2019

Student Participation and Postsecondary Outcomes

Entry-Level Aerospace Assembler Training and Enhanced Manufacturing Skills Programs

ERDC
Education Research & Data Center

ABOUT THE ERDC

The research presented here uses data from the Education Research and Data Center, located in the Washington Office of Financial Management. ERDC works with partner agencies to conduct powerful analyses of learning that can help inform the decisionmaking 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 instructors.

Specifically:

- RCW 28A.700.100[2] 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 in 10 districts received Entry-Level Aerospace Assembler Training program grants to implement this program. Six additional districts received funding in 2014.
- RCW 28A.700.110[3] 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. In 2014, four additional skills centers received funding.

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. This 2018 annual report is the first to include complete high school course-taking information, a full two-year postsecondary enrollment and comprehensive employment follow-up.

Schools and skills centers receiving program grants in 2013 and 2014 are shown in Table 1.

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

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

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

Table 1: AAT/EMS[4] Grant Recipients[5]

Aerospace Assembler Training Programs	
District	Fiscal Year
Auburn	2013
Bethel	2013
Bremerton	2013
Central Kitsap	2013
Ellensburg	2013
Enumclaw	2013
Franklin Pierce	2013, 2014
Kent	2014
Marysville	2014
Port Angeles	2014
Puyallup	2013
Renton	2013
Snohomish	2013
South Kitsap	2014
Vancouver	2013
Wahluke	2013
West Valley (Spokane)	2014
Enhanced Manufacturing Skills Programs	
Skills Center (District)	Fiscal Year
Northwest Career & Technical Academy (Mount Vernon)	2013
Spokane Valley Tech (Central Valley)	2013
Pierce County Skills Center (Bethel)	2014
Columbia Basin Technical Skills Center (Moses Lake)	2014
North Olympic Skills Center (Port Angeles)	2014
Seattle Skill Center (Seattle)	2014

Identifying program participants

ERDC receives detailed enrollment data from the OSPI Comprehensive Education Data and Research System.[6] This information contains student-level course enrollment data

4 In this report, the Entry-Level Aerospace Assembler Training and Enhanced Manufacturing Skills Program will be abbreviated "AAT/EMS."

5 See "Aerospace Assembler Program Grants-FY2" and Aerospace & Technical programs-FY2" entries on OSPI Agency Financial Services 2013 Proviso Reports (http://www.k12.wa.us/Finance/Agency-FinancialServices/Provisos/2013.aspx) as well the "Aerospace Assembler Program Grants-FY1" and "Skill Center Technical Programs Start Up-FY1" entries on OSPI Agency Financial Services 2014 Proviso Reports (http://www.k12.wa.us/Finance/AgencyFinancialServices/Provisos/2014.aspx).

6 See "Comprehensive Education Data and Research System (CEDARS)" (http://www.k12.wa.us/CEDARS/) for information.

as well as the identities of the instructor for each course and section; OSPI staff assisted in identifying participants in the AAT/EMS programs. Identification of participants in these programs involved (1) identifying schools funded by OSPI to offer these programs, (2) identifying relevant courses at the high-school level and (3) examining course-specific student enrollment over the two-year period during which these programs were offered. Students graduating in 2014 who participated in at least one course offered in the programs in 2013 or 2014 are the focus of this report.

Characteristics of graduates[7]

Table 2: Characteristics of 2014 AAT/EMS Graduates[8]

Student Characteristics	AAT/EMS Graduates	All Graduates from AAT/EMS Schools	All Washington Graduates
Male	89%	50%	49%
Female	11%	50%	51%
Programs and Services			
FRPL-eligible3	31%	40%	38%
Special education	11%	9%	9%
Bilingual education	5%	3%	2%
Race/Ethnicity			
American Indian or Alaska Native	*	1%	1%
Asian	5%	11%	8%
Black/African American	5%	9%	4%
Hispanic	9%	13%	16%
Native Hawaiian or other Pacific Islander	*	1%	1%
Two or More Races	4%	6%	5%
White	74%	59%	64%
High School Grade Point Average			
3.50–4.00	10%	24%	24%
3.00–3.49	18%	24%	25%
2.50–2.99	31%	23%	22%
2.00–2.49	23%	18%	18%
Less than 2.00	17%	11%	11%

Note: Shares may not add to 100% due to rounding. An asterisk (*) indicates that data is not reported to protect subgroups with fewer than 10 individuals.

7 Conventions to protect personally identifying information suggested by the U.S. Department of Education are adhered to in the following series of tables when cell sizes represent populations too small to report. Counts shown in tables are rounded to the nearest 10 students. See "Statistical Methods for Protecting Personally Identifiable Information in Aggregate Reporting" (NCES SLDS Technical Brief #3) <nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2011603>.

8 FRPL-eligible students are those eligible for free or reduced-price lunch based on family income.

Table 2 displays characteristics of 2014 high school graduates who completed AAT/EMS courses. For comparison, characteristics of all graduates of high schools offering these programs and characteristics of all high school graduates are shown. Graduates of high schools served by skills centers offering the Enhanced Manufacturing Skills Program are included in the comparison group.

The most dramatic difference between program graduates and graduates overall is in the gender of participants. Male students accounted for almost 90 percent of the approximately 280 high school graduates completing AAT/EMS courses in high school.

Overall, among all 2014 high school graduates, students reported as Asian, Black/African-American, Hispanic and Two or More Races account for 33 percent of the graduates. Approximately 39 percent of 2014 graduates from schools offering access to the AAT/EMS programs were reported in these categories. Among program graduates only 23 percent fell into these categories.

The GPA distribution for the program graduates differs from that of high school graduates overall. For all high school graduates and for graduates from program schools, the largest shares fall into the 3.00–3.49 or 3.50–4.00 categories, with a total of 48 to 49 percent, respectively, of the graduates with GPAs of 3.00 or above. For AAT/EMS program graduates, 28 percent fall into the 3.00–4.00 categories. The largest share of the AAT/EMS graduates (31 percent) have GPAs in the 2.49–2.99 range.

Postsecondary enrollment follow-up[9]

Overall, 61 percent of all 2014 Washington high school graduates enrolled in postsecondary education in 2015. Table 3 summarizes one year of postsecondary education follow-up for the approximately 150 AAT/EMS high school graduates. For these graduates, the overall postsecondary enrollment rate for the first year after high school graduation is 52 percent. Included in the postsecondary enrollment data are three categories: Washington public fouryear institutions, the state's community and technical colleges, or CTCs, and combined Washington private institutions and out-of-state institutions.[10]

9 Postsecondary enrollment rates for the 2014 high school graduates have been updated from previous reports based on current data available to the ERDC. Academic years used in this report are expressed using the last year of the academic term, so "2013" refers to the academic year 2012–13. The two years of follow-up for the 2013 graduates are 2014 (i.e., 2013–14) and 2015 (i.e., 2014–15).

10 Enrollment data for the ERDC data warehouse is provided by the State Board for Community and Technical Colleges and the six public baccalaureate higher education institutions of the state (University of Washington, Washington State University, Central Washington University, Eastern Washington University, The Evergreen State College and Western Washington University). Additionally, the National Student Clearinghouse is the source of information about enrollment in Washington private higher education institutions and out-of-state institutions.

Postsecondary enrollment rates, as well as enrollment rates by type of institution, are related to high school GPA. Typically, high school graduates with the highest GPA have the highest rates of postsecondary enrollment and the greatest tendency to enroll in either Washington public four-year institutions or in private or out-of-state institutions.[11] This holds true for the AAT/EMS graduates. More than 80 percent of the graduates with a GPA of 3.50 or above participated in postsecondary education in the year after high school graduation. Of all the AAT/EMS graduates enrolled in postsecondary education, 61 percent enrolled in community or technical colleges.

Table 3: One-Year Postsecondary Enrollment Follow-Up by High School GPA

		Share of College Enrollment by Institution Type		
		Washington Public		
High School GPA	Postsecondary Enrollment Rate	CTC	Four-Year	Private & Out-of-State Institution
3.50-4.00	83%	*	*	*
3.00-3.49	69%	41%	*	*
2.50-2.99	51%	75%	*	*
<2.50	40%	82%	*	*
Total	52%	61%	18%	21%

Note: An asterisk (*) indicates that data is not reported to protect subgroups with fewer than 10 individuals.

Table 4 shows a full two-year postsecondary enrollment follow-up (through 2016) for the 2014 high school graduates. Individuals were considered enrolled if, at any time during the two years after high school graduation, they were enrolled in a postsecondary institution.

Table 4: Two-Year Postsecondary Enrollment Rate Follow-up by High School GPA

		Share of College Enrollment by Institution Type		
		Washington Public		
High School GPA	Postsecondary Enrollment Rate	CTC	Four-Year	Private & Out-of-State Institution
3.50-4.00	83%	*	*	*
3.00-3.49	76%	51%	*	*
2.50-2.99	61%	74%	*	*
<2.50	46%	87%	*	*
Total	59%	66%	16%	18%

Note: An asterisk (*) indicates that data is not reported to protect subgroups with fewer than 10 individuals.

11 See the ERDC High School Graduate Outcomes (https://erdc.wa.gov/data-dashboards/high-school-graduate-outcomes).

Program participants with lower high school GPAs are more likely to defer college enrollment by a year than those with higher GPAs. At the end of one year, 51 percent of graduates with high school GPAs of 2.50 to 2.99 had enrolled in postsecondary education. After two years, 61 percent had enrolled. For those in the 3.50–4.00 GPA range the rate was stable at 83 percent.

Program participants who defer postsecondary enrollment until the second year after high school graduation were more likely to enroll in a CTC. In the first year after graduation, 61 percent of the enrolled graduates enrolled in a CTC. After the second year, 66 percent of those enrolling in postsecondary institutions had enrolled in a CTC.

Employment

Approximately 225 AAT/EMS graduates were employed in Washington in 2015 or 2016 — roughly 200 in each year.[12] Table 5 shows the median earnings of the graduates by postsecondary enrollment status and by the number of calendar quarters in which they were employed in a year. Individuals earning at least $100 in a quarter are considered employed. Table 5 shows that the median earnings of all employed AAT/EMS graduates in 2015 was approximately $12,100.

Table 5: Earnings of Program Graduates by Employment Status

	2015		2016	
	Employed	Earnings	Employed	Earnings
Employed	200	$12,100	210	$16,100
Employed 4 quarters	120	$17,600	140	$22,600
Employed 1-3 quarters	90	$5,100	70	$5,600
Not enrolled	80	$13,800	110	$19,800
Employed 4 quarters	50	$20,400	80	$25,200
Employed 1-3 quarters	30	$6,900	30	$6,200
Enrolled	120	$10,400	100	$13,100
Employed 4 quarters	70	$16,600	60	$18,200
Employed 1-3 quarters	50	$4,400	40	$5,600

Note: Numbers of graduates are rounded to the nearest 10. Subtotals may not add to totals due to rounding. Earnings are inflation-adjusted to 2016 dollars using the implicit price deflator for personal consumption and rounded to the nearest $100.

12 Employment and earnings information is available for individuals matched with unemployment insurance wage records collected by the Washington State Employment Security Department. Employment information for self-employed individuals, federal employees and those employed exclusively outside Washington is not included.

Many factors are in play in assessing employment outcomes, particularly for a group with many members combining work with postsecondary enrollment. For those not enrolled in postsecondary education, median earnings were $13,800, significantly more than $10,400 for those enrolled. Adding the number of quarters worked into the equation illustrates the obvious: Those working all four quarters in 2015 had significantly higher earnings ($17,600) than those working fewer quarters ($5,100).

There are significant differences across industries in the potential earnings for recent high school graduates. Table 6 shows earnings by industry group for all employed graduates and for those who had earnings in four quarters. For those working in more than one industry, the industry associated with the highest earnings for that year is selected for display.

Median earnings are calculated for groups with at least 30 individuals. To display as much detail as possible, construction and manufacturing are combined in Table 6. (The two industries have similar earnings patterns, but there are not consistently 30 individuals employed in either industry group.)

When employment and earnings are broken out by industry group, several things stand out:

- The two-industry group employing the greatest numbers is trade, which includes retail and wholesale trade employment.
- Graduates employed in construction or manufacturing had significantly higher earnings than those employed in other industries.

Table 6: Median Earnings by Industry Group and Employment Status

	All Employed Graduates				Employed 4 Quarters			
	2015		2016		2015		2016	
Industry Group	Count	Earnings	Count	Earnings	Count	Earnings	Count	Earnings
Construction or Manufacturing	50	$22,800	60	$26,300	30	$29,000	40	$30,000
Trade	50	$13,400	70	$14,700	40	$15,800	50	$17,800
Other industries	110	$8,800	90	$13,200	50	$13,100	50	$20,000

Note: Numbers of graduates are rounded to the nearest 10. Totals may not add to numbers in Table 5 due to rounding. Earnings are inflation adjusted to 2016 dollars using the implicit price deflator for personal consumption and rounded to the nearest $100.

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