

2017

Student Participation and Postsecondary Outcomes:

Entry-Level Aerospace Assembler Training and Enhanced Manufacturing Skills Programs



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ABOUT THE ERDC

The research presented here utilizes data from the Education Research and Data Center, located within the Washington Office of Financial Management. ERDC works with partner agencies to conduct powerful analyses of learning that can help inform the decision-making of Washington legislators, parents, and education providers. ERDC's data system is a statewide longitudinal data system that includes de-identified data about people's preschool, educational and workforce experiences.

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Background

The Washington Office of Superintendent of Public Instruction awards start-up grants to high schools and skills centers to implement training programs in aerospace assembly and enhanced manufacturing skills.¹ These one-time awards are used to purchase or improve course curriculum, purchase course equipment and support professional development for program teachers.

Specifically,

- RCW 28A.700.100² established the Entry-Level Aerospace Assembler Training Program in high schools to create a K-14 pipeline for aerospace assemblers. In 2013, 10 high schools received Entry-Level Aerospace Assembler Training program grants to implement this program.
- RCW 28A.700.1103 established Enhanced Manufacturing Skills Programs in secondary skills centers to teach students the skills and knowledge that are transferable to the aerospace, marine technology, pre-engineering and transportation industries. In 2013, two secondary skills centers received grants for start-up equipment, curriculum purchases and professional development opportunities related to this program.

For both programs, the Education Research and Data Center in the Office of Financial Management is directed to collect student participation and completion data for grant-recipient high schools and skills centers and to follow students to employment or further training and education in the two years following the students' completion of the program. ERDC is to report the findings in a series of annual reports beginning in 2014 and running through 2018.

The programs were first implemented in the 2013 school year. Due to the established schedule for finalizing enrollment and employment information, this 2017 annual report is the first to include a full two-year postsecondary enrollment and employment follow-up.

1 See www.k12.wa.us/legisgov/2012documents/aerospaceadvancedmanufacturing.pdf for background information.

2 <http://app.leg.wa.gov/rcw/default.aspx?cite=28A.700.100>

3 <http://app.leg.wa.gov/rcw/default.aspx?cite=28A.700.110>

Schools and skills centers receiving program grants in 2013 are shown in Table 1.

Table 1: Aerospace Assembler Training/Enhanced Manufacturing Skills Program grant recipients, 2013

District Code	School Code	School District	School	CIP Code	CIP Title
Aerospace Assembler Training Programs					
17408	2795	Auburn	Auburn High School	48.0503	Machine Shop Technology/Technician
18100	3109	Bremerton	Bremerton High School	14.9992	Engineering Design 2
18401	2615	Central Kitsap	Central Kitsap High School	15.0613	Manufacturing Technology/Technician
19401	2996	Ellensburg	Ellensburg High School	01.0201	Agricultural Mechanization, General
				46.0100	Architecture and Construction Foundations
27003	4540	Puyallup	Emerald Ridge High School	15.0801	Aeronautical and Aerospace Engineering Technology
				15.1301	Drafting and Design Technology General
				49.0102	Airline/Commercial Pilot and Flight Crew
17216	3330	Enumclaw	Enumclaw High School	48.0508	Welding Technology
06037	2179	Vancouver	Ft. Vancouver High School	48.0508	Welding Technology
27402	2876	Franklin Pierce	Franklin Pierce High School	14.9992	Engineering Design 2
17403	3741	Renton	Lindbergh High School	48.0701	Woodworking Foundations
31201	2428	Snohomish	Snohomish High School	15.0613	Manufacturing Technology/Technician
				47.0000	Manufacturing Foundations
				48.0503	Machine Shop Technology/Technician
27403	4158	Bethel	Spanaway Lake High School	47.0000	Manufacturing Foundations
13073	4254	Wahluke	Wahluke High School	15.0613	Manufacturing Technology/Technician
Enhanced Manufacturing Skills Programs					
29320	5960	Mount Vernon	Northwest Career and Technical Academy	47.0616	Marine Maintenance and Ship Repair Technology/Technician
32356	5278	Central Valley	Spokane Valley Skill Center	15.0613	Manufacturing Technology/Technician

Identifying program participants

ERDC receives detailed enrollment data from the OSPI Comprehensive Education Data and Research System.⁴ This information contains student-level course enrollment data as well as the identification of the instructor for each course and section. Also included is information about the course itself, including the classification of instructional program code associated with each career/technical education class. For some CTE programs, knowing the associated

4 <http://www.k12.wa.us/CEDARS/>

CIP code is sufficient to identify student participants. In the case of the Aerospace Assembler Program, that is insufficient since many CIP codes are general in nature, and a variety of courses are offered under a single CIP code within a high school.

To assist in identifying participants in the Aerospace Assembler and Enhanced Manufacturing Programs, OSPI provided additional information from district CTE directors. This included the CIP code(s) under which relevant classes were offered, the name of the teacher(s) of the relevant class(es), the number of students served and, in some cases, the section number of the class. In most cases, the information lined up perfectly with CEDARS data, but it has become clear that to accurately identify the program participants in some of the schools, additional information is required, at least in the early years of these programs.

Program student participation and completion

The tables that follow describe the characteristics of participants in the grant schools for which participants could be identified with confidence — approximately 500 students. Because some cells in these tables represent small counts of students, conventions to protect personally identifying information suggested by the U.S. Department of Education are followed.⁵

Table 2 shows the end-of-year enrollment status of the 2013 program participants. For those participating in skills center programs, the end-of-year enrollment status is based on records from the student's home high school.

Table 2: End-of-year status of 2013 Aerospace Assembler/Enhanced Manufacturing Skills Program participants (all grades)

Grade	Total Participants	End-of-year Status By Grade		
		Continuing	Dropout/Unknown	Graduate
Grade 9	66	≥95%	*	*
Grade 10	142	≥98%	*	*
Grade 11	132	≥98%	*	*
Grade 12	170	5-9%	3-4%	85-89%

Note: An asterisk (*) indicates that data is suppressed because it represents a cell size of less than 10.

5 "Statistical Methods for Protecting Personally Identifiable Information in Aggregate Reporting" (NCES SLDS Technical Brief #3) <<https://nces.ed.gov/pubs2011/2011603.pdf>>

Table 3 shows demographic characteristics of participants in the programs.

Table 3: Characteristics of 2013 program participants (all grades)

Characteristic	Share of Participants
Male	93%
Eligible for free or reduced-price meals	38%
Language spoken at home other than English	17%
Special education	14%
Bilingual education	2%
Race/ethnicity	
<i>American Indian or Alaska Native</i>	≤ 1%
<i>Asian</i>	3%
<i>Black/African-American</i>	3%
<i>Hispanic</i>	14%
<i>Native Hawaiian or other Pacific Islander</i>	≤ 1%
<i>Two or more races</i>	5%
<i>White</i>	72%

Table 4 shows the distribution of the participants by cumulative high school grade point average category.

Table 4: GPA distribution of 2013 Aerospace Assembler/Enhanced Manufacturing Skills Program participants (all grades)

	Percentage in GPA Category				
	3.50-4.00	3.00-3.49	2.50-2.99	2.00-2.40	below 2.00
All program participants	12%	16%	25%	18%	28%

Postsecondary follow-up

Approximately 150 program participants left high school in 2013. ERDC routinely follows high school graduates and leavers to postsecondary education and training. Included in this follow-up data are enrollments in three types of institutions:

- Washington's community and technical colleges
- Washington's public four-year institutions
- private institutions and/or out-of-state institutions

In the tables that follow, enrollments in Washington public four-year institutions are combined with enrollments in private and out-of-state institutions to allow for cell size sufficient for display. Table 5 shows the college-going rates by high school GPA for the 2013 high school exiters. Overall college-going rate for program participants who left high

school in 2013 was 40–44 percent. Students with GPAs of 3.00 or higher attend at a rate of 55–59 percent while students with lower GPAs attended at a rate of 30–34 percent.

Overall, 55–59 percent of those enrolled in postsecondary education in 2013 enrolled in a Washington CTC. When students are characterized by their high school GPA category, a pattern parallel to that of high school graduates overall emerges.⁶ Approximately 60–64 percent of high school leavers with GPA of 3.0 or above attended Washington public institutions or private/out-of-state institutions. The equivalent rate for those with lower GPAs was 25–29 percent.

Table 5: One-year postsecondary follow-up for 2013 high school leavers

GPA Category	College-going Rate (2014)	Share of College Enrollment by Institution Type	
		Washington CTC	Washington Public Four-year and Private/out-of-state
3.00-4.00	55-59%	35-39%	60-64%
<3.00	30-34%	70-75%	25-29%
Overall	40-44%	55-59%	45-49%

Table 6 shows a postsecondary enrollment follow-up for the two years following high school exit.

Table 6: Two-year postsecondary follow-up for 2013 high school leavers

GPA Category	College-going Rate (2014 and 2015)	Share of College Enrollment by Institution Type	
		Washington CTC	Washington Public Four-year and Private/out-of-state
3.00-4.00	60-64%	30-34%	65-69%
<3.00	35-39%	70-74%	25-29%
Overall	45-49%	55-59%	45-47%

After two years, 45 to 49 percent of the program participants who left high school in 2013 had enrolled in postsecondary education or training, with more of the higher GPA students attending public four-year or out-of-state/private institutions and more of the lower GPA students attending Washington CTCs.

6 See ERDC High School Feedback Reports at <http://www.erd.cwa.gov/data-dashboards/high-school-feedback-report>.

Employment follow-up

Approximately 110 high school exiters who participated in aerospace assembler or enhanced manufacturing skills programs were employed in 2014 or 2015. Table 7 shows the median earnings of the high school exiters by postsecondary enrollment status and by the number of calendar quarters in each year in which they were employed. Individuals earning at least \$100 in a quarter are considered employed. Individuals averaging at least 30 hours of employment per week over a calendar quarter are considered to be employed full-time in that quarter.

Table 7: Earnings in 2014 and 2015 by employment status

Employment Status	2014		2015	
	Count (rounded)	Median Earnings (rounded)	Count (rounded)	Median Earnings (rounded)
Employed	100	\$9,500	100	\$14,600
Employed 4 quarters	50	\$17,100	60	\$23,100
Not enrolled	50	\$14,700	50	\$20,900
Employed 4 quarters	30	\$21,500	40	\$25,000
Enrolled	50	\$7,400	50	\$11,200

Note: Totals may not add due to rounding.

Many factors are in play in assessing employment outcomes, particularly for a group where many members are combining work with postsecondary enrollment. The median earnings of all employed aerospace/enhanced manufacturing exiters in 2014 was approximately \$9,500. For those not enrolled in postsecondary education, median earnings were \$14,700.

Adding the number of quarters worked into the equation illustrates the obvious: Those working all four quarters in 2014 had significantly higher earnings (\$17,100) than those working fewer quarters. Median earnings for this group in 2015 were higher by \$5,100 in 2015 than in 2014. In both years, median earnings for those enrolled in postsecondary education or training were lower than those who were not enrolled.



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