

Annual Report to the Board  
For  
Career & Technical Education  
January, 2007

## **Highlights and Executive Summary**

# Board Report: Career & Technical Education January, 2007

## Highlights

- ❑ In partnership with the Shoreline Public Schools, we are engaged in a state-mandated skills center feasibility study. If the study finds that a skills center is feasible in the Seattle metropolitan area, then state funding and a significant boost in CTE facilities and offerings are possible. Building a skills center in Seattle will have a very significant impact on what our high schools look like, and how our community serves secondary education students.
- ❑ Seattle Public Schools flagship CTE programs include CWEST and ACE pre-apprenticeship programs; *ProStart* Culinary; American Sign Language; *Cisco* Networking Essentials; Marketing/*DECA*; Career in Education; *Automotive YES*; *Project Lead the Way* pre-engineering; Radio Broadcasting; Video and Film Production; Global Technology Academy; Health Occupations; and academies in Architecture, Construction & Engineering; Biotechnology; Environmental Science; Finance; Hospitality & Tourism; Information Technology; Maritime; and Public Service.
- ❑ According to a national study,<sup>1</sup> CTE concentrators are just as likely to attend college as non-concentrators, and are more likely to complete their college education; in other words, they enter college with a more definitive idea of how college will support their career aspirations.
- ❑ Though still suffering from three-pronged pressure: tight budgets; narrowly defined core subjects and high-stakes exams; and cultural bias against non-baccalaureate postsecondary scenarios...Board Policy 52.00 and Procedure 52.01 have slowed down the elimination of Career & Technical Education programs in Seattle Public Schools. Newly certificated photography and other teachers have softened the fiscal blow of the displacement of other CTE teachers, but not replaced the loss of options for students. Many high schools now have leadership with a deepened understanding of and new commitment to building robust CTE programs that integrate well with their vision and help to reduce their dropout rates.
- ❑ The state has approved a CTE option for students who do not pass the WASL, to obtain a CAA (<http://www.k12.wa.us/assessment/CAAoptions/CTEOptions.aspx>), and this includes a General Collection of Evidence and a COE with an Industry Certificate Focus. Out of hundreds of possible Industry Certificates, the state has thus far approved 10, four of which can be obtained in Seattle Public Schools CTE programs.
- ❑ For an annual non-salary investment of under \$30,000, Seattle Public Schools' NAF Academies generate over \$385,000 in student wages, advisory board fundraising, and in-kind contributions; in 2006, NAF Academy students earned \$339,500 in college scholarships. Students in partnership academies (Public Service, Biotechnology, CREATE, Environmental Science, and Maritime) also experience support from their advisory groups, scholarships, and paid internships. Seattle Public Schools supported 135 internships above and beyond 91 NAF Academy internships.
- ❑ 29 graduates of Seattle Public Schools' pre-apprenticeship programs (CWEST & ACE) have pursued apprenticeships in the trades, from electrician to carpenter, from laborer to pipe-fitter. Their expected BEGINNING salaries range from \$40,000 to \$50,000 and this program has generated over \$725,000 so far in scholarship-type support of their apprenticeship training.
- ❑ 49 different CTE courses have tech prep (i.e., "AP for CTE") articulations with our local community college system, the Seattle Community College District (Appendix 1), and are eligible for college credit. 841 students earned 5,738 credits at Seattle Community Colleges in 2005-06. At an average value of \$73.69 per credit, \$424,038 in tuition was saved.
- ❑ Total savings to students is over \$1.87 million.

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<sup>1</sup> ACTE Issue Brief: Career and Technical Education's Role In American Competitiveness, [http://www.acteonline.org/policy/legislative\\_issues/upload/Competitiveness.pdf](http://www.acteonline.org/policy/legislative_issues/upload/Competitiveness.pdf)

# Board Report: Career & Technical Education January, 2007

## Executive Summary

### ❑ **Assessment of CTE Program**

- o Ten industry certifications have been identified, and OSPI is in the process of aligning and endorsing a list of industry certifications appropriate for secondary CTE
- o Cross-crediting of CTE courses with core academics continues, with 19 courses potentially approved for districtwide cross-crediting
- o The state-mandated course re-approval process has been synthesized with a local assessment of CTE course offerings; this is underway Spring 2007.
- o Seattle Public Schools has CTE offerings in all 10 industry clusters identified by The Prosperity Partnership's Regional Economic Strategy for the Central Puget Sound Region. The 2006 *High Skills, High Wages* report identifies health care, construction, and information technology as the leading growth areas. Seattle Public Schools has excellent but insufficient offerings in these areas.

### ❑ **Annual Report**

- o In early April 2006, 1450 student CTE FTE were submitted to the state, down from a high of 1767 in 2001 and a baseline of 1590 in 1997. Student FTE in November 2005 were 1,562 and in November 2006, 1,583. This increase is not due to adding programs, but conversion of some existing programs (i.e., photography) to CTE...it is a 'treading water' effect. Teacher FTE is currently 78.9, and last year at this time is was 81.6.
- o Assessment of range and accessibility: There is a need to increase Marketing; Pre-apprenticeship (north end); Careers in Education; American Sign Language; Applied Math; Pre-Engineering; Graphics; Health Occupations; & middle school CTE offerings.
- o The indirect rate charged to state program 31 has not been reduced from 15%; irregularities in charges are monitored and corrected by the CTE Department and the Budget Department.

### ❑ **Expansion and Strengthening of CTE Programs**

- o Apart from 'harvesting' from existing positions, i.e., in Photography, there is one new CTE position, a Family & Consumer Sciences teacher at West Seattle High School
- o A brochure and poster campaign has launched. Seattle Public Schools also led production of a brochure that includes a Spanish-language version and is being distributed statewide.
- o Career days also continue, but the high schools have yet to launch the proposed exhibits of work and achievement by CTE programs and students.

### ❑ **Dual Certification for Current Non-CTE Teachers**

- o The CTE staff has certified 11 current Seattle Public Schools teachers in CTE, in areas like Theater Tech, Photography, Video, Journalism, Horticulture and Aviation.

### ❑ **Career & Technical Education Master Plan**

- o The first iteration of the CTE Master Plan was submitted to the high school director in May of 2005. Staff from the CTE Department met individually with principals in Spring 2006 to review, update and revise it with school input. This is completed and awaits a 'next step.'

### ❑ **Reduction and/or Realignment of CTE**

- o This procedure, and in fact all the CTE Policy procedures, have not been adequately communicated to schools, and a few 2006-07 staffing actions have violated this procedure. In at least three instances, the one-year planning phase should have been initiated before eliminating the program, and it was not.

## **Annual Report**

# Board Report: Career & Technical Education January, 2007

## Annual Report

Board Policy C52.00 and Board Procedure C52.01 require an Annual Report to the board on the implementation of C52.01, Career & Technical Education (CTE) Procedure, in January. The format of this report corresponds to that of CTE Procedure C52.01.

### 1. Assessment of CTE Program

- a. Program continuity: Seattle Public Schools currently have many programs that are sequenced towards an industry certification, apprenticeship status, or placement in a four-year college program. Out of hundreds of possible Industry Certificates, the state has thus far approved 10, four of which can be obtained in Seattle Public Schools CTE programs.

<u>Program/Course(s)</u>	<u>Certificate/College Credits</u>	<u>State-Approved Certificates</u>
1. Marketing	A*S*K Business Institute Certificate through MarkEd	A*S*K Business Institute Certificate through MarkEd
2. Marketing	National Professional Certification in Customer Service	
3. Automotive	Automotive YES-ASE	Automotive YES-ASE
4. Office user specialist	Microsoft Office User Specialist Certification in Nine Areas	IC3 ICDL, MOS-Core, MOS-Expert
5. ACE	Direct entry into Apprenticeships	
6. C-WEST	Direct entry into Apprenticeships	
7. Careers in Education	Seattle University & SPU college credit; WWU; Whitworth; CWU; SCC transfer credit	
8. ASL	SCC transfer credit	
9. Cisco 1-4	CCNA	
10. Computer Installation and Repair Technology/ Technician	A+ and Net+	A+
11. Dental Assisting		WA State Dental Association
12. (Early) Child Care		State Training and Registration System (STAR)
13. Therapeutic career		Sports Medicine Specialty Program
14. Digital Design		MCP
15. Web page/digital/ multi-media and information design		CIW Foundations
16. CAD/CADD Drafting and/or Design Technology		American Design Drafting Association (ADDA)

Eleven career academies in five schools (Ingraham, West Seattle, Franklin, Sealth, and Ballard) integrate CTE courses with core courses; these academies feature the most successful, comprehensive, and longstanding examples of personalization, community-based learning, and college, work & adult life preparation available to students in Seattle Public Schools. We estimate over 90% of students completing an academy sequence go to college (in NAF

## Board Report: Career & Technical Education January, 2007

academies of Finance, Hospitality & Tourism, and Information Technology, the figure is closer to 100%; a complete data report will be available in June 2006). And 49 different CTE courses have tech prep (i.e., “AP for CTE”) articulations with our local community college system, the Seattle Community College District (Appendix 1), and are eligible for college credit. Students earned 838 credits at Seattle Community Colleges in 2005-06. At an average of \$32 per credit, \$26,816 in tuition was saved. Our pre-engineering classes (*Project Lead the Way*) do not currently carry a certificate, but advanced placement and admissions ‘points’ for colleges and universities with engineering schools are in preparation.

b. Reasonable alignment with state and district standards:

Beginning in 2006-07, OSPI will be requiring re-approval of all CTE courses on a four-year cycle. Seattle Public Schools will be on the following schedule: 2006-07, Agriculture; 2007-08, Technology & Industry; 2008-09 Health & Human Services; 2009-10 Business & Marketing. These correspond well to SPS’s four career pathways. We will add to this approval process two questions, to be answered by the leadership at each high school where the course up for re-approval are being taught: 1) what is the academic cross-crediting potential of each class; 2) how does this course fit into the CTE Master Plan / High School transformation plan of the school(s) where it is taught?

Career & Technical Education courses carry the triple burden of having to meet state CTE standards, market themselves successfully to students, and to also contain the rigor defined by state and district standards in literacy, math, science, and curriculum (i.e., EALRs and GLEs). The best process thus far undertaken by the central office is the effort to cross-credit. No course will be submitted to the high school director for approval until it has undergone careful analysis of the curriculum and classroom observations of the teacher(s). To date, 19 CTE courses have been vetted for cross-crediting status, and as such have been shown to align with state and district standards:

<u>Course</u>	<u>Cross-Credit Equivalency Area</u>
i. Applied Math IA, IB, IIA, IIB, IIIA, IIIB	Math
ii. Careers in Education I and II	Language Arts
iii. Project Lead the Way – Principles of Engineering I & II	Science
iv. American Sign Language	World Language
v. Family Health	Health Education
vi. Nutrition and Wellness	Science
vii. Food Science, Dietetics, and Nutrition I and II	Science
viii. Health Medical I & II	Science
ix. Family Systems	Social Studies
x. Family Health	Health Education

Some concerns have been raised regarding course titles and transcripts, and it is expected that these issues will be resolved by February 2007.

c. Current and future labor market trends are reflected in many CTE courses. The construction, information technology, and health industries are the fastest growing

## Board Report: Career & Technical Education January, 2007

and have the highest demand. The Prosperity Partnership's<sup>2</sup> Regional Economic Strategy for the Central Puget Sound Region and the 2006 *High Skills, High Wages*<sup>3</sup> reports identify these areas of necessary and likely economic growth. We have identified CTE programs that prepare our students to take full advantage of these areas; all programs are ripe for more growth:

<u>Industry Cluster</u>	<u>CTE Offerings</u>
i. Transportation	Maritime, Automotive, Pre-Engineering
ii. Entrepreneurship, Small Business	Business, Marketing, Finance
iii. Aerospace, Aviation	Pre-Engineering, <i>Aeronautics</i> <sup>4</sup>
iv. Life Sciences	Environmental Science, Biotechnology
v. Alternative Energy	Automotive, Pre-engineering
vi. Public and Nonprofit Sectors	Family & Community Services, Public Service, Accounting, Careers in Education, Child Development
vii. Information Technology	Computer Applications, Cisco, A+ Programming, Oracle
viii. Green Buildings & Clean Energy	Automotive, Pre-Apprenticeship
ix. Logistics and International Trade	Business, Finance, Accounting,
x. Construction & Engineering	Pre-engineering, pre-apprenticeship

- d. Excellence is maintained by investing as much as possible in all the supporting activities that together make CTE programs excellent: advisory boards that represent the industry; professional development; participation in school transformation processes; career & technical student leadership organizations; community-based learning; cross-referencing industry and academic standards; small learning communities as exemplified by career academies; and so on.

## 2. Annual report

- a. CTE enrollment continues to decline; in early April 2006, 1,450 student CTE FTE were submitted to the state, down from a high of 1,767 in 2001 and a baseline of 1,590 in 1997. This is attributed to a reduction in staff and offerings, and increased usage of Occupational Education graduation requirement waivers. But the CTE policy may have had some 'braking' effect: Student FTE in November 2005 was 1,562 and in November 2006, 1,583. This increase is not due to adding programs, but conversion of some existing programs (i.e., photography) to CTE...it is a 'treading water' effect. Teacher FTE is currently 78.9, and last year at this time is was 81.6. Enrollment statistics are summarized in Appendix 2.

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<sup>2</sup> "Prosperity Partnership envisions a region where residents have good jobs and earn family-wage incomes, where globally competitive businesses thrive, where diversity is embraced..." from *Regional Economic Strategy for the Central Puget Sound Region, Summary, October 2005*.

<sup>3</sup> Washington State Workforce Training and Education Coordinating Board

<sup>4</sup> Not currently offered, but is a part of the *Project Lead the Way* pre-engineering offerings, Grades 3-12.

## Board Report: Career & Technical Education January, 2007

- b. Assessment of range and accessibility: Preliminary findings and recommendations can be found in the CTE Master Plan (May, 2005). Highlights would include a need to increase Marketing programs; pre-apprenticeship opportunities in the north end; Careers in Education; American Sign Language; Applied Math; CTE offerings in the middle schools; and Health Occupations. The new Roosevelt High School will feature a pre-engineering program, and a new Family & Consumer Sciences teacher has been hired at West Seattle High School. Cleveland has experienced a precipitous drop in CTE offerings, and Garfield withdrew support of its Automotive Technology program.
- c. Review of State Program 31 expenditures show salaries or parts of salaries of six teachers were improperly charged to state program 31. Career & Technical Education Department staff worked with the Budget and Human Resources Departments to rectify this. Central staff was maintained at the same level. The indirect rate remained at 15%, the state's allowable maximum. The proposal to administer all state program 31 funds centrally needs further review.

### 3. Expansion and Strengthening of CTE Programs

There are two new specialty programs for 2006-07. The only truly new fulltime position in Seattle Public Schools will be a Family and Consumer Sciences position at West Seattle High School. We look forward to having a strong Careers in Education, Early Childhood Education and ProStart (culinary) program there. This is really more of a revival than a new program, but they should be better established for the future. Secondly, although Roosevelt is eliminating its woods program, it is adding a full Project Lead the Way pre-engineering program. Appendix 3 charts the changes in CTE staffing school by school over the past four years.

For the marketing goals set by the policy, Seattle Public Schools has been an active partner in a new CTE marketing initiative at the state level, and has been working hard with our Communications Department and has launched a complementary local marketing campaign. Seattle Public Schools led the marketing research effort in 2005-06 that provided the basis for these regional and statewide marketing efforts. As one example, we have had an effective marketing effort specifically for pre-apprenticeship programs. Franklin High School has held assemblies that have featured CTE courses and career academies. And career days, which often lead to CTE enrollment for students, continue to be held at various high schools. IGNITE has done internationally recognized work in increasing the number of young women pursuing careers in high technology and engineering, and we have made great strides in marketing the advantages of apprenticeship to a diverse group of students. A few Seattle Public Schools counselors attended the March Counselors Conference on Project Lead the Way. More work lies ahead in this effort, in particular in working with counselors, and having exhibitions of student work at the high schools.

The eSIS system allows simple cross-enrollment, and this will aid students from one school who want to attend a program at another school. A good test of this will be having the Garfield Auto Program available districtwide until it returns to Garfield for the 2008-09 school year.

# Board Report: Career & Technical Education January, 2007

## 4. Professional Development and Cross-Crediting

The Career & Technical Education Department has worked closely with Instructional Services to synthesize professional development for CTE teachers for three purposes: 1) to achieve and sustain high academic rigor so that CTE is a true alternative to the conventional core courses; 2) to stay on top of breaking developments in their respective industries and specialty areas, i.e., provide students with current knowledge that will serve them in tomorrow's workforce; and 3) to not 'burn out' trying to do both of these things. This is a complex problem, but we are excited by the challenge. The cross-crediting initiative continues, and to date there are 19 CTE courses that have been analyzed and approved for cross crediting (See 1.b. above and Appendix 4).

## 5. Dual Certification for Current Non-CTE Teachers

We met with Human Resources in early May to further implement this procedure. Human Resources has provided us with a list of recently hired (within 5 years) teachers and paraprofessionals. They have been contacted and invited to explore the possibilities of CTE certification. In the meantime, enterprising CTE staff have located 11 current Seattle Public Schools teachers, in areas like Theater Tech, Photography, Video, Horticulture and Aviation, who have added CTE certification over the past two years.

Specifically:

<u>TEACHER</u>	<u>CTE CREDENTIAL (OTHER CREDENTIAL, SUBJECT)</u>	<u>SCHOOL</u>
Gina O'Neill	Photography (Art, PE, Health)	Ballard
William Kuhns	Photography (Standard, <i>Art</i> )	Hale
Cecilia Otto	Photography (Standard, <i>Art</i> )	Roosevelt
Paul Larsen	Video (Standard)	West Seattle
Norland Walter	Wood Construction (Standard, <i>Special Education</i> )	Sealth
Mike Keplinger	Photography (English, LA)	Summit K-12
Frank Cantwell	Aviation (Physics, Math)	Sealth
Eric Faulkner	Video; (English, LA, Journalism)	Franklin
Ruben Vankampen	Theatre Tech (Standard <i>Drama</i> )	Roosevelt
Stephen Miranda	Journalism	Garfield
Susan Barth	Horticulture (Science)	Nova
Laura Sudgen	Agriculture (Science)	West Seattle

## 6. Hiring

CTE met with Human Resources in early May to begin implementing this procedure. *"Where there is turnover or attrition, the Human Resources Department and schools will seek people with industry experience (i.e., experience outside of education) and view such experience as an asset for new applicants who can be dual-credentialed, i.e., make it a preferred qualification."* Director Westergaard-Nimocks stated that we can post some language on the district website, and that when Seattle Public Schools

moves from PeopleSoft to SAP, we will centralize postings and be able to more effectively implement this part of the policy.

**7. Career & Technical Education Master Plan**

The first iteration of the CTE Master Plan was submitted to the high school director in May 2005. A process for integrating it into transformation planning at the middle and high school levels has not been established. In lieu of such a process, staff from the CTE Department will meet individually with principals this spring to review the plan, update and revise it with their input and input from their Building Leadership Teams. Also, a Memorandum of Protocol has been submitted to the CAO and COO that will make the CTE Master Plan binding.

**8. Reduction and/or Realignment of CTE**

This procedure, and in fact all the CTE Policy procedures, have not been adequately communicated to schools, and a few 2006-07 staffing actions have violated this procedure. In at least three instances, the one-year planning phase should have been initiated before eliminating the program, and it was not.

APPENDIX 1

2005-2006 TECH PREP CLASSES IN THE SEATTLE PUBLIC SCHOOLS  
THAT ARE ELIGIBLE FOR TECH PREP CREDIT\*



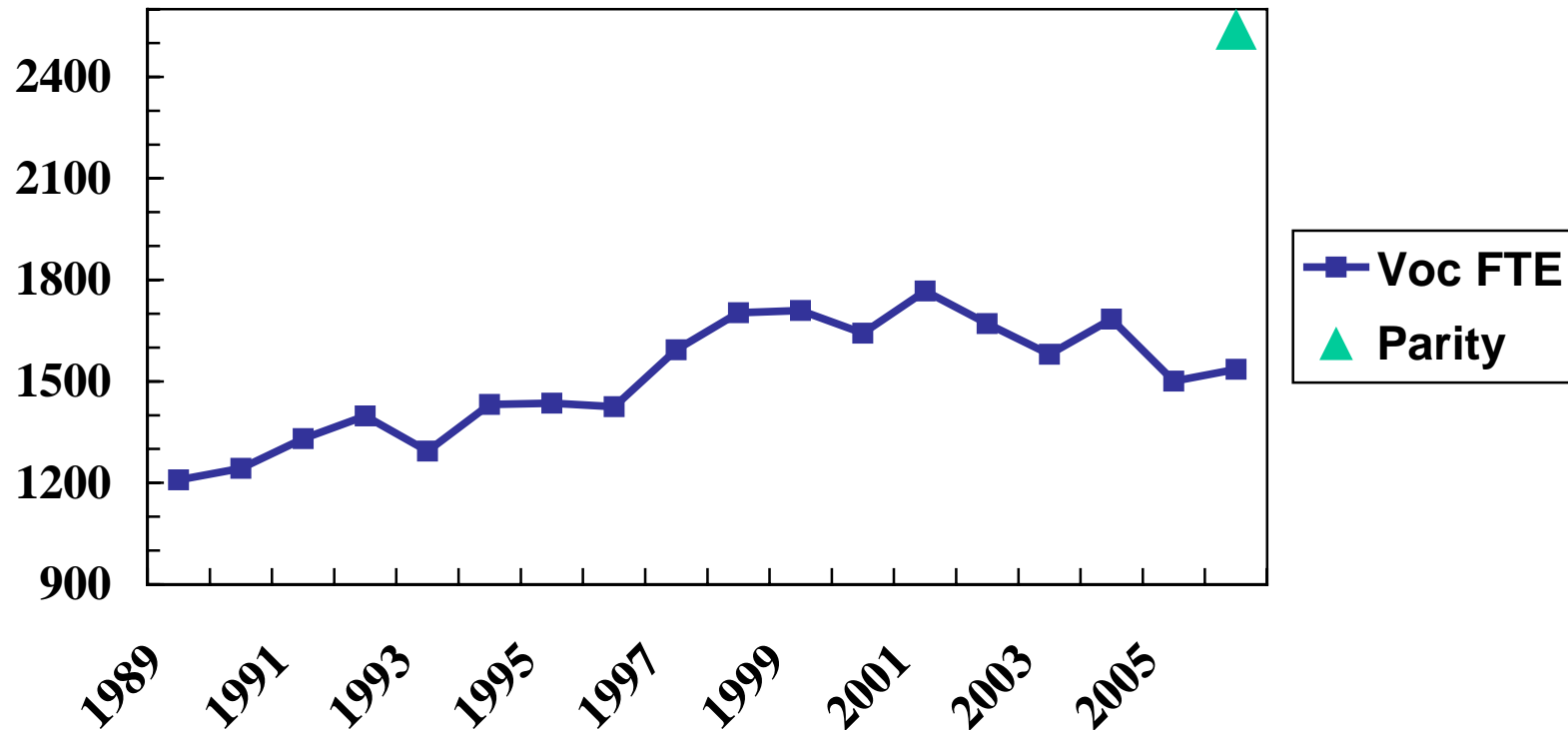
**Key:** S = South Seattle Community College      N = North Seattle Community College      C = Seattle  
Central Community College (Complete Listing On Next Page)

## Board Report: Career & Technical Education January, 2007

HIGH SCHOOL COURSE	College(s)	COLLEGE COURSE DESCRIPTION, NAME AND NUMBER	Credits
<b>Accounting</b> Accounting 1 & 2 Accounting 3 & 4	<b>N, S</b>	✓ Introduction to Accounting I, <b>ACC 110</b>	5
	<b>S</b>	✓ Introduction to Accounting II, <b>ACC 120</b>	5
<b>Applied Communications Business English</b>	<b>S</b>	✓ Applied Composition, <b>ENG 105</b>	3
	<b>N, C, S</b>	✓ Integrated Communications I, <b>BUS 131</b>	5
<b>NAF Academy of Finance—all four semesters</b>	<b>N, C, S</b>	✓ Introduction to Business, <b>BUS 101</b>	5
<b>Applied Math I and 2</b>	<b>S</b>	✓ Applied Mathematics I, <b>MAT 111</b>	5
<b>Principles of Technology</b>	<b>S</b>	✓ Technical Physics, <b>PHY 111</b>	5
<b>Automotive Maintenance Advanced Auto. (High School teacher course specification required prior to transcription)</b>	<b>S</b>	✓ Introduction to Automotive, <b>MVM 100</b>	3
	<b>S</b>	✓ Basic Brakes, <b>AUT 126</b>	3
	<b>S</b>	✓ Basic Auto Engines, <b>AUT 128</b>	4
	<b>S</b>	✓ Auto Engines (In Car), <b>AUT 130</b>	4
	<b>S</b>	✓ Minor Tune-up Procedures, <b>AUT 136</b>	4
<b>Cisco</b>	<b>C, N</b>	✓ Cisco I, <b>NET 142</b>	5
	<b>C, N</b>	✓ Cisco II, <b>NET 144</b>	5
	<b>C, N</b>	✓ Cisco III, <b>NET 146</b>	5
	<b>S</b>	✓ Cisco I, <b>CTN 282</b>	5
	<b>S</b>	✓ Cisco II, <b>CTN 283</b>	5
	<b>S</b>	✓ Cisco III, <b>CTN 284</b>	5
<b>Woods &amp; Construction (2 semesters required)</b>	<b>C</b>	✓ Cabinet Making and Fine Woodworking, <b>WCO 130, 140 or 150</b> (depending on program focus of each student)	18 max.
<b>Drafting</b>	<b>N</b>	✓ Introduction to Engineering Graphics, <b>DSN 151</b>	11
	<b>N</b>	✓ Introduction to ACAD Drafting, <b>DSN 163</b>	4
	<b>N</b>	✓ Advance ACAD for Mech. Design, <b>DSN 261</b>	4
	<b>S</b>	✓ Drafting Technology I, <b>TDR 121</b>	4
	<b>S</b>	✓ Drafting Technology II, <b>TDR 123</b>	4
	<b>S</b>	✓ Introduction to CAD 2-D, <b>TDR 131</b>	3
	<b>S</b>	✓ Intermediate CAD 2-D, <b>TDR 133</b>	3
	<b>S</b>	✓ Basic CAD 3-D, <b>TDR 230</b>	3
	<b>S</b>	✓ Advance CAD 3-D, <b>TDR 231</b>	3
<b>Horticulture</b>	<b>S</b>	✓ Landscape Industry, <b>LHO 100</b>	1
	<b>S</b>	✓ Greenhouse Operations, <b>LHO 111</b>	3
	<b>S</b>	✓ Fall Plant Identification, <b>LHO 115</b>	3
	<b>S</b>	✓ Winter Plant Identification, <b>LHO 116</b>	3
	<b>S</b>	✓ Spring Plant Identification, <b>LHO 117</b>	3
	<b>S</b>	✓ Principles Horticulture, <b>LHO 150</b> (Horticulture Science 1)	2
<b>Information Tech.</b> A+ I & II or Tech Services 1 & 2  Net Essentials or Tech Services 3 & 4  Web Page I Web Page Design and Animation I	<b>N</b>	✓ Computer Basics, A+, <b>EET 130</b> and IT Essentials I, <b>EET 131</b>	9 and 5
	<b>C</b>	✓ Introduction to Computer Hardware, <b>ITC 140</b> and	5
	<b>C</b>	✓ Operating Systems Concepts, <b>ITC 134</b>	5
	<b>S</b>	✓ Computing Hardware Overview, <b>CTN 101</b> and	5
	<b>S</b>	✓ Operating Systems I, <b>CTN 141</b> and	5
	<b>S</b>	✓ PC Hardware I, <b>CTN 170</b>	5
	<b>S</b>	✓ Local Area Networks I, <b>CTN 270</b>	5
	<b>C, N</b>	✓ Network Essentials, <b>NET 120</b>	5
	<b>C</b>	✓ Internet and the World Wide Web, <b>MIC 150</b>	4
	<b>S</b>	✓ Web Production I, <b>CTN 160</b>	5
<b>Digitools / Introduction to Technology</b>	<b>C, S</b>	✓ Keyboarding, <b>BUS 104</b>	3
	<b>N</b>	✓ Keyboarding, <b>BUS 105</b>	4
	<b>N, C, S</b>	✓ Keyboarding / Skill building, <b>BUS 106</b> [*typing speed requirement]	3
<b>Marketing</b> Marketing 1 Marketing 1 & 2 Marketing 1 & 2	<b>N, C, S</b>	✓ Introduction to Business, <b>BUS 101</b>	5
	<b>S</b>	✓ Leadership and Supervision, <b>SMG 100</b>	3
	<b>S</b>	✓ Working with Diverse Pops., <b>SMG 103</b>	3
<b>Medical Assisting</b>	<b>N</b>	✓ <b>AMA 100, 102, 103, 104, 108, 110, 115, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 243</b>	20
<b>Computer Applications</b> Digitools/ IT Intro to Info Tech Digitools/ IT Intro to Info Tech MOUS WORD* MOUS WORD/EXCEL or MOUS WORD & MOUS EXCEL*	<b>N, S</b>	✓ Using Computers in Business, <b>BUS 169</b>	5
	<b>C</b>	✓ Introduction to Microcomputers, <b>MIC 101</b>	4
	<b>C, S</b>	✓ Information Technology I, <b>BUS 170</b> [*typing speed requirement]	4
	<b>C</b>	✓ Information Technology II, <b>BUS 171</b> [*typing speed requirement]	4
<b>Project Lead the Way</b> IED POE POE and IED DE (2 semesters)	<b>S</b>	✓ <b>TDR 121, 123, 131, 133, 230, 231</b> (see above: drafting)	21
	<b>S</b>	✓ Creative Technical Problem Solving, <b>MET 102</b>	3
	<b>N</b>	✓ Introduction to Technology, <b>EET 105</b>	3
	<b>N</b>	✓ Digital Circuits I, <b>EET 170</b> (5); Digital Circuits II, <b>EET 171</b> (5)	10

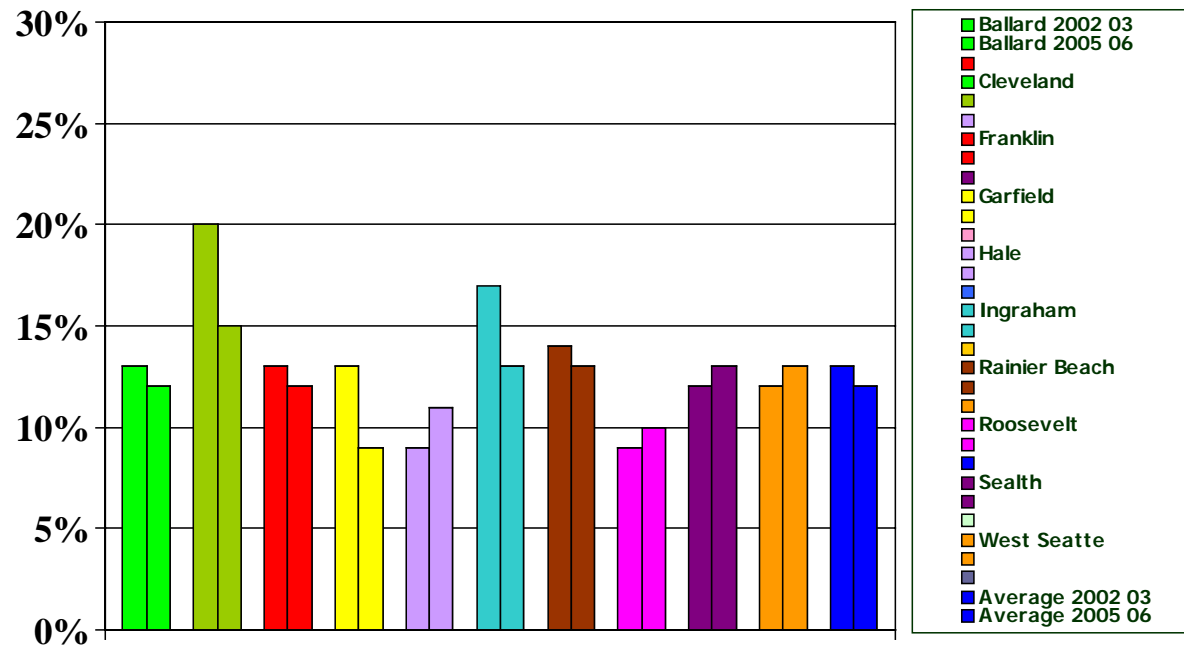
APPENDIX 2

# Student FTE in Career & Technical Education



APPENDIX 3

## Percent of CTE Staffing by High School 2002-2006



APPENDIX 4

APPENDIX 5

EXCERPTS from the 2006 *High Skills, High Wages* Report (32 page reduction of 121 page document).

**WASHINGTON STATE  
WORKFORCE TRAINING AND EDUCATION COORDINATING BOARD  
MEETING NO. 114  
NOVEMBER 16, 2006**

**HIGH SKILLS, HIGH WAGES 2006  
WASHINGTON'S STRATEGIC PLAN FOR WORKFORCE DEVELOPMENT**

This tab contains the final draft of "High Skills, High Wages 2006." for the Board's approval.

The final draft has been changed from previous drafts by making changes to chapter 5 that are consistent with changes to the final draft of "Washington Works," and by updating the economic data in chapter 1.

**Board Action Requested:** Adoption of the recommended motion.

**RECOMMENDED MOTION**

WHEREAS, State statute RCW 28C.18.060 directs the Workforce Training and Education Coordinating Board to "Develop and maintain a state comprehensive plan for workforce training and education, including but not limited to, goals, objectives, and priorities for the state training system," and...

**... Chapter 1: Tomorrow's Economy**

/

*High Wages for the Highly Skilled*

Washington's economy, like that of the U.S. economy as a whole, is continuing its transition from one based mainly on the production of goods to one based more and more on knowledge and information. This emerging knowledge-based economy has been increasing demand for workers with more advanced skills and higher levels of education than in the past. The upside of these changes is that many of these jobs are not only the fastest growing, but also the best paying ones. In order to obtain these jobs, workers will generally require some form of postsecondary

## Board Report: Career & Technical Education January, 2007

education or training, they won't, however, usually require a four-year degree....

### *The National Economic Recovery*

In late 2002, the nation began to recover from the 2001 recession. Early on, the recovery was fueled by increases in productivity (i.e., output per worker) resulting in more goods and services; there was, however, little creation of new jobs. It was not until the late 2004 that the recovery was coupled with large increases in jobs....

### *Washington's Economy*

Washington State's economy was especially hard hit by the last recession. Job growth, however, began in earnest in 2004 and continued to grow into 2006, although at a slower pace than in 2005. Washington's job recovery has been outpacing that of the nation. Between July 2005 and July 2006, non-farm employment increased by about 81,500 jobs, a 2.9 percent increase.<sup>5</sup> Over-the-year gains were widespread by sector (see Figure 1). Construction led all other industries with 16,900 new jobs; the large majority in the specialty trades. The gains in employment were triggered by the booming housing market.

Professional and business services added 16,000 jobs. While increases were experienced across the subsectors, the largest was in employment services (6,900). The retail and wholesale trade sectors added 9,400 jobs with most of that increase in retail (6,400). Manufacturing employment increased by 9,100 jobs; most in aerospace (5,200). The leisure and hospitality industries added 8,100 jobs, with 8,200 in accommodation and food services offsetting a loss of 100 in arts, entertainment, and recreation jobs. Education and health service industries added 7,900 new jobs, all in health services and social assistance jobs....

**Figure 1. Over-the-Year Non-Farm Wage and Salary Employment Gains by Industry Sector: July 2005 to July 2006**

<b>Industry Sector</b>	<b>Seasonally Adjusted Gains in Thousands</b>
Total Non-Farm	81.5
Construction	16.9
Professional and Business Services	16.0
Manufacturing	9.1
Transportation Equipment	5.8
Education and Health Services	7.9
Leisure and Hospitality	8.1
Retail Trade	6.1
Government	5.4
Wholesale Trade	3.3

<sup>5</sup> Washington ESD, Labor Market and Economic Analysis Branch, "Washington State Employment Situation Report for July", August 15, 2006, [http://www.workforceexplorer.com/admin/uploadedPublications/7033\\_ESR\\_Aug15\\_06.pdf](http://www.workforceexplorer.com/admin/uploadedPublications/7033_ESR_Aug15_06.pdf) (8/25/2006).

## Board Report: Career & Technical Education January, 2007

Information	3.0
Transportation, Warehousing, and Utilities	2.6
Financial Activities	1.8
Other Services	1.6
Natural Resources and Mining	-0.3

Source: Employment Security Department (ESD) Labor Market & Economic Analysis (LMEA), "Washington State Employment Situation Report for July," August 15, 2006.

In addition to employment gains, Washington had a seasonally-adjusted unemployment rate in July 2006 of 5.3 percent, a decline of 0.2 percent since July 2005. The estimated number of unemployed workers declined from 182,400 to 175,500. Washington's economy experienced these decreases in the unemployment rate despite adding 42,300 individuals to the labor force.<sup>6</sup>...

Over the years, new technologies have generated new products and industries, as well as changed the way firms are organized and how workers are utilized.<sup>7</sup> Future technological advances are expected to continue to do so. With new technologies come changing job skill requirements. Although some technologies have created demand for unskilled workers, more have engendered demand for higher skilled workers....

Not only have employees needed to learn to use new, highly sophisticated machines, they have also had to learn, and often design, whole new organizational processes associated with those machines. Many U.S. manufacturers have reduced the number of supervisors in their factories and given workers greater responsibility for ensuring quality, redesigning manufacturing processes and improving products. Companies are adopting participatory, "high-performance" work systems that place more authority and problem-solving responsibilities on front-line workers. Jobs are more broadly defined, employees work in collaborative teams wherein success demands effective communication, and outcomes are focused on timeliness, quality, and customer service.<sup>8</sup>

### Globalization

Washington, more than any other state, relies on foreign trade. Estimates indicate that in 2005, one in three jobs in Washington was directly or indirectly supported by international trade.<sup>9</sup>...

The effects of globalization, however, accrue unevenly across industries and individuals. Workers displaced by competition will generally be able to find jobs; earnings losses, however, may be significant for some.... Forrester Research expects that the number of U.S. jobs

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<sup>6</sup> Ibid.

<sup>7</sup> Lynn A. Karoly and Constantijn W.A. Panis, *The 21<sup>st</sup> Century at Work: Forces Shaping the Future Workforce and Workplace in the United States* (Santa Monica, CA: RAND Corporation, 2004). Paul Sommers, *Drivers For A Successful Technology-based Economy: Benchmarking Washington's Performance* (Seattle, WA: Technology Alliance, May 2003).

<sup>8</sup> Karoly & Panis, 2004, p. xxv.

<sup>9</sup> Washington State Department of Community, Trade, and Economic Development (CTED), *Why Trade is Important*, [http://www.cted.wa.gov/portal/alias\\_cted/lang\\_en/tabID\\_159/Default.aspx](http://www.cted.wa.gov/portal/alias_cted/lang_en/tabID_159/Default.aspx) (11/28/2005).

## Board Report: Career & Technical Education January, 2007

outsourced will grow from about 400,000 in 2004 to 3.3 million by 2015, or about 250,000 per year.<sup>10</sup>

Will there still be good jobs left in U.S.? Most economists think so. First, many jobs are not at risk of being outsourced. The most vulnerable jobs and occupations are ones with the following attributes or features:<sup>11</sup>

- No face-to-face customer servicing requirements
- High information content
- Work process is telecommutable and Internet enabled
- High wage differential with similar occupation in destination country
- Low setup barriers
- Low social networking requirement

“Even as the supply of workers around the world capable of high-tech innovation increases, the demand for innovative people is increasing at an even faster pace.”<sup>12</sup> .<sup>13</sup> Reich has similarly argued that there will be plenty of good jobs in the future, but too few Americans are being prepared for them.

In 1990, the ratio of the average wage of the top 10 percent of jobs to the bottom 10 percent of jobs was 7.6. The ratio peaked at 12.4 in 2000, before decreasing to 10.2 in 2002.<sup>14</sup>

The information and services industries are the fastest growing driven by increases in software publishing and professional and business services (e.g., accounting, engineering, computer systems and programming). Their share of employment is expected to increase to about 46 percent by 2030. Manufacturing employment, while continuing to grow, is expected to grow more slowly than total employment. Aerospace and wood products manufacturing were once about 13 percent of total employment; now they account for less than 5 percent. The combined mining and manufacturing industries’ share of employment is expected to decrease to about 8 percent of non-farm employment by 2030. Government jobs will continue to be about 20 percent of employment. The composition of government employment, however, has shifted from federal jobs to state and local jobs; this trend is projected to continue.

**Figure 4. Number of Annual Openings in Occupations Requiring More Than One Year and up to, but Less Than, Four Years of Postsecondary Education (2004-2014)**

<b>Occupation</b>	<b>Estimated Employment</b>	<b>Average Annual Openings</b>	<b>Estimated Average Wage June</b>
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<sup>10</sup> Cited in Brainard and Litan, April 2004.

<sup>11</sup> Ashok D. Bardhan and Cynthia Kroll, “The New Wave of Outsourcing,” (Berkeley, CA: Fisher Center for Real Estate and Urban Economics, University of California, Berkeley, Paper #1103, 2003), <http://repositories.cdlib.org/iber/fcreue/reports/1103> (12/05/2005).

<sup>12</sup> Robert Reich, “High-Tech Jobs Are Going Abroad! But That’s Okay,” Washington Post Company, 2003.

<sup>13</sup> Ibid.

<sup>14</sup> Bailey, 2004, p. 3.

## Board Report: Career & Technical Education January, 2007

	2004	2004-2014	2006
Computer Support Specialists	14,615	611	\$48,629
Gaming Dealers	5,274	332	\$19,974
Registered Nurses	48,077	2,006	\$62,217
Medical Secretaries	13,740	575	\$31,783
Carpenters	42,277	1,550	\$44,303
Computer Specialists, All Other	5,353	217	\$69,015
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	5,222	301	\$53,370
Travel Agents	3,532	191	\$35,102
Aircraft Mechanics and Service Technicians	4,795	237	\$53,587
Nursing Aides, Orderlies, and Attendants	23,639	745	\$23,863
First-line Supervisors/Managers of Construction Trades and Extraction Workers	19,957	705	\$63,983
Electricians	15,997	615	\$51,817
Preschool Teachers, except Special Education	6,209	204	\$25,102
Cost Estimators	5,365	239	\$60,199
Licensed Practical and Licensed Vocational Nurses	9,861	407	\$39,881

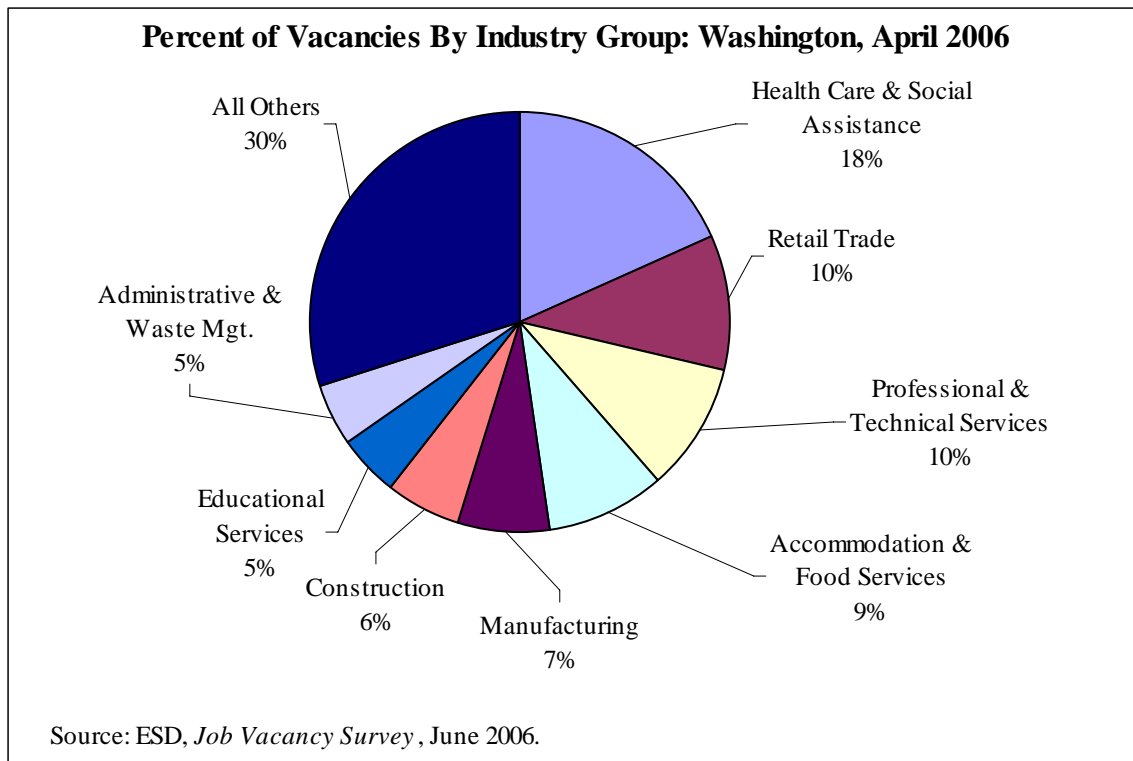
Source: Data provided through David Wallace, Washington Employment Security Department, 8/28/2006.

Washington employers in a recent survey regarding their job vacancies in April 2006, reported an estimated 81,532 job openings.<sup>15</sup> Health care and the social assistance industry employers reported nearly twice as many openings (14,937) as any other industry group (see Figure 5). This industry's openings had the second highest percentage requiring certification or licensing (78 percent), offered the third highest median wage (\$15.38), and had the third highest percentage of permanent openings (97 percent).

The agriculture, forestry, fishing and hunting industry led in the percentage of *new* openings (53 percent of its 1,700 vacancies) followed by the construction industry (34 percent of its 4,762 vacancies). The professional, scientific, and technical services industry along with the management of companies and enterprises offered the highest median wages, \$16.55 and \$15.46, respectively. Accommodation and food services had the fourth highest number of vacancies (7,331) but, along with agriculture, forestry, fishing, and hunting, offered the lowest median wage (\$7.63).

<sup>15</sup> ESD, *Washington State Job Vacancy Survey*, June 2006.

## Board Report: Career & Technical Education January, 2007



With regard to jobs, transportation and materials moving occupations account for the largest share of vacancies (11.2 percent), followed by health care practitioners and technical occupations (10.8 percent) and office and administrative occupations (10.0 percent). The median hourly wage offered for transportation and materials moving jobs (\$9.74) was below the state median (\$10.00), while the median for health care practitioners and technical occupations (\$22.26) was much higher and the median for office and administrative occupations (\$10.04) was at the state median. Ninety-six percent of health care practitioners and technical occupation vacancies required a certificate or license, more than any other occupational group. Management and architecture and engineering openings offered the highest (\$31.25) and second highest (\$23.51) median hourly wage, respectively. Both of those groups of occupations along with healthcare practitioners and technical jobs were more likely to require education beyond high school than other occupations.<sup>16</sup>

### ***Employers Report a Shortage of Skilled Worker***

The transition to a more knowledge-based economy has called for some changes in the types of skills employers are requiring now, or will be requiring in the near future.<sup>17</sup> Advanced technologies clearly call for workers with the knowledge and skills to use them effectively, efficiently, and creatively. Rapid technological changes and increased global competition have led to a growing importance of strong non-routine cognitive skills, such as abstract reasoning, problem-solving, communication, and collaboration. Employers continue to report a shortage of workers with either basic workplace or job-specific skills, or both.

<sup>16</sup> ESD, *Job Vacancy Survey*, July 2005, p. 6.

<sup>17</sup> Karoly & Panis, 2004.

## Board Report: Career & Technical Education January, 2007

Employers attempting to hire were asked about the level of difficulty they encountered in finding qualified applicants with specific education levels. They reported the greatest shortage of applicants for jobs requiring postsecondary education, especially for vocationally trained workers from our community colleges, apprenticeship programs, and private career schools (see Figure 6).

**Figure 6. Employer Difficulty Finding Applicants by Educational Level  
(Percentage and Estimated Number of Firms)**

<b>Educational Level</b>	<b>Percent of All Employers</b>	<b>Estimated Number of Firms</b>
Neither a high school diploma or GED	2%	4,700
High school diploma or GED	7%	14,100
Some college course work	9%	18,900
Vocational certificate	9%	18,900
Vocational associate degree	8%	17,800
Academic associate degree	5%	10,700
Baccalaureate degree	6%	13,700
Master's, doctoral, or professional degree	6%	12,500

Source: Workforce Board, 2006.

The problem will likely grow worse. Skills required in the workplace continue to increase, and, as a result, higher percentages of firms reported that their need for workers with postsecondary training would increase or remain the same over the next five years (see Figure 7).

**Figure 7. Educational Level (Among all Employers the Percentage Expecting a Change in Demand)**

<b>Educational Level</b>	<b>%Increase</b>	<b>%Decrease</b>
Neither a high school diploma or GED	2%	5%
High school diploma or GED	10%	4%
Some college course work	16%	4%
Vocational certificate	15%	1%
Vocational associate degree	9%	1%
Academic associate degree	11%	1%
Baccalaureate degree	14%	1%
Master’s, doctoral, or professional degree	1%	1%

Source: Workforce Board, 2006.

The findings from Washington’s employers are reflected in a spring 2005 national survey of the skills gap in manufacturing industries conducted by Deloitte Consulting and the National Association of Manufacturers’ Manufacturing Institute/Center for Workforce Success. More than 80 percent of respondents to the survey indicated that they are experiencing a shortage of qualified workers—with 13 percent reporting severe shortages and 68 percent indicating moderate shortages.<sup>18</sup> Ninety percent of respondents indicated a moderate to severe shortage of qualified skills production employees, including front-line workers, such as machinists, operators, craft workers, distributors, and technicians. Further, 65 percent of respondents reported shortages of engineers and scientists—18 percent severe and 47 percent moderate shortages.

The importance of particular clusters varies by region (see Figure 8), but three clusters highly ranked throughout the state are health care, construction, and software/IT.<sup>19</sup>

**Figure 8. Important Industry Clusters by Region**

<b>Spokane</b>	<b>Eastern Balance<sup>1</sup></b>	<b>Pierce</b>	<b>King/Snohomish</b>	<b>Southwest<sup>2</sup></b>	<b>Northwest<sup>3</sup></b>
1. Health Care	1. Health Care	1. Health Care	1. Software	1. Construction	1. Construction
2. Construction	2. Education/ Social Services	2. Construction	2. Aircraft	2. Health Care	2. Health Care
3. Wholesale Trade	3. Transportation	3. Aircraft	3. Construction	3. Education/ Social Services	3. Transportation
4. Metal Fabrication	4. Wholesale Trade	4. Ship/Boat Building/ Repair	4. Business Services	4. Transportation	4. Education/ Social Services
5. Transportation	5. Agriculture/ Food Processing	5. Wholesale Trade	5. Health Care	5. Communications	5. Ship/Boat Building/ Repair
6. Electronics/ Instruments	6. Wood Products	6. Education	6. Ship/Boat Building/ Repair	6. Wood Products	6. Wood Products

<sup>18</sup> The National Association of Manufacturers’ Manufacturing Institute/Center for Workforce Success and Deloitte Consulting LLP, *2005 Skills Gap Report – A Survey of the American Manufacturing Workforce*, 2005.

<sup>19</sup> Sommers and Heg (2002) rated clusters by averaging their rankings across four criteria—employment size, employment growth, the location coefficient, and the percentage of workers receiving a living wage. We modified these ranking when constructing Figure 8. We excluded clusters from the highly ranked group if their location coefficient was low (less than 0.9) or if the percentage receiving a living wage was low (below 33 percent).

## Board Report: Career & Technical Education January, 2007

<sup>1</sup> Eastern Balance includes counties in Eastern Washington other than Spokane.

<sup>2</sup> Southwest includes Grays Harbor, Lewis, Mason, Pacific, Thurston, Clark, Cowlitz, Skamania, and Wahkiakum Counties.

<sup>3</sup> Northwest includes Clallam, Jefferson, Kitsap, Island, San Juan, Skagit, and Whatcom Counties.

Source: Sommers and Heg, 2002

**Figure 10. Projected Annual Openings in Selected Health Care Occupations by Training Level: 2004-2014**

Training Level Occupational Title	Average Annual Openings
Little or no postsecondary	
Home Health Aides	299
One to twelve months postsecondary	
Dental Assistants	501
Medical Assistants	393
More than one year and up to, but less than, four years postsecondary	
Registered Nurses	2,006
Medical Secretaries	575
Nursing Aides, Orderlies, and Attendants	745
Licensed Practical and Licensed Vocational Nurses	407
Four years or more postsecondary	
Medical Scientists, except Epidemiologists	169

Source: Data provided by D. Wallace, WA ESD, 8/28/2006.

Despite Washington's educational institutions preparing more health care workers than previously, gaps between supply and demand remain.<sup>20</sup> The Workforce Board's analysis of the gap shows that we will need to increase the number of newly prepared registered nurses by 520 per year (beyond 2004 levels) for the next 10 years to meet current and projected demand. Figure 11 shows the annual number of newly prepared workers to close the supply-demand gap in the next ten years for ten health care occupations.

**Figure 11. The Gaps Between Supply and Demand by Health Care Occupation**

Occupation	Annual Need of Additional Newly Prepared Workers To Close the Gap in 10 Years*
Registered Nurses	520
Dentists	80
Physical Therapists	70
Dietitians and Nutritionists	40
Occupational Therapists	40

<sup>20</sup> Workforce Board, *Progress 2005: Report of the Health Care Personnel Shortage Task Force*, January 2006.

## Board Report: Career & Technical Education January, 2007

Respiratory Therapists 20

\*Estimates are rounded to the nearest ten.

Source: Workforce Board, *Progress 2005: Report of the Health Care Personnel Shortage Task Force*, January 2006.

**Figure 12. Employment and Projected Annual Openings in Selected IT Occupations: 2004-2014**

Occupational Title	Estimated Employment 2004	Average Annual Total Openings	Estimated Average Wage June 2006
Software Engineers, Applications	21,272	983	\$82,425
Computer Programmers	12,440	758	\$83,589
Software Engineers, Systems Software	12,604	610	\$87,715
Computer Support Specialists	14,615	611	\$48,629

Source: Data provided by D. Wallace, WA ESD, 8/28/2006.

What is particularly notable with the increases in construction employment is that in July 2005 construction jobs were about 6 percent of total non-farm employment but 21 percent of the over-the-year employment growth. Moreover, in the long term, the need to replace an aging construction workforce will add to the number of annual job openings in the sector.

**Figure 13. Projected Annual Openings in Selected Construction Occupations by Training Level: 2004-2014**

Training Level Occupational Title	Average Annual Openings
One to twelve months postsecondary	
Painters, Construction, and Maintenance	608
Roofers	315
Drywall and Ceiling Tile Installers	279
Construction Laborers	765
Tapers	187
More than one year and up to, but less than, four years postsecondary	
Carpenters	1,550
First-Line Supervisors/Managers of Construction Trades and Extraction Workers	705

Source: Data provided by D. Wallace, WA ESD, 8/28/2006.

### *Workforce Growth Slows*

## Board Report: Career & Technical Education January, 2007

During the 1980's, Washington's labor force grew rapidly at an average annual rate of 2.5 percent. In the 1990's, the rate slowed to 1.9 percent and is expected to decrease further to 1.6 percent between 2005 and 2010 and to 0.9 percent between 2010 and 2030.<sup>21</sup> The number of workers increased 1.64 million between 1970 and 2000 and is projected to increase by only 1.18 million in the 30 years between 2000 and 2030.

The labor force growth rate is slowing due to the aging of the baby-boom generation and the lower birth rates of subsequent generations.<sup>22</sup> As baby boomers age, many will retire and exit the labor force and, because of the lower birth rates, the most active labor force participants, aged 25-54, will increase at an annual average of only 19,700 persons between 2005 and 2030 compared to 44,300 persons between 1970 and 2004.<sup>23</sup>

increasing number of migrants over 65 who are attracted to Washington by the promise of a better quality of life in retirement. Most of these older migrants do not enter the labor force. In fact, they seek services and products that will expand the economy and the need for more workers.

### ***Young Adults in the Workforce***

On the opposite end of the age spectrum are young adults, ages 16-24, part of the baby boom echo (born between 1982 and 1995). Although this is a large potential workforce, this age cohort tends to have lower labor force participation rates than older adults. In 2000, the labor force participation rate of 16-24 year olds was 68.0 percent, for 25-54 year olds it was 83.9 percent, and for 55-64 year olds it was 60.0 percent.<sup>24</sup> A large number of 16-24 year olds are still in school—either high school or post-secondary education. Too many others are no longer in school; many dropped out of high school. The Office of Superintendent of Public Instruction (OSPI) estimates that only 70.1 percent of the class of 2004 graduated on-time and 8.5 percent were still enrolled after four years of high school.<sup>25</sup> In 2004, about 14 percent of Washington's 16-24 year olds who were not enrolled in school—high school or postsecondary—had less than a high school diploma or GED.<sup>26</sup> Although some of them will eventually earn their high school diploma or an equivalent (such as the GED) and go on to participate in higher education, many more will continue to be challenged in the workplace because of their inadequate levels of education. The unemployment rate for 16-24 year old is 21.6 percent, higher than the rate for virtually any other major population subgroup.

The challenges posed by young adults call for a multi-prong effort. We need to ameliorate the high school dropout problem as well as prepare this younger generation to fully participate in

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<sup>21</sup> Washington State OFM and ESD, *The 2005 Long-Term Economic and Labor Force Forecast for Washington*, May 2005, <http://www.ofm.wa.gov/economy/longterm/2005/index.htm> (8/4/2005).

<sup>22</sup> The baby-boom years are between 1946 and 1964, with the peak birth year being 1957. Mitra Toossi, "A century of change: the U.S. labor force, 1950-2050," *Monthly Labor Review*, May 2002.

<sup>23</sup> OFM & ESD, *2005 Forecast*, p.2-3.

<sup>24</sup> OFM & ESD, *2005 Forecast*, Table 2-1, p. 2-5.

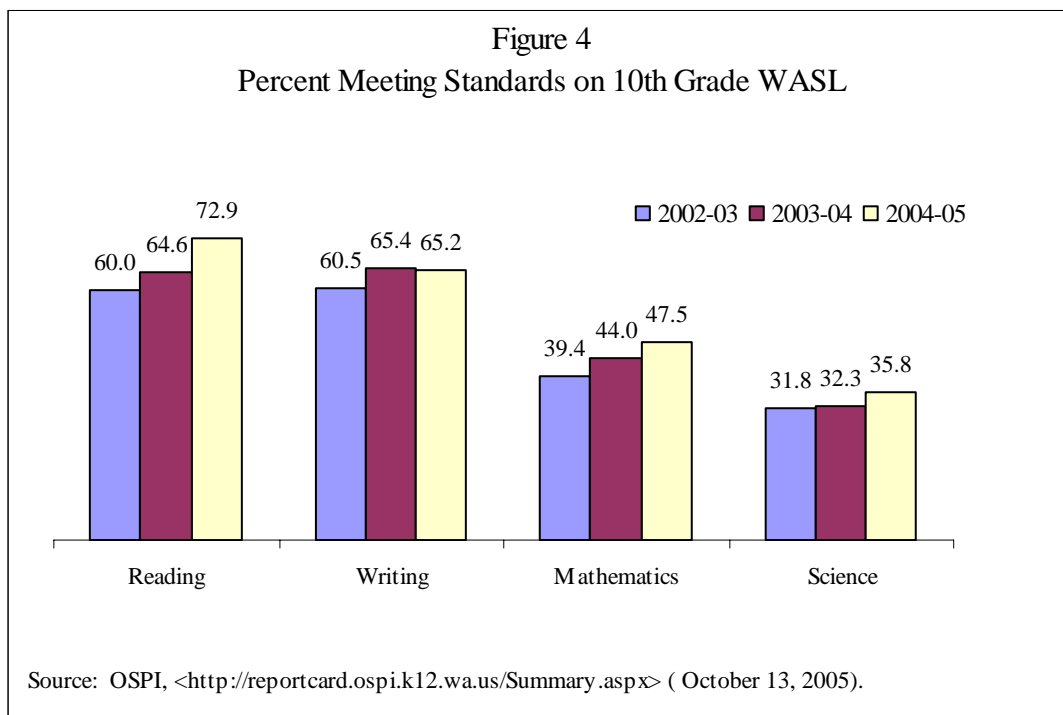
<sup>25</sup> Pete Bylsma and Lisa Ireland, *Graduation and Dropout Statistics: For Washington's Counties, Districts, and Schools, School Year 2003-2004*, September 2005, <http://www.k12.wa.us/DataAdmin/pubdocs/GradDropout/03-04/Graduationanddropoutstatistics2003-04Final.pdf> (10/13/2005).

<sup>26</sup> The source for these data is the 2004 Washington State Population Survey.

## Board Report: Career & Technical Education January, 2007

and benefit from our knowledge-based economy. We need to prepare them for their successful transition to the world of work or higher education. Young adults are also our opportunity to encourage career and occupational choices that will further the growth and health of our state's economy.

The advantages of a high school diploma and higher levels of education for the economic well-being of individuals are well documented.<sup>27</sup> Higher levels of education have become even more important and will continue to be more important in order for our economy to remain globally competitive.<sup>28</sup> Not only do we need to reduce dropout rates, but we need to assure that students are achieving at levels that will allow them to participate successfully in postsecondary education or the workplace. The performance of our students as measured by the Washington Assessment of Student Learning (WASL) and other assessments is getting better, but is not yet good enough.



<sup>27</sup> Jennifer Cheeseman Day and Etic C. Newburger, "The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings," *Current Population Reports*. July 2002, <http://www.census.gov/prod/2002pubs/p28-210.pdf> (September 16, 2005).

<sup>28</sup> Lynn A. Karoly and Constantijn W.A. Panis, "The 21<sup>st</sup> Century at Work: Forces Shaping the Future Workforce and Workplace in the United States, (Santa Monica, CA: RAND Corporation, 2004), pp. xvii-xviii.

## Board Report: Career & Technical Education January, 2007

Academic preparation alone, however, is not sufficient to prepare young people for their future. Seventy-eight percent of high school graduates work during the year after high school, and 33 percent work and do not attend postsecondary education or training.<sup>29</sup> Employers who hire these young people report that too many have inadequate basic workplace or employability skills, and the specific job skills that employers are looking for.<sup>30</sup> Despite this problem, outside of career and technical education, there is generally no assessment of secondary student work-related skills.

### Chapter 3: What is the Workforce Development System?

The workforce development system consists of programs and services that prepare people for employment. There are 18 programs as defined in state statute and by Governor Gary Locke's Executive Order 99-02. These programs focus on preparing individuals for jobs that do not require a baccalaureate degree, about 75 percent of all jobs in Washington.

#### *Secondary career and technical education*

Career and Technical Education (CTE), formerly known as vocational education, enables students to explore career options, learn academic and life skills, and prepare for work and postsecondary education. Model CTE programs integrate occupational skills learning with academic content. CTE programs are offered in grades 9-12 through approximately 235 local school districts and 10 vocational skills centers.

Currently, the State Board of Education (SBE) requires that all students complete at least one CTE course or its equivalent to fulfill graduation requirements. Some students complete an entire CTE sequence involving several related courses. The extent of CTE offerings varies significantly with district size, location, administrative support, and philosophy, resulting in varied opportunities for the state's high school students.

OSPI has adopted CTE program standards which are used to approve and evaluate all CTE programs to ensure they incorporate workplace skills and industry-based skill standards. The program standards differentiate programs as "exploratory" or "preparatory." Students taking exploratory programs explore a CTE program area or cluster to help them determine if they are interested in pursuing the program area/cluster leading to employment or related post-high school training. Preparatory career and technical education programs provide opportunities for students to master occupational skills based on industry-defined standards, which will prepare them for employment after graduation and/or advanced placement into a postsecondary CTE program.

In addition, OSPI provides curricular frameworks that organize all CTE programs within broad career pathways: agriculture and science; business and marketing; health and human services; and technology and industry. These frameworks are based on national career cluster standards, incorporate appropriate and related essential academic learning requirements, include employability and leadership skills, and identify occupational skills to be learned in exploratory

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<sup>29</sup> OSPI, Washington State Graduate Follow-up Study: Class of 2003 All Graduates First Year after Graduation, <http://survey.sesrc.wsu.edu/gfs/pdfpapers/class2003Y1AllGrads.pdf> (10/25/05).

<sup>30</sup> Workforce Board, *Secondary Career and Technical Education Works*, (nd).

## Board Report: Career & Technical Education January, 2007

and preparatory coursework . The Carl Perkins Act, as amended in 1998, emphasizes the importance of integrating academic standards into CTE. Known as Perkins III, the Act provides additional funds for secondary and postsecondary career and technical education, and emphasizing vocational programs' use of technology, teacher training, and distance learning. Perkins III increases state and local flexibility in providing services and activities designed to develop, implement, and improve career and technical education, including Tech-Prep education, and builds on state and local efforts to develop challenging academic standards. Nearly all community and technical colleges are applying the Tech-Prep model that offers students the opportunity to gain college credit when they take career and technical education courses in high school.

### **The K-12 System and CTE Advisory Councils**

SBE sets policies for the K-12 school system. SBE oversees K-12 accountability, including setting CTE performance standards consistent with federal law and establishing targets for high school graduation rates.

Locally elected school boards set K-12 policies at the district level. Districts with approved high school CTE programs are required to have general advisory councils and a program advisory committee for each CTE program. Composed of representatives of business and labor, these councils and committees help schools ensure their programs meet the skill needs of local industries.

**What Are Skills Centers?**

A skills center is a regional educational and training institution that serves multiple school districts, is operated by a host local school district, and has an identifiable core facility. Skills centers provide career and technical education programs that are cost or enrollment prohibitive for individual schools and/or districts in the service area to offer. Students age 16 to 21 in grades 11 or 12 learn job preparation skills and can take advantage of the close relationships that skills centers forge with industries. For example, the New Market Skills Center, Tumwater, offers computer game program design taught by the Digipen Institute in conjunction with Nintendo. It is an advanced placement program that includes math, computer science, computer programming, and 3D animation. Skills centers offer education and training in a variety of occupations, including health care occupations that are currently experiencing shortages.

Students learn basic skills, workplace readiness skills, and entry-level occupational competencies. They learn about career and postsecondary opportunities, participate in internships and work-based learning, develop a personal career portfolio, and participate in a wide range of leadership activities/programs. They may also receive advanced placement or college credit through Tech-Prep programs.

An administrative council, comprised of the superintendents of the participating school districts, governs each skills center. Local districts contribute to the facility and equipment acquisition, and each district has an equal vote.

***The K-12 foundation***

Primary and secondary school education provides a critical foundation for learning throughout a student's life. It is expected to provide the academic skills students will need as adults, citizens, and employers and employees.

Washington Performance-Based Education Act of 1992 and the Education Reform Act of 1993 set four student learning goals. The fourth goal states students must, "Understand the importance of work and how performance, effort, and decisions directly affect future career and educational opportunities." For virtually all students, whatever option they choose upon leaving high school will eventually lead to the workplace. Whether they enter the state's workforce as student employees, summer workers, or full-time entry-level employees, Washington's youth must be prepared to be successful. As an increasing number of college students work part- and even full-time, the importance of basic workplace competencies also increases for all students. And, general work readiness skills are increasingly being demanded by businesses moving to a high-performance style that demands higher teamwork and problem-solving skills from even their frontline workers. The Workforce Board is piloting assessments for credentialing of general workplace skills (see information on the work readiness credential on page \_\_)

***Career Guidance and transitions to life after high school***

New requirements for students graduating in 2008 and beyond call for completion of a culminating project and an individual plan for the student's high school experience and one year beyond. Secondary schools are being asked to adopt a comprehensive guidance curriculum that

## Board Report: Career & Technical Education January, 2007

includes a consistent relation with an assigned advisor for the entire time in school, student-led advisor-parent conference and the integration of student planning and preparation into course curricula and schedules. (See Navigation 101 on page \_\_.) These strategies aim to ensure students connect what they learn in high school with future education and career options.

In order to improve transitions to life after high school, schools are partnering with community and technical colleges and baccalaureate institutions to improve the coordination of secondary and postsecondary education. Running Start, Tech-Prep, College in the High School, Advanced Placement courses—all of these are examples of options increasingly available to students so they can prepare for their education after high school and often earn postsecondary credits at the same time. High schools also partner directly with employers to enable students to explore or prepare for specific kinds of employment at the high school level. A new program initiated by Governor Gregoire will provide direct entry into apprenticeship programs for students completing appropriate coursework in high school.

### *The Five P's*

OSPI encourages high schools to organize their courses and structure to facilitate effective student transition to life beyond high school. The Five P's—Pathways, Portfolio, Project, Plan, and Parents—can form the basis of such a structure.

1. **Pathways**—Career pathways are an organized sequence of classes and activities that contribute to preparation for occupations of a similar kind (health or business, for example).
2. **Portfolio**—A portfolio is a collection of student work and achievements used by the student to document progress along the pathway.
3. **Project**—A culminating senior project completed by the student illustrates his or her pathway work, and is usually presented to a panel of community reviewers for evaluation.
4. **Plan**—A student develops an individual plan for the year after graduation, including the steps needed to accomplish the goal (e.g., completing the first classes of an articulated program; preparing to meet baccalaureate admission standards; or earning industry skills certification).
5. **Parents**—Involving parents and guardians in their child's planning and preparation for life after high school is important. Parents also need to know the options available to their children; creating a formal structure within the school schedule to encourage parents' assistance in supporting and guiding their children in choosing courses that fulfill future study and career goals is helpful.

The four goals for workforce development are:

1. **Youth:** Ensure all Washington youth receive the education, training, and support they need for success in postsecondary education and/or work.

## Board Report: Career & Technical Education January, 2007

2. **Adults:** Provide Washington adults (including those with barriers to education and employment) with access to lifelong education, training, and employment services.
3. **Industry:** Meet the workforce needs of industry by preparing students, current workers, and dislocated workers with the skills employers need.
4. **Integration:** Integrate services provided by separately funded workforce development programs so that we provide the best possible service to our customers.

### Moving Toward our Ideal Workforce Development System

The following section addresses the four workforce development goals by first identifying an objective and then providing strategies to ensure we move towards that objective. We outline strategies for the key customers in the workforce development system: Youth; Adults (including those with barriers to education and employment); and Industry (including employers and workers).

#### Strategies Serving Youth

**Youth Goal:** Ensure all Washington youth receive the education, training, and support they need for success in postsecondary education and/or work.

*Objective 1:* All students graduate on time.

- 1.1 Create a state-level public/private partnership that provides demonstration grants to school-community partners for development of comprehensive dropout prevention and intervention programs for middle and high school students at-risk of dropping out and dropouts. *Lead: OSPI*
- 1.2 Expand the Dropout Prevention Initiative to more high schools. *Leads: Governor, OSPI, ESD, Workforce Board, and WDCs.*

*Objective 2:* All students leave high school prepared for success in further education and/or work.

- 2.1 Increase the number of students who complete a CTE sequence and/or course requirements for admission to a four-year college or university, or enrollment in college-level classes at a community or technical college. *Lead: OSPI...*

*Objective 4:* There are secondary CTE programs throughout the K-12 system that enable students to explore career pathways and complete preparatory coursework that matches their aspirations. The career pathways are articulated with postsecondary education and training, and result in industry certification.

## Board Report: Career & Technical Education January, 2007

- 4.1 Expand opportunities for secondary students to take CTE preparation programs and career assessments. *Leads: OSPI and Workforce Board.*
- 4.2 Boost the academic content of CTE programs and recognition of academic course equivalencies. *Lead: OSPI.*
- 4.3 Develop model statewide CTE articulation agreements that provide a program of sequenced courses and ensure all students have access to dual enrollment options. *Leads: SBCTC and OSPI.*
- 4.4 Expand preapprenticeship training to prepare students for direct entry to apprenticeship programs. *Leads: Washington State Apprenticeship and Training Council at the Department of Labor and Industries (L&I) and OSPI.*
- 4.5 Pilot the Work Readiness Credential for CTE completers. *Leads: Workforce Board and OSPI.*

### What Are Our Challenges?

As outlined in the first two chapters, Washington's workforce is aging and becoming more ethnically diverse. It is also growing at a slower rate. The changes in our workforce and our economy pose challenges and opportunities. The challenges of slower population growth and increasing skill needs make it essential that we provide historically underutilized populations with knowledge and skills to participate in tomorrow's economy. We need to ensure we develop an adequate workforce that supports our employers and a thriving economy.

Youth, adults, and industry face specific challenges. Too many of our youth drop out of high school—only 70 percent graduate on time with their ninth grade cohort. Too many of our youth leave high school without adequate preparation for further education or success in the workplace. Many adults need support in finding work, retaining work, and moving up a career ladder so that they can earn a family-wage living. Our employers need more workers with mid-level preparation—those that complete workforce training programs at community and technical colleges, private career schools, and apprenticeships. Many of our current workers and dislocated workers need training to update their skills or learn new skills that meet the changing needs of the economy.

### What Are Our Challenges in Serving Youth?

#### *In Brief: Key Issues for Youth*

*Isn't that what our education system should be about, shepherding our children towards their life goals? Yes, academic knowledge is important—who can survive today without a good grounding in math, science, reading, writing, technology and computer literacy?—but shouldn't the academic knowledge we teach be couched in what makes it useful in our kids' future life and work? Haven't we seen enough kids so turned off by school that they drop out and give up on their dreams? And haven't we seen how motivated young people can become when they see that*

## Board Report: Career & Technical Education January, 2007

*what they are learning is helping them reach for the job they want, follow the career they seek, and fulfill the ambitions they have to change their world?*<sup>31</sup>

We face steep challenges in improving education and employment outcomes for our youth:

- Almost one in three students do not graduate on time with their cohort.
- Youth who drop out and many other students who remain in school do not see the connections between what they are learning and their futures, and many students leave school unprepared for further education and/or work.
- There are large disparities in education and employment outcomes between students from racial and ethnic minorities and those with disabilities compared with the general youth population.

We have developed programs to address these concerns, but we need to expand these efforts:

- Dropout prevention initiatives in several local areas reconnect youth who have dropped out with programs that help them achieve credits towards a high school diploma. These programs also improve the achievement and motivation of youth at risk of dropping out. Programs may include interventionists who connect youth with the services they need whether it is academic tutoring or support services. These programs are small and few and should be strengthened and expanded to reach more young people.
- Intensive CTE programs help students to understand the connections between learning and their future lives and prepare them for further education and/or the world of work. Many schools offer only a limited career and technical education program that should be expanded from the exploratory to the preparatory.
- While there are many CTE programs that offer dual enrollment options to enable students to gain credit towards graduation and postsecondary credit, these often only articulate with one program at one postsecondary institution. CTE dual enrollment options should articulate with a broad range of postsecondary programs.
- Some schools integrate the IEP for students with a disability with the 13<sup>th</sup> year plan required of all students, but this is not the common practice for most schools.
- A few high schools and skills centers have developed preapprenticeship programs as part of their career and technical education offerings. These prepare students for apprenticeships and may lead to direct entry into apprenticeship programs when the student completes high school. Many more high schools and skills centers could develop pre-apprenticeship programs.

### **The Dropout Issue**

The most serious issue for youth is the high dropout rate during secondary school and sometimes earlier. In recent years, national studies conducted by organizations, such as the Manhattan Institute and the Bill and Melinda Gates Foundation have highlighted the dropout issue for states across the nation. State studies, such as the interim report of the Governor's *Washington Learns* initiative (a comprehensive two-year study of Washington's entire education system), also

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<sup>31</sup> Jack Canfield, Foreword to *Career Pathways: Education with a Purpose*, Dan M. Hull, Cord, 2005.

## Board Report: Career & Technical Education January, 2007

emphasize the need to reduce the dropout rate.<sup>32</sup> As data has become more reliable and we follow the cumulative dropout rate beginning in grade 9, we have learned that a much higher number of youth are dropping out than was previously known.

According to OSPI, “Of the students who began grade 9 in the fall of 2000 and were expected to graduate in 2004, an estimated 21 percent dropped out. About 70 percent of this cohort of students graduated “on-time” and 8 percent were still enrolled in school at the end of grade 12.” During the same time period, only about half of American Indian, African American, and Hispanic students had graduated on time.<sup>33</sup>

The consequences of leaving school without a high school diploma are severe. Those who drop out of high school earn about 25 percent less than those who have a high school diploma, earning \$21,600 per year compared to \$30,800.<sup>34</sup> If you drop out you are “much more likely to be unemployed, living in poverty, receiving public assistance, in prison, on death row, unhealthy, divorced, and a single parent with children who drop out from high school themselves.” High dropout rates are a burden on our economy with fewer skilled workers paying income taxes and increased costs of health care, social services, and incarceration.<sup>35</sup>

Why do students drop out? A report from the Bill and Melinda Gates Foundation surveyed youth to ask them why they had dropped out of high school. Respondents reported a variety of reasons but the top reason is a lack of engagement and connection to their education. About half of respondents said their major reason for dropping out was that their classes were not interesting, they were bored and disengaged. About 70 percent of respondents said they were not motivated or inspired to work hard.<sup>36</sup>

Systemic school improvement alone will not keep all students engaged in schooling or meet the requirements of the federal No Child Left Behind Act. The latest evidence from other states shows that without a concerted effort on the part of schools and communities to address the dropout issue the implementation of the WASL as a graduation requirement may lower the graduation rate. Increasing academic success and increasing graduation rates need to be dual goals for the K-12 system. The data currently exists to identify, with a high degree of predictive validity, which individual students in middle school and high school are likely to dropout.

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<sup>32</sup> Office of the Governor, *Washington Learns: 2005 Interim Report*, page 3, available at [http://www.washingtonlearns.wa.gov/report/Interim2005\\_report.pdf](http://www.washingtonlearns.wa.gov/report/Interim2005_report.pdf).

<sup>33</sup> Bylsma, P. and Ireland, L. (2005). *Graduation and Dropout Statistics for Washington's Counties, Districts, and Schools*. OSPI. Olympia, WA.

<sup>34</sup> *Education Pays, 2004: The Benefits of Higher Education for Individuals and Society*, Baum, S. and Payea, K., College Board (2004).

<sup>35</sup> John M. Bridgeland, John J. DiIulio, Jr. Karen Burke Morison, (2006). *The Silent Epidemic: Perspectives of High School Dropouts*, Civic Enterprises and Peter D. Hart Research Associates for the Bill and Melinda Gates Foundation. *Helping Students Finish School: Why Students Drop Out and How to Help Them Graduate*, (2003), OSPI.

<sup>36</sup> John M. Bridgeland, John J. DiIulio, Jr. Karen Burke Morison, (2006). *The Silent Epidemic: Perspectives of High School Dropouts*, Civic Enterprises and Peter D. Hart Research Associates for the Bill and Melinda Gates Foundation.

## Board Report: Career & Technical Education January, 2007

A number of promising practices exist for dropout prevention and intervention, such as tiered interventions in schools, active case management, support services that reduce barriers to learning, dropout retrieval, and alternative learning options or settings. These promising practices should be incorporated into a demonstration grant program that targets students most at-risk and collects the necessary data to replicate programs that produce the best results.

## Board Report: Career & Technical Education January, 2007

In order to address dropout problems the Workforce Board joined forces with ESD and OSPI to create the Dropout Prevention and Intervention Initiative. We awarded \$1.34 million in WIA funds to WDCs to jointly plan and deliver dropout prevention and intervention services with schools and community organizations. The WIA funds have leveraged about \$2.2 million in Basic Education Act funds (as of June 2005) to coordinate a range of direct services retrieving dropouts back into an education setting and retaining youth in school. While these programs are working well, they are only able to serve a very small portion of all those in need. In order to expand this initiative, we recommend that the Governor consider applying to DOL for a waiver that will allow WDCs to use local WIA formula for this effort.

### **The Dropout Prevention Initiative**

The Dropout Prevention Initiative (DPI) provides local WDCs and schools with the flexibility to structure youth dropout prevention and retrieval efforts based on local needs and includes:

**Prevention services** – identifying students at risk of dropping out, and providing support so that students stay and succeed in school.

**Retrieval services** – providing rapid response or reentry services that bring young people back into an educational setting.

**Recovery programs** – coordinating services that help young people to return to school and recover lost credits through seat time or competency testing; and resolving academic, social, or personal issues that inhibit successful learning.

#### **Governor’s Promising Practice: “Academic Intervention Specialist”**

The Olympic WDC’s DPI project received a Governor’s Promising Practice Award in 2005. The WDC works with Educational Service District #114 (Bremerton, Port Angeles, South Kitsap, and Chimacum School Districts) and the Northwest Services Council and has served more than 50 youth in the region, including 15 youth who had dropped out and 35 students who were identified “at-risk” of dropping out.

A key component of the program is the addition of a caring, interested adult in the lives of these youth. The Interventionist and the WIA youth counselors work together to address the issues and circumstances that impact the young person’s lack of success. This requires a look at not only the youth but also the other people in his/her life including the parents. This holistic approach allows for a more comprehensive and longer-term impact on the youth and those around them.

An “Intervention Specialist” coordinates a rapid response or reentry plan with school districts, builds a relationship with each student, and assists them in reconnecting with their school in either the traditional setting, the alternative schools, or in the local community college if appropriate. The interventionist works with each youth to assess their current academic standing, number of credits needed to graduate, and a variety of options. The specialist then assists the youth in making the necessary contacts to accomplish this goal, and he/she maintains contact on a regular basis to monitor their progress.

The project far exceeded its projected outcomes. Over the 2004-2005 school year the project retrieved 15 dropouts (10 projected); retained 35 at-risk youth (25 projected); youth earned 92 credits towards graduation (20 projected); youth earned 23 diplomas (5 projected) and 47 youth

were on track to receive diplomas (15 projected).

### *The Need for Comprehensive Career Guidance, Navigation 101*

Many students leave high school without a clear direction and unprepared for further education or work. This may result in having to take remedial classes in college, dropping out of college, and spending several years or a lifetime in low-paid work. If K-12 students do not make a connection between the relevance of their learning and their future lives, there is also a higher risk of dropping out while in K-12. A new comprehensive career guidance model, *Navigation 101*, is having a powerful impact on student retention rates, increasing rigorous course-taking, increasing on-time graduation, and improving transitions to postsecondary opportunities.<sup>37</sup>

State graduation requirements include a thirteenth year plan for students to map out what they will do in the year after high school.<sup>38</sup> This is a good first step but schools need to ensure that this activity is connected with a variety of other activities for the plan to be meaningful. Schools are only required to hire one person for both counseling and guidance purposes, so students may not be able to access the type of guidance and support they need, and other staff and teachers may not be equipped to meet these needs.

*Navigation 101*, the comprehensive guidance model first established in the Franklin-Pierce School district, aims to motivate students in middle and high school so they can develop educational and career goals and be successful in meeting them. This comprehensive guidance model involves significant restructuring of the school system. The central component is a guidance curriculum. All students take a Navigation class twice a month over four years from middle school through high school with the same advisor. The school restructures the schedule on Navigation days and makes it a priority to meet students' chosen courses. Parents and guardians are involved in their children's goal development and course planning at student-led conferences.

The results from the first few years of implementation are outstanding. Since the model was implemented the percentage of students receiving one or more "F" grades dropped from 50 percent to 42 percent; the number of students taking "gatekeeper" courses in math and science has risen significantly; and the number of students moving from 9<sup>th</sup> to 10<sup>th</sup> grade has increased from 70 percent to 81 percent.<sup>39</sup>

The interim report of the Governor's "Washington Learns" initiative recommends requiring a comprehensive career guidance program in secondary schools.<sup>40</sup> In 2006, the Legislature passed

<sup>37</sup> Tim Stensager, Dan Barrett, Technical & Career Education, Franklin Pierce School District, Presentation to the House Higher Education Committee, 2006.

<sup>38</sup> WAC 180-51-061 lays out the minimum requirements for graduation. These include a "High School and Beyond Plan" also known as the Thirteenth Year Plan. The WAC states that, "Each student shall have an education plan for their high school experience, including what they expect to do the year following graduation."

<sup>39</sup> Tim Stensager, Dan Barrett, Technical & Career Education, Franklin Pierce School District, Presentation to the House Higher Education Committee, 2006.

<sup>40</sup> Office of the Governor, *Washington Learns: 2005 Interim Report*, page 27, available at [http://www.washingtonlearns.wa.gov/report/Interim2005\\_report.pdf](http://www.washingtonlearns.wa.gov/report/Interim2005_report.pdf)

## Board Report: Career & Technical Education January, 2007

Engrossed Substitute Senate Bill 6255 that encourages all secondary schools to provide a comprehensive guidance program and provides student planning grants through OSPI. The Governor and Legislature allocated \$3.98 million to OSPI for dissemination of the *Navigation 101* curriculum and for grants to implement the program in 100 school districts.

### **What is *Navigation 101*?**

Navigation 101 is a comprehensive career guidance model that:

- Teaches students the skills they need to chart their own course through middle school, high school, postsecondary education, and adult life.
- Provides students with an ongoing, personal relationship with an adult that lasts throughout the four years of their high school career.
- Provides a meaningful way to keep parents involved in the decisions their teens are making.

All students take a Navigation class twice a month over four years from middle school through high school with the same advisor. The central component is a career guidance curriculum that includes:

- Discussion and analysis of students' test results.
- Various assessments of personal interests and aptitudes.
- Goal-setting skill development.
- Planning for each year's high school course selection and personal goals.
- Independent living skills lessons, such as how to budget and how to balance a checkbook.
- Information about how the postsecondary education and training system works and how to access it.
- Development of a student portfolio and planning for annual, student-led planning conferences with their parents or guardians and their Navigation teacher.

In addition, students learn how to write a resume, how to use the full array of resources available to job seekers, and how to enroll in programs that allow them to earn both high school and post-secondary credits for free before high school graduation.<sup>41</sup>

*"The cornerstone of the model is the recognition that there are specific skills and a specific body of knowledge that every student needs to master in order to take charge of his or her own education, career, and life .. this model has had a profound impact on student motivation, and on students' willingness to take on more challenging coursework."* Tim Stensager, CTE Director and Founder of Navigation 101, Franklin Pierce School District

*"This makes our future much more real to us."* – student at Franklin-Pierce High School

### **CTE Promotes Student Success**

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<sup>41</sup> Tim Stensager, Executive Director Technical & Career Education, Dan Barrett, Coordinator Career Education, Paper, "The Franklin Pierce Model for Student Education and Career Planning," 2004.

## Board Report: Career & Technical Education January, 2007

Secondary CTE plays a central role in helping students to be successful in their life after high school. CTE helps different students in different ways. CTE's applied learning techniques often enable students who are at risk of dropping out to achieve academic success for the first time in their school experience. At the same time, CTE connects learning to career aspirations, providing a reason to stay in school.

## Board Report: Career & Technical Education January, 2007

For students who were previously uninterested in math and science, CTE's direct applications of theory to practice often inspire a new interest in these subjects. CTE also helps students who are academically advanced to prepare for their career at an earlier age acquiring skills that are relevant to their future education and careers.

In Washington, CTE completers continue on to postsecondary education at about the same rate as do other students. Students who complete a CTE sequence have better employment and earnings outcomes than students of similar demographic characteristics who do not complete a CTE sequence. The tax revenue generated by the increased employment and earnings more than offsets that taxpayer cost of CTE.<sup>42</sup> In addition, national studies show that CTE can reduce the probability of dropping out of high school.<sup>43</sup>

Some CTE programs are planning to pilot the Work Readiness Credential as part of their CTE program. This would enhance the employability of students who complete a CTE sequence. See page 44 for more on the Work Readiness Credential.

Brier Terrace 8<sup>th</sup> Grade Students in CTE "Sci-Ma-Tech" Industrial Technology Class:<sup>44</sup>

*"In taking Sci-Ma-Tech, I realized there are a lot of technology-based jobs that I would be able to do."*

*"I've learned a lot of different design techniques. I am planning on being an architect and it has taught me how to do a lot of planning and designing and how to use the math in my designing."*

*"There were a lot of components that we learned in our Sci-Ma-Tech class that we had in the WASL. Sci-Ma-Tech helped me to remember the science for the WASL."*

*"The class got me extremely excited about science and math. Because it integrates math, science and technology with English, I really enjoy these subjects now. When you're having fun you learn more and remember more, even those social skills that go along with hands-on learning projects. I think this program has helped many students to learn math, science and technology".*

Policymakers and educators are beginning to recognize the significance of CTE in supporting education reform. As described by Dr James Stone of the National Research Center for CTE, CTE is a program that is both a classroom experience and a structural experience. The classroom experience includes work-based learning, student learning organizations, and preparation of the

<sup>42</sup> Workforce Board, *Workforce Training Results 2006*.

<sup>43</sup> Dr James Stone, presents results of his study on "Math-Enhanced CTE," CTE National Research Center, University of Minnesota, National Dissemination Center for Career and Technical Education webcast, December 13, 2005 archived at <http://www.nccte.org/webcasts/description.aspx?wc=188>

<sup>44</sup> Senate Early Learning, K-12 and Higher Education Committee work session, presentation on Sci-Ma-Tech, Industrial Technology CTE class at Brier Terrace Middle School, January 11, 2006.

## Board Report: Career & Technical Education January, 2007

teachers. The structural experience includes dual credit options, skills centers, career pathways, career academies, among other components.<sup>45</sup>

CTE courses can teach a broad range of academic knowledge through applied learning. For example, a 2005 study from the National Research Center for CTE found that enhancing the CTE curriculum with math significantly improves the math skills of students.<sup>46</sup> If we are to take advantage of CTE as a way of boosting academic achievement and preparing students for life beyond high school, school administrators and faculty should search for ways to increase the academic content taught in CTE. We must also ensure the content is recognized and credited towards graduation requirements and college admission. In 2006, the Washington State Legislature passed SHB 2937 requiring school districts to establish a process for crediting academic knowledge taught in CTE.

### **Math-Enhanced CTE: A Study by Dr James Stone, National Center for CTE<sup>47</sup>**

The study explored whether “Math-enhanced CTE” would improve math achievement of students and what effect this would have on occupational learning. In “Math-enhanced CTE” the teacher introduces the lesson, introduces embedded math so the student is hardly aware that it is “math,” provides related contextual math examples, and finally a more traditional math example so the student becomes aware that they are learning math.

The year long study included 3,000 students, over 150 teachers, in 10 states, and 5 CTE applications (Auto Tech, Business, IT, Agriculture and PT, and Health). Teachers received professional development, pedagogy and curriculum mapping training. They set up learning communities of teachers in each application, videotaped some of the classes, and interviewed teachers after the study.

The study found that “Math-Enhanced CTE” significantly improves the math learning of students. At the same time, “math-Enhanced CTE” does not negatively impact the learning of occupational skills and knowledge.

*“CTE provides a math-rich curriculum—though we haven’t taken the best advantage of this opportunity to teach math.”* Dr. James Stone

*“(Since the 80’s) the increase (in average Carnegie units for graduation) has been almost exclusively in science and math. But, what has that increase in course-taking brought us? It doesn’t seem to have bought us very much. While more middle and high school students are*

<sup>45</sup> Dr James Stone, presents results of his study on “Math-Enhanced CTE”, CTE National Research Center, , University of Minnesota, National Dissemination Center for Career and Technical Education webcast, December 13, 2005 archived at <http://www.nccte.org/webcasts/description.aspx?wc=188>

<sup>46</sup> Stone, J. R., III, Alfeld, C. Pearson, D., Lewis, M. V., & Jensen, S. (2005). *Building academic skills in context: Testing the value of enhanced math learning in CTE* (Pilot study). St. Paul, MN: National Research Center for Career and Technical Education. (Available from National Dissemination Center for Career and Technical Education, The Ohio State University, 1900 Kenny Road, Columbus, OH 43210-1016; <http://www.nccte.org>)

<sup>47</sup> Dr James Stone, “Math-Enhanced CTE”, CTE National Research Center, University of Minnesota, December 2005.

## Board Report: Career & Technical Education January, 2007

*required to take more math, and more algebra, it hasn't translated to any improvements on the NEAP test in 30 years.” Dr. James Stone*

## Board Report: Career & Technical Education January, 2007

### *Improving Transitions for Youth with Disabilities*

While youth with disabilities are required to complete an IEP, this is not always connected with the 13<sup>th</sup> year plan required of all students for graduation. Some well-intentioned teachers, counselors, and parents are not aware of the education and employment opportunities for students with disabilities. The Center for Change in Transition Services at Seattle University is dedicated to improving transitions from school to education and work for students with disabilities. The Center educates parents, counselors and educators about the wide variety of opportunities available to students with disabilities. The Center advises that in addition to the graduation requirements for all students the following activities should be “non-negotiable” for students in Special Education:

- Identifying postsecondary goals.
- Developing and implementing a course of study to reach goals.
- Developing IEP goals to provide specially designed instruction.
- Identifying appropriate postsecondary agency linkages.
- Conducting postschool research to measure outcomes.<sup>48</sup>

### *Tech-Prep and Career Pathways: Improving Transitions to College*

One way of connecting youth with postsecondary education is to ensure that high school programs articulate with college programs, so that students take a sequence of classes that lead directly into postsecondary coursework. Tech-Prep is a national educational initiative outlined in the Carl D. Perkins Act, Title II that aims to strengthen connections for CTE students to postsecondary study. According to the legislation Tech-Prep programs must:

- Lead to an associate degree, two-year certificate, or apprenticeship.
- Provide technical preparation in at least one field of engineering technology; applied science; mechanical, industrial, or practical art or trade; or agriculture, health, or business.
- Build student competencies in mathematics, science, technology, and communications through a sequential course of study.
- Lead to employment or further education.<sup>49</sup>

Many Tech-Prep programs in Washington offer dual enrollment courses that enable students to obtain credit towards high school graduation and college credits at the same time. Tech-Prep programs, however, need to move beyond single course articulation agreements to broad agreements so that a sequence of courses articulates with a field of study at the postsecondary level.

### *PreApprenticeships—A Running Start Program for CTE*

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<sup>48</sup> Dr. Cinda Johnson, Ed.D., Center for Change in Transition Services, presentation, “*Aligning High School Reform and Transition Services for Youth in Special Education*,” 2005.

<sup>49</sup> Carl D. Perkins Vocational and Applied Technology Education Act, Title II.

## Board Report: Career & Technical Education January, 2007

Preapprenticeship programs offer another career pathway option. The interim report of the Governor's "Washington Learns" initiative recommends creating "preapprenticeship programs for high school students that lead to an apprenticeship after graduation. Students who participate in this pathway will be expected to meet all academic requirements for high school graduation."<sup>50</sup> In 2006 the Governor initiated and the Legislature passed a bill to increase the number of students preparing for apprenticeship training. Second Substitute House Bill 2789 directs the Washington State Apprenticeship and Training Council to oversee direct-entry programs into apprenticeships for secondary students. The 2006 supplemental budget provides \$175,000 for grants to develop programs.

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<sup>50</sup> Office of the Governor, *Washington Learns: 2005 Interim Report*, page 28, available at [http://www.washingtonlearns.wa.gov/report/Interim2005\\_report.pdf](http://www.washingtonlearns.wa.gov/report/Interim2005_report.pdf)