animal veterinarians).

Northern Virginia Roundtable – Chantilly Academy

- Industry certifications are costly. Local decision in what is covered. In Fairfax, it is very expensive to cover the costs of certification including pre-tests, practice tests. In Fairfax 3,700 earn an industry certification. ACAC certifications cost $125.

- It is difficult to find qualified teachers certified to teach in CTE programs. For example, a teacher may be certified in science and have a teaching certificate but cannot be a CTE teacher.

- It is important not to forget the vocational component in CTE in lieu of academic rigor. There is a need for both elements. Plumbers and carpenters play a major role in the workplace.

- Programs must generate enough interest to get students to participate to justify the creation of a program/lab.

- There is a huge stigma surrounding CTE. Parents push for college. CTE = blue collar.

- Issues surrounding dual enrollment. Dual enrollment a very good option for students and a viable pathway to a good job. However, there are no statewide guidelines for the administration of dual enrollment in CTE. It would be helpful to have portability of credentials and transparency of pathways. There are unequal processes for dual enrollment across the Commonwealth. If this was rectified, more students in Virginia could graduate with a CTE certificate and college credits. Systemic issue because not the same across the Commonwealth.

- Issue with teacher credentials pertaining to dual enrollment. Teachers must have Master's degree and 18 credit hours in the course. Very difficult. Possibly utilize online classes through the local community college when there is a shortage of qualified teachers.

- Economic incentives from business partners help provide training and jobs to students. Employers not always welcomed into the schools.

- Parents and counselors unaware that a majority of future jobs will not require a 4-year degree.

- Need for more industry related training in CTE.

- Career planning must start sooner in a student's educational career. Also, have students made aware of professions with growth and high demand. An example of this is that health allied professions there are huge demands. Not just nurses but X-Ray Technicians and other health technicians, radiologists. Very strong job stability.

- Geographic Information System (GIS) Technicians is another high demand occupation. GIS is part of Northern Virginia Community College. Very strong programs in Northern Virginia. First tier of GIS technician requires only 8 credits and a student can pursue this while in high school.

- Centers of excellence in PA, regional training facilities are a good model.

- Can be difficult to create certain programs for Associate's and/or Bachelor's programs, e.g., construction management or plumbing. Varies by school division and among community colleges.

- Relevance of traditional high school program for senior year. Need a "Capstone" class for seniors to make learning real and incorporate local businesses.

- Growing need for entrepreneurial partnerships between schools and businesses. Curriculums must be adapted to be strategically aligned with workforce demands. Businesses would like to partner to help provide the labs/space for CTE programs if it accommodates a need for them.

- Investigate Workforce Investment Boards and how these Boards work with school divisions, not just the community college system.

Tidewater Roundtable – Virginia Beach Advanced Technology Center
- Workforce Readiness Skills (WRS) 13 skills, address attendance, teamwork, computer literacy, etc. The WRS covers the "soft" skills that youth do not always get at home or in the basic school curriculum.

- Merger of career education with Virginia Wizard. Potential to take CTE in Virginia to the next level.

- CTE curriculum resource center budget being cut. Significant cuts in Governor's reduction plan. Impact upon CTE.

- Not many parents or business folks aware of DOE's 16 pathways and 79 career clusters. Very good information but not available to parents or to the general public.

- Leadership an issue. Superintendents call the shots, must have people ready to infuse new knowledge and keep learning of new sills continuous. Superintendents do not always buy into CTE. Only effective program if there is buy-in from the Superintendent.

- Education split between theory and application. The two need to be brought together.

- If all careers are accounted for in the pathways, but Engineering and Accounting included in CTE. CTE/regular curriculum with other pathways is not integrated. Separate tracks – diplomas v. CTE.

- Key to successful CTE, better partnerships, innovative ideas and collaboration between school system and business. Examples are Sentara and Virginia Beach schools create simulation labs for health professions.

- High schools have 24-credits for students to earn diploma, less and less elective opportunities. Pushing some credits down to middle school.

- Failure rate of students in science and math programs in college is 35 to 50 percent. Need to better prepare high school students for these requirements. CTE can help with this.

- Relevance in certifications a big issue. Technological advancements takes place at least every 12-months, new skills are introduced 12-months. DOE only reviews certifications every 12 months. Need to have rolling review of certifications, not just once every year.

- Evaluate using virtual tools v. real laboratory. Look at cost savings.

- Better prepare students for what they need to pursue their goals. If they want careers in healthcare, emphasize math or science classes and not PE classes for electives.

- Guidance Counselors do not have time to "counsel" students on requirements for classes or for other needs.

- Need a paradigm shift in education. Need more show and tell and more business involvement.

- The #1 industry in Virginia is agriculture. Is this addressed in CTE?

- Workplace Readiness Skills (WRS) cannot be applied because there is no comparable test to use as a benchmark. However, these skills are what employers want. Virginia Beach uses WRS because businesses want this. Cost of testing is not included in the SOL testing budget in the Appropriations Act.

Shenandoah Roundtable – Massanutten Technical Center

- New programs are created based on the stated need of the community. Desire in Harrisonburg/Rockingham to keep students with desire to pursue certain careers in the community (e.g. firefighters and rescue workers).

- Issues with instructors in high school who are not eligible to teach dual enrollment classes because of the requirement that they have a Master's plus 18 credits in the specialty. Cannot justify teachers to return for Master's because the pay is the same. Certain majors do not really require a Master's degree but these teachers still cannot teach these dual enrollment classes. Difficult to find qualified teachers.

- Personal finance and economics class will be a barrier to CTE. It will take children out of CTE classes. Must be implemented but with no new staff or money. CTE will be eliminated in some schools. Other courses, like Geography, will also be eliminated to allow for this new course.

- State requirement to test 66 percent of all CTE completers and next year must test 100 percent of all CTE completers. No funding to accomplish this mandate. Frederick County spent $38,000 for testing requirements last year but only $14,000 in the testing budget.

- There are 30 industry credentials, 10 of these have different rules and all of these tests are not designed for youth, designed for adults.

- Different industries tests have completely different testing rules regarding use of proctors. This is another issue for industry credentials and testing for these credentials.

- Disconnect between industry credentials v. what industry wants. Industry and employees not always consulted. Some tests are obvious, particularly if a state license is issued. However, this is not always the case, e.g., welding.

- Every community college handles dual enrollment differently. Dual enrollment may count in the community college system but frequently, these classes cannot be transferred to a 4-year university.

- Tech prep consortium, based in the local community college, is a very strong partner for CTE.

- Battle for resources with higher education. If 76 percent of all future jobs are not going to require a 4 year degree, assess shifting funding to local high schools, tech prep and community colleges. Evaluate using DOE building funds to fund CTE centers. Regional centers have strong CTE programs and can offer more than division because partnerships with several school divisions. Very cost effective. Currently, there are nine regional centers. They offer current programs for high-demand careers. Beneficial to communities.

- Career coaches make a tremendous difference. Trained to help students achieve future employment goals. There is a need to have career coaches for every high school but not enough funding for this.

- Classroom management needs to be included in teacher training programs. This could help retain teachers because they would have additional skills with effectively managing their classrooms.

- Funding and additional mandates a huge issue in CTE. New career and technical diplomas which require additional funding. Academic and career plans also require funding. Requirements keep increasing but no accompanying funding. This causes frustration among educators and administrators.

- Guidance counselors/schools get assessed on how many students attend a 4-year institution.

- CTE is expensive because schools cannot place 30 students in an Auto shop class unlike a Psychology course; there typically is a 20 student maximum.

- Certain credentials are powerful, such as A+ and Microsoft certification but others are not necessary. Workplace Readiness Skills are at the top of the list of what employers want.

- Virginia expanding Workplace Readiness Skills from 13 to 21. Redefining the skills and including a standalone test for assessing the Workplace Readiness Skills.

- Teacher praxis test not reflect teacher class work and irrelevant if you go to another state to teach because of reciprocity.

- "Pile ons" a problem in CTE. School divisions cannot continue to do more with less. Schools looking at all programs, summer school, gifted programs because they cannot spend what they do not have. Reiterate Academic and Career Plans and Finance and Economics requirements are problematic for schools.

Galax Roundtable – Crossroads Institute

➢ There is a need for students to experience a "real world" curriculum.

➢ Training instructors for CTE is a challenge, as is training technology instructors..

➢ Career Coaches in Galax High School are very effective. Galax also already has an Academic and Career Plan (ACP).

➢ Wytheville College has a Career Coach in each service region's high school. This was driven by the Wytheville Manufacturing Council. Career Coaches are effective because they help point students to appropriate postsecondary educational options. There was discussion of placing Career Coaches in middle schools.

➢ Reality Store is an effective program in Galax, with an equally effective teacher. The program, which is designed to teach students how to pay bills, is good preparation for college.

➢ Employers are looking for particular skills in employees. In middle schools, there are exploratory program to discuss this.

➢ Involvement of business leaders is crucial. Junior Achievement programs are effective because of the involvement of the business community. There needs to be a strategy to pull in the community. Job shadowing is an effective way to involve the business community.

➢ Industry is working hard to stay afloat. Carroll County has donated equipment/seed to help with the school division's farm program.

➢ Every class is tied to the SOLs. Junior Achievement is successful because it teaches students about elements needed to succeed in business and industry.

➢ Region 6 Task Force was formed with CTE Directors to facilitate more business partnerships.

➢ There is a need for a media blitz on the benefits of CTE, to discuss CTE and its value, and compare it with 4-year degree. There is a huge disconnect between perception and reality. Educators need to have parents look at the statistics about CTE and help educate their children/students on the benefits of CTE. Have them look at student loans and the value of community college. Discuss with them how much a traditional 4-year college degree will cost them. Inform them how much debt they will have and how much income they will need to make to pay it off.

➢ Align CTE with Governor's green job initiatives. Grayson Prison has done this. Virginia is 2nd for importing energy. Look at nuclear power, solar, clean coal and wind; Virginia has all these resources.

➢ Push to "lower the bar" so everyone has an opportunity to pursue college. Not every student will excel in or desire to pursue a traditional 4-year degree.

➢ In Pulaski, the Chamber of Commerce is involved in a program where every junior will take a class in a career cluster and participate in a job shadowing program. The mentors in the program discuss with students the costs of colleges and the realities about certain careers.

➢ Industry certification requirements have accompanying challenges, particularly with diminishing staff levels.

- ACP to commence in 7th grade. This may be too soon to be effective because how few 7th graders know what they want to pursue as a career. There must be local flexibility in the implementation of the ACP. A 10th grade revision is more prudent.

- Dual enrollment/dual credit very beneficial and effective. Teacher certification is difficult. Wytheville Community College is 3rd in growth in dual enrollment in the Commonwealth. This is a true pathway; students do not have to duplicate classes.

- Industry certification is what employers want. Business and industry are constantly undergoing considerable change and it is challenging to keep up wit this.

- There really is a need to add an hour to the school day to keep up with the rest of the world.

- Career planning is crucial and every bit, if not more so, more crucial than an Advanced Diploma.

- Work readiness skills are crucial. Academic classes are relevant but CTE has its worth. Every CTE program has WRS competencies. There is a need to prepare students for how the real world works.

- CTE provides extracurricular activities to students. Also provides valuable leadership skills to students.

- Real-world application is key and an integral part of CTE. Service learning can also be an effective part of CTE. An example is the Agriculture program's providing rain water for the football field.

- It is not the students that need to be convinced about the benefits of CTE; it is the parents.

- There is a need to steer students to the skilled trades. Also, need to teach younger students work readiness skills and teach older students more about self-sufficiency.

- There is a need to link economic development with CTE credentials. It is hard to keep up with all of the diverse certifications.

- Criticism of traditional education is that the system is not designed to "open the world up to young people when we still have them." Another example is that there are countless other career opportunities in the health arena other than nursing.

- A "one size fits all" approach from Richmond will not help improve CTE.

- Entrepreneurship offers an effective career cluster and makes ideas real for students.

- Force credentialing in programs. The requirement for credentialing in CTE is 60 percent this year and will be 100 percent next year. There is no funding to help with this.

- Highly functioning communities include leadership for students. There may not be funding to accomplish this; however, citizens are engaged in the process. Accordingly, workplace readiness is valid and an effective component of economic development.

- Use CTE in extracurricular activities. In Agriculture classes, local students work cattle and learn how to do so through CTE. They, in turn, share with their families and pass along to the farming community. Tobacco money helps to fund this. Never underestimate the power of youth.

Henry County Roundtable – Virginia Museum of Natural History

➢ 80 percent of community college attendees remain in the community.

➢ Henry County's Career Hub an effective community-based program. Based in school and in Liberty Fair Mall, the Career Hub runs different series of events and is run by Henry County Schools but also offers programs to the public. The Career Hub successfully provided career development services to more than 1,000 students and parents in the community. There are 43 partners involved. The Career Hub to help feature on-time graduation rates. The Hub has two 21st Century Grants.

➢ Patrick Henry has the ACE Academy. Students can benefit from dual enrollment, transfer to Patrick Henry Community College and obtain an Associates Degree. The program has record enrollment, even with the budget cuts.

➢ Arrington Manufacturing plans to build a $8.7 million motorsports facility. Two or three programs in the country. Virginia motorsports facility at Patrick Henry Community College.

➢ Agri-business is another critical industry. Various community partnerships are being formed.

➢ An effective approach would be for every student to complete 40-hours of community learning.

➢ Career Coaches are very effective and provide much-needed support. They also assist students in making good decisions.

➢ Pittsylvania already utilizes an ACP, which brings all 8th graders to the Tech Center.

➢ Very pleased with industry certifications in CTE, particularly state licensure. For example, for EMT exam, the state average pass rate is 10 percent, but Pittsylvania had a 50 percent pass rate.

➢ A small veterinarian program was created; this is tied to VCCS certifications.

➢ State budget cuts may have impact on CTE teachers. Positions may be cut in local school divisions.

➢ Career Academy was proposed but, due to low enrollment, did not move forward with proposal. Good CTE programs are expensive, so must make good use of regional Career Academies.

➢ CTE has grown over the past several years and has exhibited rigor and relevance.

➢ Assess feasibility of matching Virginia CTE curriculum with NOCTI credentials. Delaware and New Jersey have done this and matched curriculum with testing.

➢ "Wall" for CTE: 4-year College vs. CTE stigma. Former sewing program in Martinsville closed in recent years because no longer a community need for such a program.

➢ In Martinsville, largest employers are school system and government. ADA is a strong CTE partner with Virginia Beach school system. Unfortunately, there is no large industry to establish partnership in Martinsville/Henry County, which is a barrier. Chantilly schools receive foundation money for CTE programs, but no one in this region to help with grants.

➢ CTE has an image program, although there is plenty rigor and relevance!

➢ HVAC is not the same as it was in years past; this requires 21st Century skills.

- There is a missing component in CTE; the SPED population is at-risk of dropping out of school. CTE teaches problem-solving skills and makes education relevant, particularly for SPED students.

- CTE has an image problem. It is important that the image of CTE demonstrate clear connections. CTE teaches high level skills which may not learned in Algebra class. For example, if a home is being built, the homeowner must trust that the contractor has strong Algebra skills. Therefore, CTE is not two different tracks and this must be demonstrated to repair the image of CTE. CTE is an effective strategy for economic development.

- The educational system is very categorical and does not always allow for an overlap in subjects. CTE does bridge this gap; students must learn academic subjects, as well as the CTE topic.

- The businesses community desires employees with 21st Century skills, including writing, communication and punctuality. Certifications such as WRS are needed and desired by employers.

- Project Lead the Way is a very effective program. It works well with students and is an example of a program with both rigor and relevance.

- Employers want quality employees. Up to 70 percent of prospective employees cannot pass a drug screen. CTE may provide strong programs, but not provide potential employees if they cannot pass the criminal background test or a drug screen. Need to educate youngsters about this fact, include in WRS.

- Educators and parents need to emphasize the direct link between educational attainment and success in life. This is particularly true in high poverty areas. In Martinsville, 68 percent of students live in a single-parent household. There is a high teen pregnancy rate. Education can turn these statistics around. Suggestions: Instruct students to weigh their choices accordingly; help students see the connection with education and their life; show young people hope and substance abuse rate drops significantly. Allow companies to partner with schools and they can inform students that they must also pass a drug test and not have a criminal record.

- It is not enough to solicit business to the community. For example, EDS came to Mecklenburg County. Once the contracting jobs were completed, the community could not provide the type of skilled workforce required by the company. Therefore, the workforce became a commuting one. Jobs were not attainable for local applicants, because they did not possess the skills.

Southwest Roundtable – Washington County School Board Office
- Credentials are definitely a valuable component of CTE and students who obtain them typically will do well. CTE is aligned with SOLs, which makes it a very comprehensive program. Credentials mean something and are valued and validate what the program is all about.

- In Washington County, the Skill Center has 500 students enrolled, 9th through 12 grades. In Pulaski, there are 1,500 students in a CTE course.

- The Academic and Career Plan (ACP) must be a living document to be effective. It can help students see the value of their coursework. For example, if students understand how science can help them in their future, their grades go up. The ACP must be flexible in order to help the student.

- In Washington County, the graduation rate is 88.4 percent. For students taking CTE classes, the graduation rate is 100 percent.

- CTE gives students a skill. One participant noted that she had previously taken secretarial classes in a CTE program. She learned typing, marketing and office skills. This made her immediately employable.

➢ There are four Career Coaches from the community college in the high school that serve all students. Students who previously did not have a plan now have a plan of action. Three of the schools participate in Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP). This is a federal initiative that encourages young people to stay in school, study hard, and take the right courses to go to college. Mountain Empire has this, as does Scott County.

➢ Montgomery County has four high schools. The school division utilizes block scheduling and seven periods and follows a comprehensive model. There is a question about whether to build a CTE center. They had 100 percent of their high school students enrolled in at least one CTE course; this is a local requirement.

➢ ACP and personal finance course requirements are stressful for counselors to implement. They require six to eight full-time teachers, which is not feasible. Participants noted that some school divisions will have to give something up that is already being taught. In Washington County, students are already being instructed in personal finance as part of computer courses.

➢ Students ask for standard or advanced diploma; they will not ask for a CTE diploma. This is not what students desire.

➢ Science Technology Engineering and Math Academies (STEM) in Virginia are excellent, but currently are not producing enough students to meet future demands for a competitive and well-educated workforce. STEM an excellent mixture of technical and real-world application.

➢ The mining industry is looking for employees, not just coal miner but all full-time positions. There is a tremendous amount of turnover in the industry, which is losing a generation of coal miners. The benefits of coal mining are not being communicated; there is much misinformation. The industry needs to capture the attention of students while they are young.

➢ Pride in work is a very important attribute which must be emphasized.

➢ Keyboarding is also a very important but frequently overlooked skill. Keyboarding is not emphasized as it ought to be. In Tazewell, typing is included as a class in the CTE program. Typing/keyboarding is a valuable aptitude and also beneficial for the academically "middle of the road" student.

➢ Washington County has 500 students attending the Career and Technical Center. This number has doubled over the past eight years. Some students obtain one, two or three credits in CTE. Students can still obtain an advanced diploma.

➢ Smyth County representatives noted the stigma still associated with CTE, which is a huge obstacle. Smyth County has held a community day to show what CTE can offer students. Highlighted classes included Introduction to Health Science and Medical Technology.

➢ Tazewell representatives noted that the quality of the students participating in CTE has been elevated in recent years. However, students are slow to warm-up to industry/manufacturing. Programs can be quite difficult. The program strives to take students to the next level.

➢ Student organizations offer tremendous value to students. Organizations such as Future Farmers of America are beneficial because they offer "hands-on" activities, provide classroom/lab exposure and offer a personal finance element, e.g., co-op.

➢ New River Valley Community College key player and partner with Montgomery County Schools. New River Valley Community College offers specific areas of workforce development and training which is free to students.

➢ There is a need for more registered nurses (RN). Program has two RN classes and one for certified nurses' assistants.

➢ CTE is at the top of critical teacher shortages. It is very difficult to locate CTE instructors.

➢ Block scheduling offers an opportunity to offer different graduation requirements over the course of the school year: Zero period days, 32-credits in a block, zero period, 36-credits. Block scheduling a method for fulfilling various academic requirements.

➢ There are misplaced resources in the educational system. CTE offers skills that all students need. CTE can neither stand still nor stand alone.

VIRGINIA'S SIXTEEN CAREER CLUSTERS AND THEIR PATHWAYS

Agriculture, Food & Natural Resources
- Food Products and Processing Systems
- Plant Systems
- Animal Systems Power
- Structural & Technical Systems
- Natural Resources Systems
- Environmental Service Systems
- Agribusiness Systems

Architecture & Construction
- Design/Pre-Construction
- Construction
- Maintenance/Operations

Arts, Audio/Video Technology & Communications
- Audio and Video Technology and Film
- Printing Technology
- Visual Arts
- Performing Arts
- Journalism and Broadcasting
- Telecommunications

Business Management & Administration
- General Management
- Business Information Management
- Human Resources Management
- Operations Management
- Administrative Support

Education & Training
- Administration and Administrative Support
- Professional Support Services
- Teaching/Training

Finance
- Securities & Investments
- Business Finance
- Accounting
- Insurance
- Banking Services

Government & Public Administration
- Governance
- National Security
- Foreign Service
- Planning
- Revenue and Taxation
- Regulation
- Public Management and Administration

Health Science
- Therapeutic Services
- Diagnostic Services
- Health Informatics
- Support Services
- Biotechnology
- Research and Development

Hospitality & Tourism
- Restaurants and Food/Beverage Services
- Lodging
- Travel & Tourism
- Recreation, Amusements & Attractions

Human Services
- Early Childhood Development & Services
- Counseling & Mental Health Services
- Family & Community Services
- Personal Care Services
- Consumer Services

Information Technology
- Network Systems
- Information Support and Services
- Web and Digital Communications
- Programming and Software Development

Law, Public Safety, Corrections & Security
- Correction Services
- Emergency and Fire Management Services
- Security & Protective Services
- Law Enforcement Services
- Legal Services

VIRGINIA'S SIXTEEN CAREER CLUSTERS AND THEIR PATHWAYS (*cont.*)

Manufacturing • Production • Manufacturing Production Process Development • Maintenance, Installation & Repair • Quality Assurance • Logistics & Inventory Control • Health, Safety and Environmental Assurance **Marketing** • Marketing Management • Professional Sales • Merchandising • Marketing Communications • Marketing Research **Science, Technology, Engineering & Mathematics** • Engineering and Technology • Science and Math	**Transportation, Distribution & Logistics** • Transportation Operations • Logistics Planning and Management Services • Warehousing and Distribution Center Operations • Facility and Mobile Equipment Maintenance • Transportation Systems/Infrastructure Planning, • Management and Regulation • Health, Safety and Environmental Management • Sales and Service