

Apprenticeship

Program Details

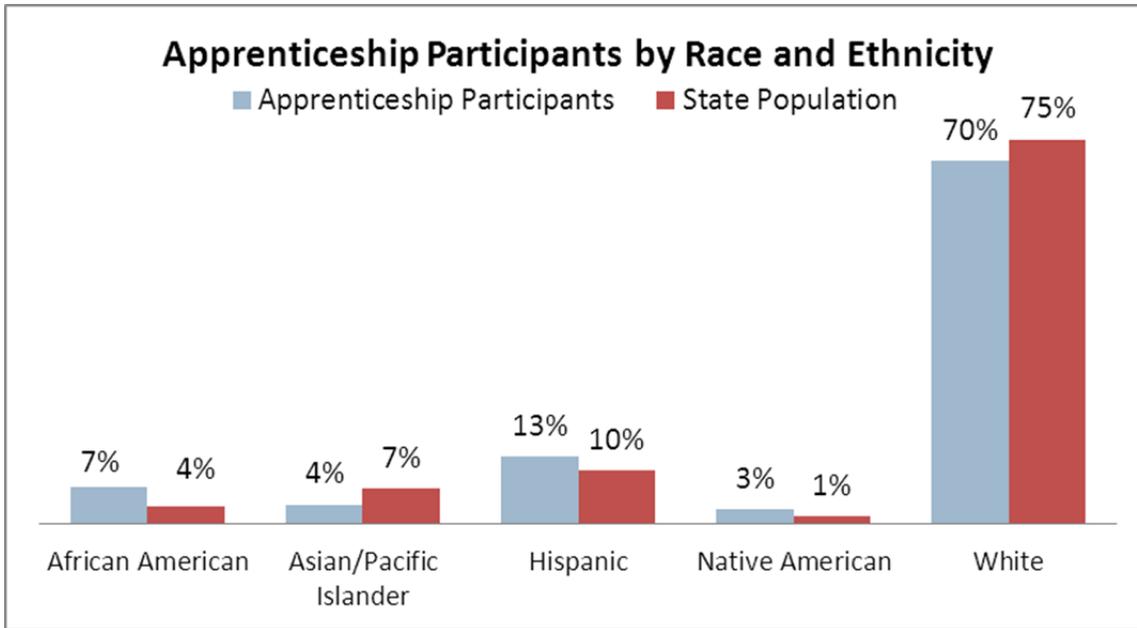
Apprenticeship combines classroom studies with extensive on-the-job training under the supervision of a journey-level craft person or trade professional. Apprentices receive wages and may receive health, pension, and other benefits while learning occupational skills. This “earn while you learn” model has proven successful across a range of industries—from cosmetology to construction. Apprenticeships require applicants be at least 16 years old (18 for construction trades), and most require at least a high school diploma or GED for entrance. Apprenticeship in Washington is governed by the Washington State Apprenticeship and Training Council and administered by the Department of Labor and Industries.

Every two years, the Workforce Board measures the performance of key workforce programs. In this report, you'll find out more about the program and who is served, the metrics used to measure performance and how the program performed.

Participant Profile

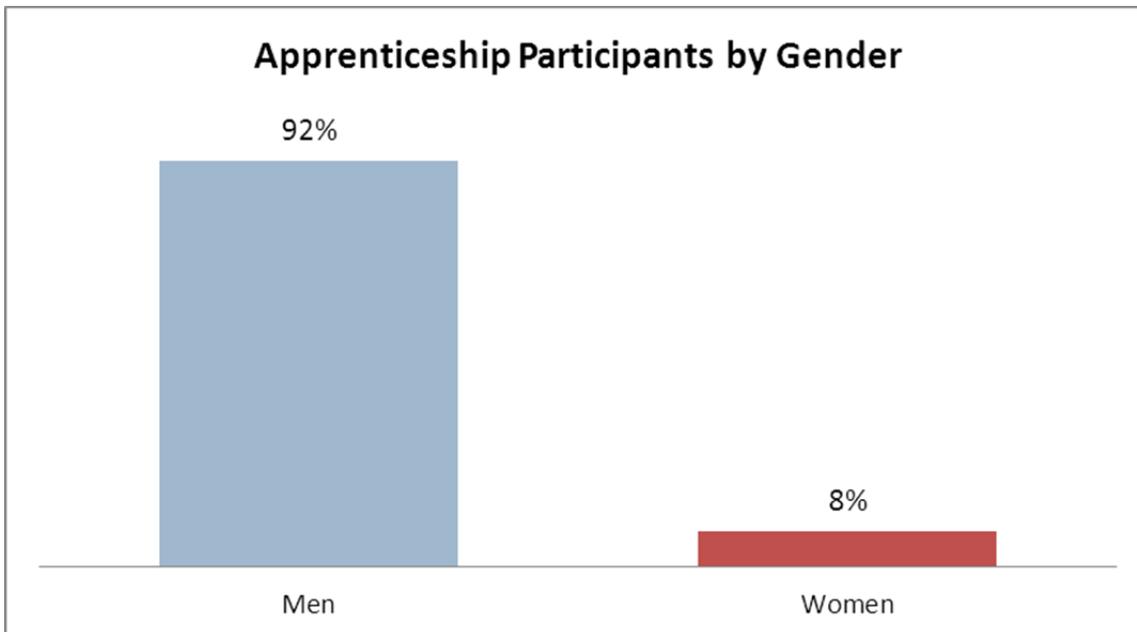
For this report, researchers studied the results of 4,447 apprentices who left a program during the 2008-09 program year. Apprentices reflect the racial and ethnic diversity of the state population. Hispanics, African Americans, and Native Americans are represented above their proportions of the state population. However, African Americans, Hispanics and Native Americans do not complete the apprenticeship programs at the same rates as they enroll, with relatively fewer reaching the finish line in their apprenticeships than those of other backgrounds. Asian/Pacific Islanders and whites enroll in apprenticeship programs in lower numbers than their share of the state population.¹

¹ In this report, unless otherwise stated, racial and ethnic minority groups are mutually exclusive; that is, an individual belongs to one group only. The groups include the following: Hispanics of any race (also referred to as Hispanics); non-Hispanic African Americans (also referred to as African Americans); non-Hispanic Asians/Pacific Islanders (also referred to as Asians/Pacific Islanders); non-Hispanic Native Americans and Alaskan Natives (also referred to as Native Americans); non-Hispanic multiracial (also referred to as multiracial); and non-Hispanic whites (also referred to as whites). According to the 2009 U.S. Census Bureau estimates from the American Community Survey, 75 percent are white; 4 percent are African American; 1 percent are Native American; 7 percent are Asian/Pacific Islander; 3 percent are multiracial; and 10 percent are Hispanic.



Source: 2008-09 Apprenticeship Administrative Data, Department of Labor and Industries, 2009 U.S. Census Bureau estimates from the American Community Survey.

Relatively few women enter apprenticeship programs compared to men. Only 8 percent of the 2008-09 apprentices were women. This is lower than the 11 percent among the 2007-08 cohort and the 12 percent of the 2005-06 cohort.



Source: 2008-09 Apprenticeship Administrative Data, Department of Labor and Industries.

The median age at program exit was 28. One quarter of those enrolled in apprenticeship programs were age 24, and another quarter were age 34 or older.

Completion Rates

Overall, apprentices spent a median of 18 months in their program. Among apprenticeship completers, the median program length was 37 months. Among apprentices leaving their program in 2008-09, 37 percent completed their program. However, the length of participation varied widely. The number of years spent in apprenticeship programs is reflected in the following table, comparing those who completed with those who did not complete.

It's worth noting that apprenticeship programs cover a broad array of occupations, from construction trades and early learning to dispensing optician and cosmetologist. Not only are apprenticeship occupations wide-ranging, the length of time it takes to complete a program varies considerably. For example, a Washington resident training to become a construction electrician can expect an apprenticeship to last at least four years to reach journey level status, while those training to become an esthetician require 2,000 hours, or approximately one year, to complete.

Number of Years Apprentices Participated in their Program		
Years in Program	Completers	Non Completers
less than 1	n/a	0.1%
1-2	9.7%	54.1%
2-3	16.0%	29.0%
3-4	22.7%	10.4%
4-5	24.1%	3.4%
5-6	18.5%	1.3%
6-7	6.3%	0.5%
7-8	1.4%	0.7%
8-9	0.9%	0.1%
9-10	0.2%	0.1%
more than 10	0.1%	0.1%

Source: 2008-09 Apprenticeship Administrative Data, Department of Labor and Industries.

Many participants opt to leave prior to completion. These non-completers still tend to show wage gains in subsequent quarters due, most likely, to the skills acquired while in the apprenticeship program. Because apprenticeship programs can last many years, a significant number of people do not reach the finish line. However, even those who exit early still show wage gains from the skills they acquired.

State Core Measures: Tracking Apprenticeship Progress

The Workforce Board routinely measures the performance of our state's largest workforce programs. As a customer-focused advocate for Washington's workers and employers, the Workforce Board strives to provide performance accountability, verifying whether worker education and training programs provide a return on investment for participants and taxpayers.

The Workforce Training Results report seeks to answer five core questions:

- Did participants get the skills they needed?
- Did participants get a job and how much were they paid?
- Were employers satisfied with the preparation workers received?
- Has the program made a difference in the participant's success?
- Did participants and the public receive a return on their investment?

Data Comes From State Wage Files & Employer Survey

The 2011 Workforce Training Results includes information obtained from Employment Security Department wage files in Washington, Idaho, and Oregon, and federal employment records for 2008-09. Employer satisfaction was assessed through the Workforce Board's 2010 Employer Survey from 156 firms that hired employees who recently exited an apprenticeship program.

Net Impact Study Adds More Insight into Program Performance

In addition, this year's report includes a comprehensive Net Impact Study. To assess both short- and long-term employment and earnings trends, data on employment records from as far back as 2005-06 is used in the Net Impact Study. Conducted every four years, this study provides a head-to-head comparison of participants and non-participants to help answer a central question: How much of a workforce participant's success in obtaining a job, or a higher wage, is due to the workforce program? By comparing program participants with similar individuals who did not participate in a workforce training program, the Net Impact Study indicates whether employment and earnings gains are due to the workforce program, or if workers could have made this progress on their own. This research also allows for a more detailed analysis as to whether the participant and the public received a return on their investment in the program.

Turn to page 20 for the Net Impact Study. Conducted every four years, this in-depth report adds extra value to 2011 Workforce Training Results. The study provides a side-by-side comparison of participants vs. similar non-participants, answering the question of whether the program is making a difference.

Did Participants Have a Job and How Much Were They Paid?

To find out about the apprentices' post-program employment and earnings, participant records were matched with Employment Security Department wage files from Washington and neighboring states.² Labor market outcomes for apprenticeships are higher than for any other program the Workforce Board studies. In addition to the quality of apprenticeship training and the wage levels in these occupations, this result may be due to the relatively long length of the program.

Record matches found 61 percent of apprentices had reported employment during the third quarter after they left the program. This is 12 percentage points below that observed in 2008-09. Their median wage was \$24.42 per hour—down slightly from \$25.19 the prior year—and annualized earnings were \$38,235.³ The median wage of apprentices is high, but there is considerable variation in wages, as the table below depicts. Limiting analysis to just those apprentices who completed their program, the outcomes are even better. The median earnings of completers was \$56,509. These results highlight the value of completing an apprenticeship program.

Distribution of Hourly Wages of Apprentices in the Third Quarter After Leaving Program	
Quartile	Hourly Wage
Highest	Above \$35.59
Third	\$24.85-\$35.59
Second	\$14.85-\$24.84
Lowest	Below \$14.85

² These files contain quarterly earnings and hours worked information on those individuals with employment reported for unemployment insurance (UI) benefits purposes (approximately 90 percent of in-state employment, with self-employment, active duty military, and those working for religious nonprofit organizations being the major groups of employers not included).

³ Annual earnings are calculated as third quarter earnings multiplied by four. Quarterly earnings are the result of hourly wage rates and the number of hours worked in a calendar quarter. All wages and earnings are stated in first quarter 2009 dollars.

Employment and Earnings for Apprentices, 2009-10

Performance Measure	Results
Employment Rate (Self-Reported)	78%
Employment Rate* (State Records)	61%
Employment Rate* Completers (State Records)	81%
Full Time Employment **	59%
Median Quarterly Hours	444 hours
Median Hourly Wage***	\$24.42
Median Annualized Earnings***	\$38,235

* These figures apply to those with employment reported to state employment agencies six to nine months after leaving the program. Rate does not include self-employment, employment outside the Northwest or military service and thus understates total employment by approximately 10 percent.

** Full-time employment averages 30 or more hours per week.

*** Earnings/wages expressed in first quarter 2009 dollars in order to account for inflation.

To put earnings in context, the median number of dependents Apprenticeship participants were able to support at the poverty level after leaving the program was 8.3 people. At the 200 percent of poverty level, this was 3.2 people.⁴

Self Sufficiency Level Trends for Apprentices

	2002-03		2004-05		2006-07		2008-09		2009-10	
	Completers	All								
Household size - Poverty Level	14.2	7.8	12.2	7.9	13.6	9.4	14.4	9.5	13.2	8.3
Household size - 200 percent Poverty Level	6.1	2.9	5.2	3.0	5.9	3.7	6.2	3.8	5.7	3.2

⁴In 2009, the poverty level for one person was \$10,830 per year. The 200-percent-poverty level that year was \$21,660 for one person.

Apprentices Receiving Benefits from Employers

Performance Measure	2002-03	2004-05	2006-07	2008-09*	2009-10
Self-Reported Medical Benefits from Employer	87%	83%	81%	N/A	85%
Self-Reported Retirement Benefits from Employer	80%	82%	68%	N/A	81%

* Due to budget concerns, the Workforce Board's Participant Survey was not conducted in 2008-09.

The next table shows employment and earnings information over five study periods.

Employment and Earnings Trends for Apprentices

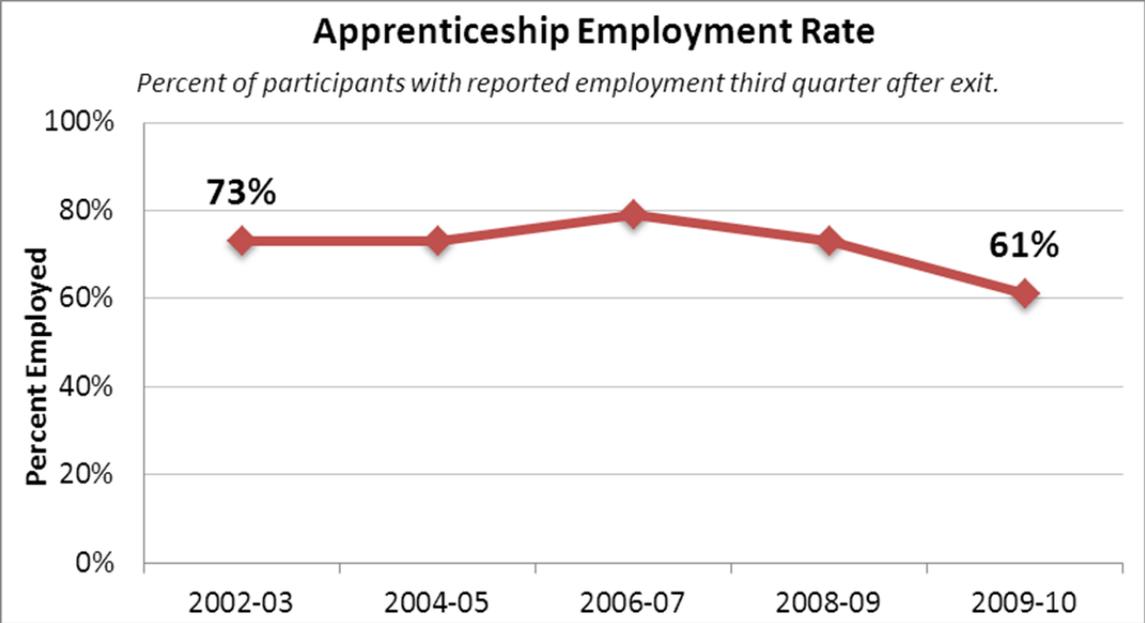
Performance Measure	2002-03	2004-05	2006-07	2008-09	2009-10
Employment Rate (Self-Reported)	87%	87%	91%	N/A	78%
Employment Rate* (State Records)	73%	73%	79%	73%	61%
Full Time Employment**	60%	61%	69%	65%	59%
Median Quarterly Hours	442	451	476	465	444
Median Hourly Wage***	\$24.09	\$24.31	\$24.78	\$25.19	\$24.42
Median Annualized Earnings***	\$36,159	\$36,786	\$42,086	\$42,750	\$38,235

*These figures apply to those with employment reported to ESD six to nine months after leaving program for all Apprenticeship participants, and are not limited to those who completed a program. Rate does not include self-employment, employment outside the Northwest or military service and thus understates total employment by approximately 10 percent.

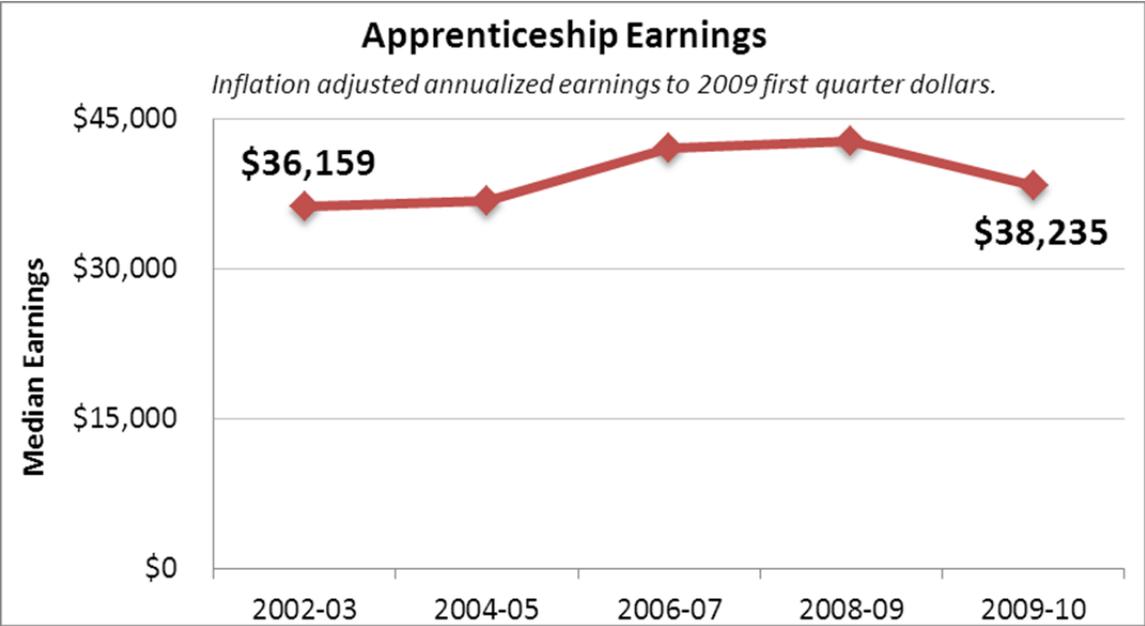
**Full-time employment averages 30 or more hours per week.

***Earnings/wages expressed in first quarter 2009 dollars in order to account for inflation.

Since 2002, participants have experienced increased earnings. However, the employment rate has decreased over the past two reports, reflecting the onset and continuation of the Great Recession.



Source: Workforce Training Results 2002-10.



Source: Workforce Training Results 2002-10.

Apprenticeship Employment by Industry

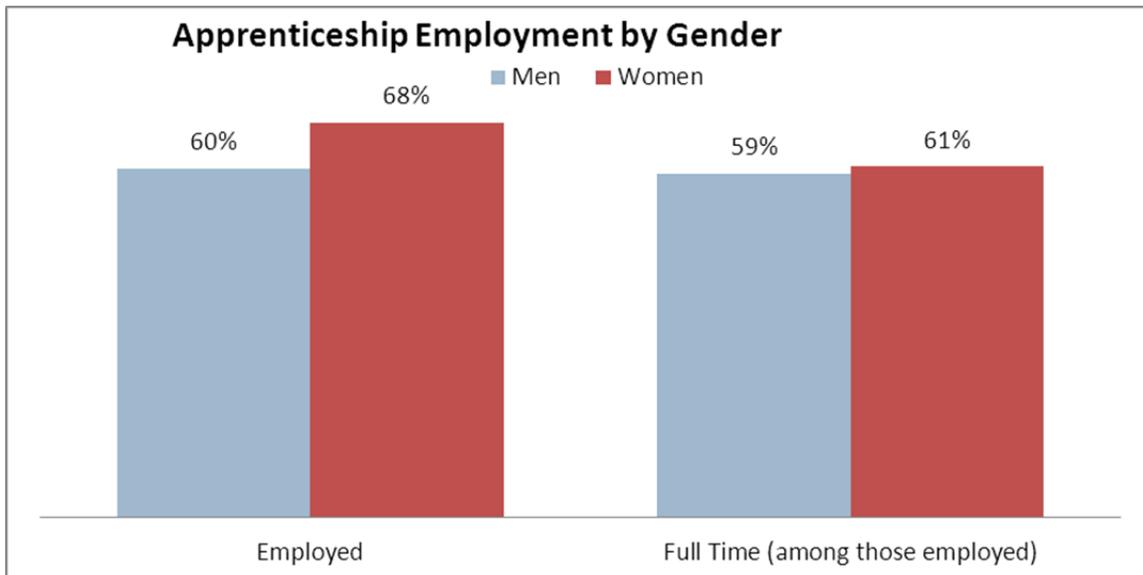
The majority of Apprenticeship program participants who were reported to be employed held jobs in the services (25.1 percent), construction (18.7 percent), manufacturing (17.1 percent) and retail (10.2 percent) industries. This is a nearly 30 percentage point drop in the number of apprentices employed in construction from the prior year, whereas the number employed in services increased by 7 percentage points from the prior year.

Industry Group	
25.1%	Services (see breakout below)
18.7%	Construction (see breakout below)
17.1%	Manufacturing
10.2%	Retail Trade
9.8%	Wholesale Trade
7.8%	Transportation and Warehousing and Utilities
3.6%	Public Administration
3.3%	Financial Services
2.9%	Natural Resources and Mining
0.7%	Information
Breakout of Services Industry	
6.7%	Administrative and Support and Waste Management
4.7%	All Other Services
2.9%	Arts, Entertainment, and Recreation
2.9%	Health Care
2.7%	Accommodation and Food Services
2.0%	Professional, Scientific, and Technical Services
1.8%	Education Services
1.6%	Social Assistance
0.9%	Arts, Entertainment, and Recreation
0.7%	Social Assistance
Breakout of Construction Industry	
5.3%	Foundation, structure & Building Exterior Contractors
4.9%	Building Finishing Contractors
2.4%	Heavy & Civil Engineering Construction
2.2%	Building Equipment Contractors
2.0%	Construction of Buildings
1.8%	All Other Specialty Contractors
<i>Note: Industry groups are based on North American Industry Classification System codes.</i>	

Source: Matches with Employment Security Department data in third quarter after exiting program.

Wages and Employment Results Vary by Population

Wages and employment results can vary by gender, race and ethnicity, and disability.⁵ Women were more likely than men to be employed in the third quarter after leaving their apprenticeship (68 percent compared to 60 percent), but experienced relatively similar rates in terms of being employed full-time (61 percent versus 59 percent). Of those employed, women had median hourly wages (\$19.23). That was 75 percent of men's wages (\$25.59), a decrease of 13 percentage points from the 2007-08 study. Median annualized earnings were 76 percent of males (\$29,524 compared to \$38,796), nearly identical to the disparity found in the last study.



Source: 2008-09 Apprenticeship Administrative Data, Department of Labor and Industries.

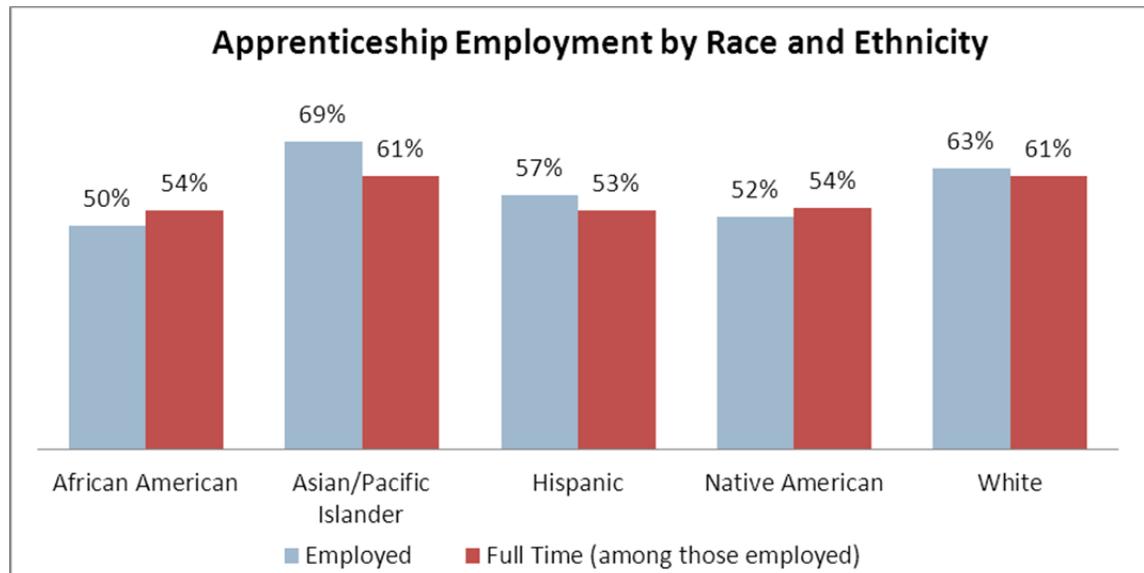
Race/Ethnicity Plays Role

Asian/Pacific Islander apprentices were more likely than others to be employed in the third quarter after leaving their programs (69 percent). This employment rate compares to 63 percent for whites, 57 percent for Hispanics, 52 percent for Native Americans, and 50 percent for African Americans. However, Asian/Pacific Islanders and whites were just as likely to be employed full time at 61 percent, with African Americans, Hispanics and Native Americans having rates between 53 and 54 percent.

For those employed, whites had the highest median hourly wage at \$26.84. The median hourly wage for African American apprentices was 73 percent of whites (\$19.71), 71 percent for Asian/Pacific Islanders (\$18.99), 76 percent for Hispanics (\$20.44), and 79 percent for Native Americans (\$21.39).

⁵ Apprenticeship administrative records do not include information on disability status.

In terms of annual earnings, whites earned the most (\$40,656), followed by Asian/Pacific Islanders (\$34,991), Hispanics (\$29,393), African Americans (\$28,228) and Native Americans (\$28,011).



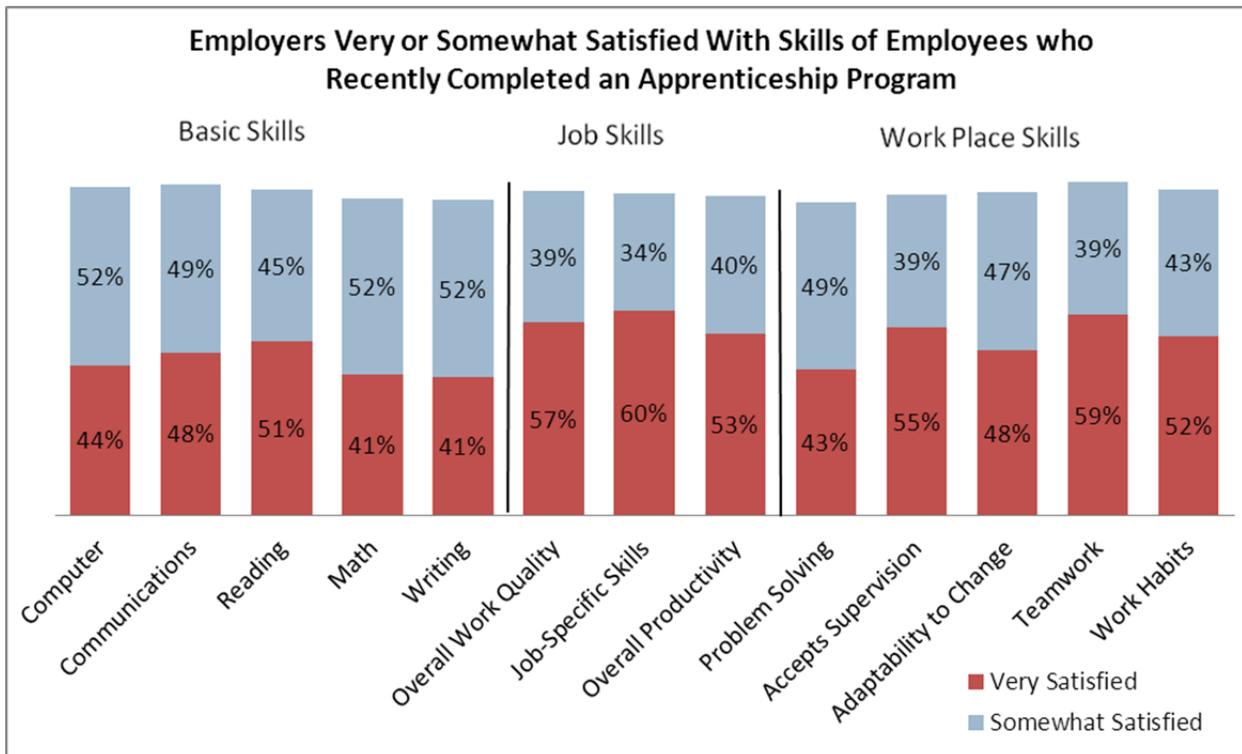
Source: 2008-09 Apprenticeship Administrative Data, Department of Labor and Industries.

Were Employers Satisfied with the Preparation Workers Received?

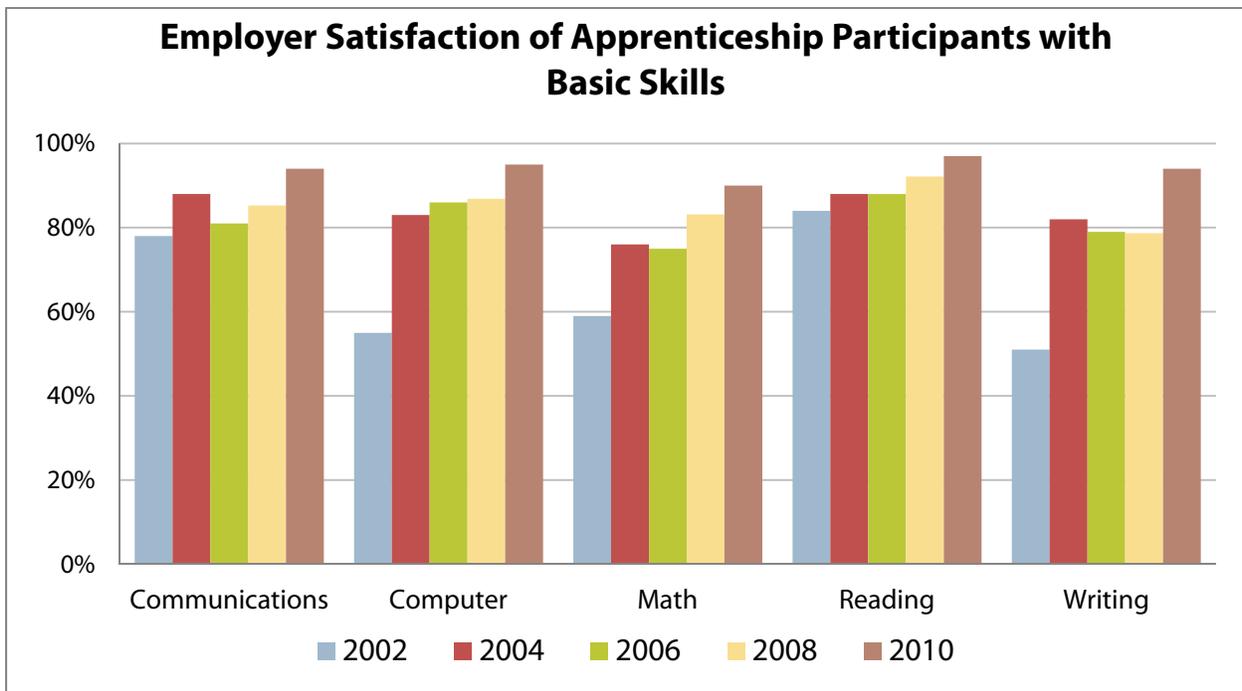
The Workforce Board’s Employer Survey, administered during 2010, asked firms to evaluate new employees who had recently completed an apprenticeship program.

Employer satisfaction was broken down into three categories: Basic Skills, Job Skills and Work Place Skills. Basic skills refer to reading, writing, math, communication and computer skills. Job skills refer to skills specific to the job as well as overall work quality and productivity. Work place skills refer to the skills necessary to get along in the workplace such as ability to accept supervision, teamwork, ability to adapt to changing situations, problem solving and overall work habits.

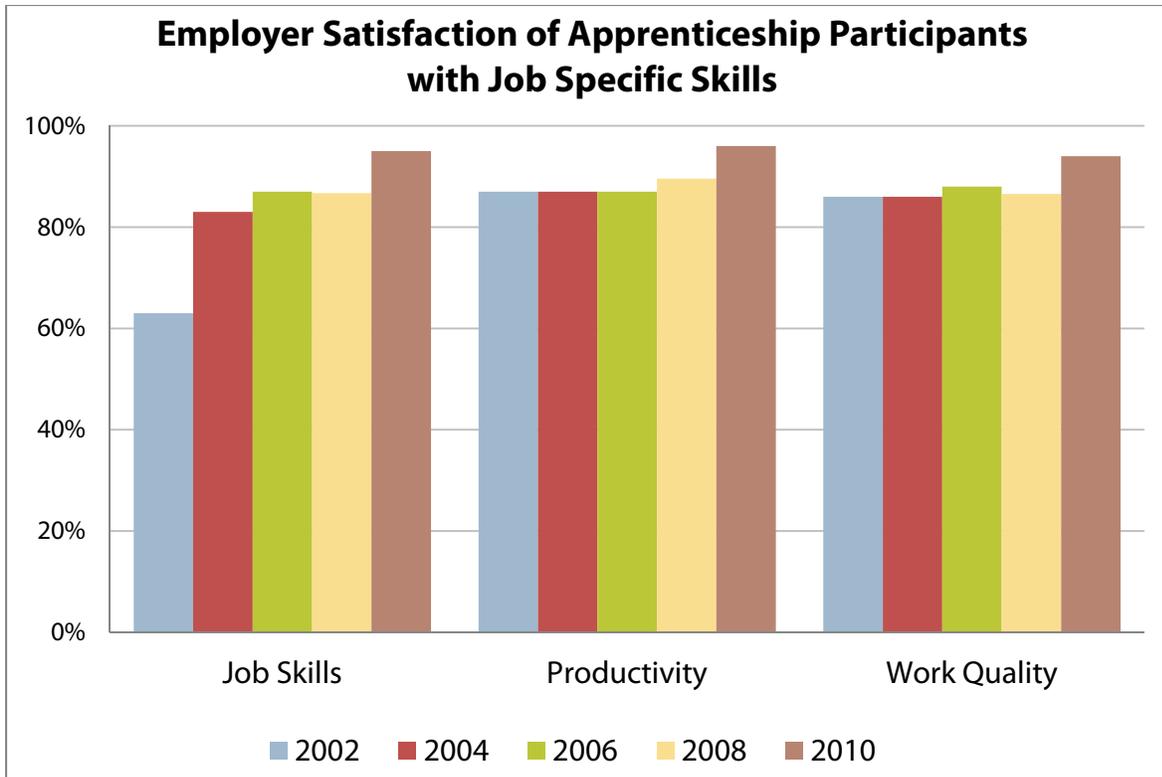
The levels of employer satisfaction reported in the 2010 survey are higher than any other survey over the past decade. For basic skills, employers were most satisfied with computer and reading skills, though they were more likely to be very satisfied with reading skills. For job skills, employers were most satisfied with the overall work quality of apprenticeship participants and were very satisfied with their job-specific skills. Employers rated the overall satisfaction with teamwork as highest among the work place skills.



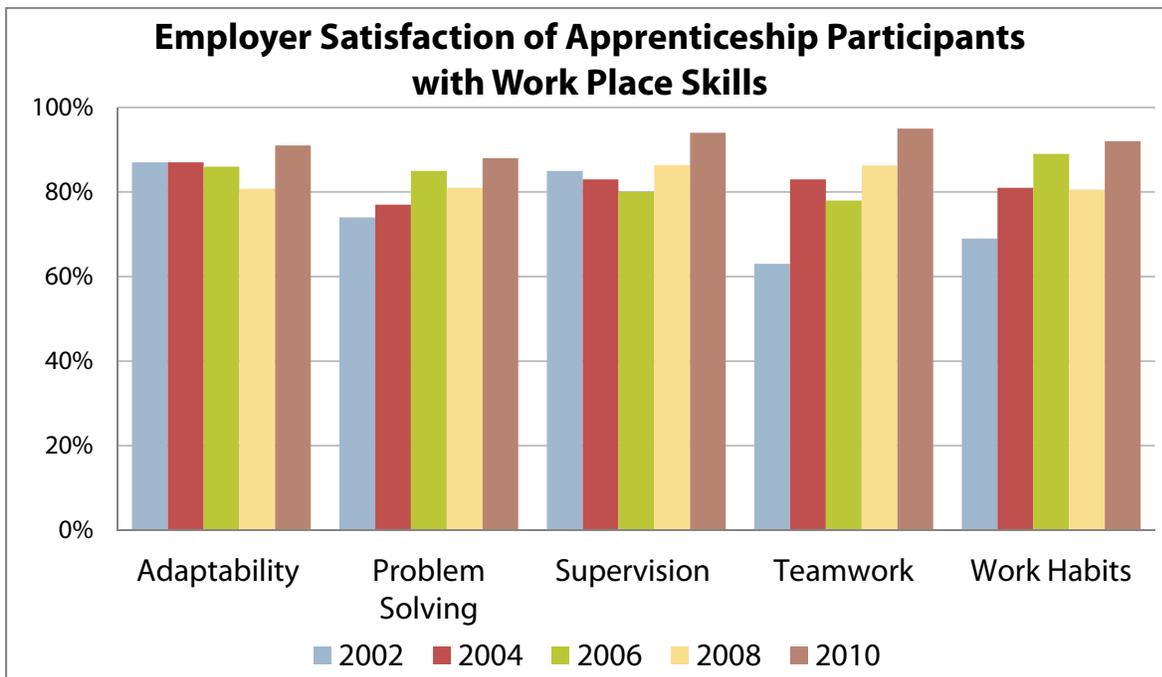
Source: Workforce Board Employer Survey conducted in 2010.



Source: Workforce Board's biennial Employer Surveys from 2002 through 2010.



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Source: Workforce Board's biennial Employer Surveys from 2002 through 2010.

Participant Survey - Did Participants Get the Skills They Needed?

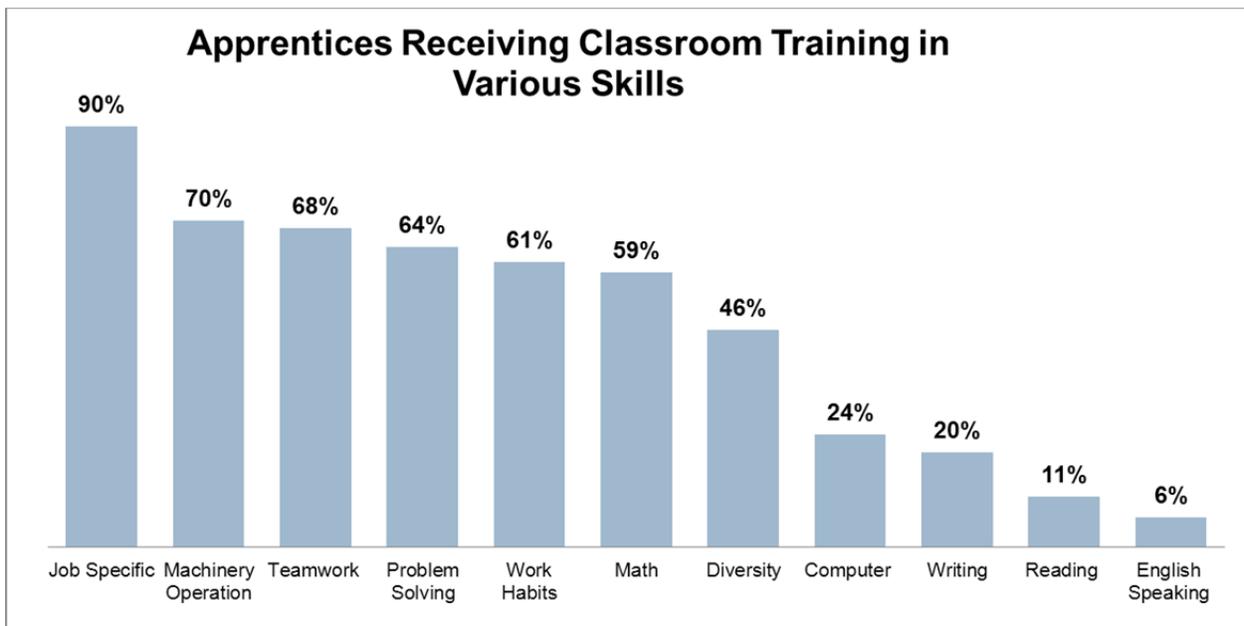
In 2011 the Workforce Board surveyed Apprentices who had left their program in 2009-10. The survey provided data on employment and participant satisfaction with the training. The survey was conducted by telephone and was completed by 317 participants.

Of the apprentices leaving their program in 2009-10 who answered questions for the 2011 Participant Survey, 37 percent completed their apprentice program, which is a decrease of 5 percentage points from the previous survey conducted in 2008.

By definition, people enter an apprenticeship program to acquire occupation or industry-specific training. As they gain these skills, they are paid to work and hold down jobs that both bolster their resume and pay the bills. Many apprentices also receive training in general workplace skills such as teamwork and problem solving. They receive both on-the-job training and classroom training.⁶

Classroom Training

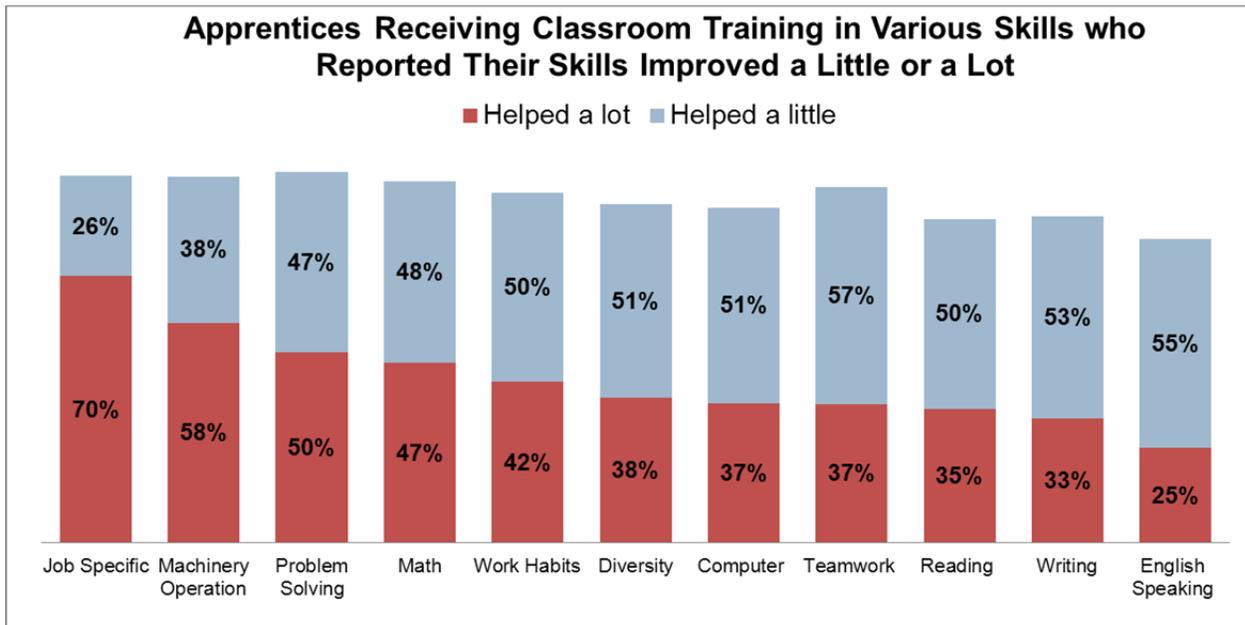
Apprentices receive various skills training, both in the classroom and during on-the-job training. During classroom training, apprentices were least likely to receive basic skills training such as English speaking, reading, and writing skills. One exception is the 59 percent of apprentices who received math skills training. Apprentices were most likely to receive training in job specific skills (90 percent). These results are similar to surveys completed in previous years.



Source: Workforce Board's Participant Satisfaction Survey 2011.

⁶ Apprentices are required to participate in at least 144 hours of classroom training annually.

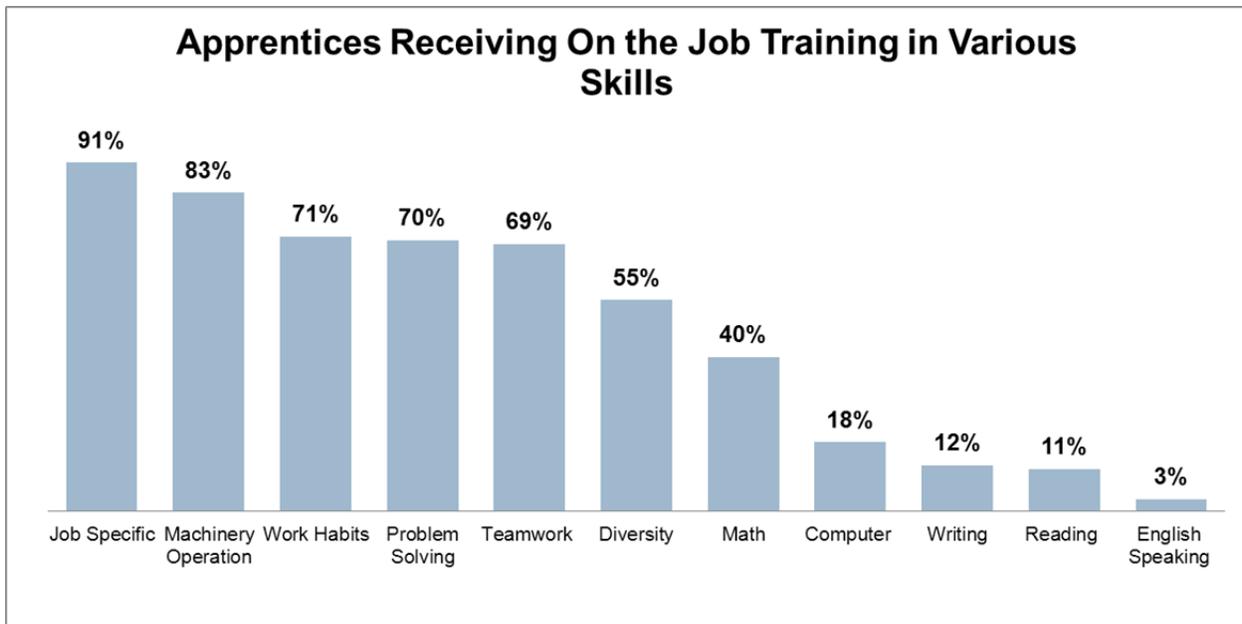
In both the previous and current studies, apprentices reported their skills in many areas improved as a result of classroom training. The apprentices from the 2011 survey indicated similar levels of improvement overall when compared with apprentices from 2008. However, compared to 2008, fewer apprentices reported the training they received in problem-solving, math and job specific skills helped “a lot.” An increasing number reported that training in those areas helped “a little.” One significant drop was in work habits. Apprentices reporting that work habits training helped “a lot” dropped by 9 percentage points.



Source: Workforce Board's Participant Satisfaction Survey 2011.

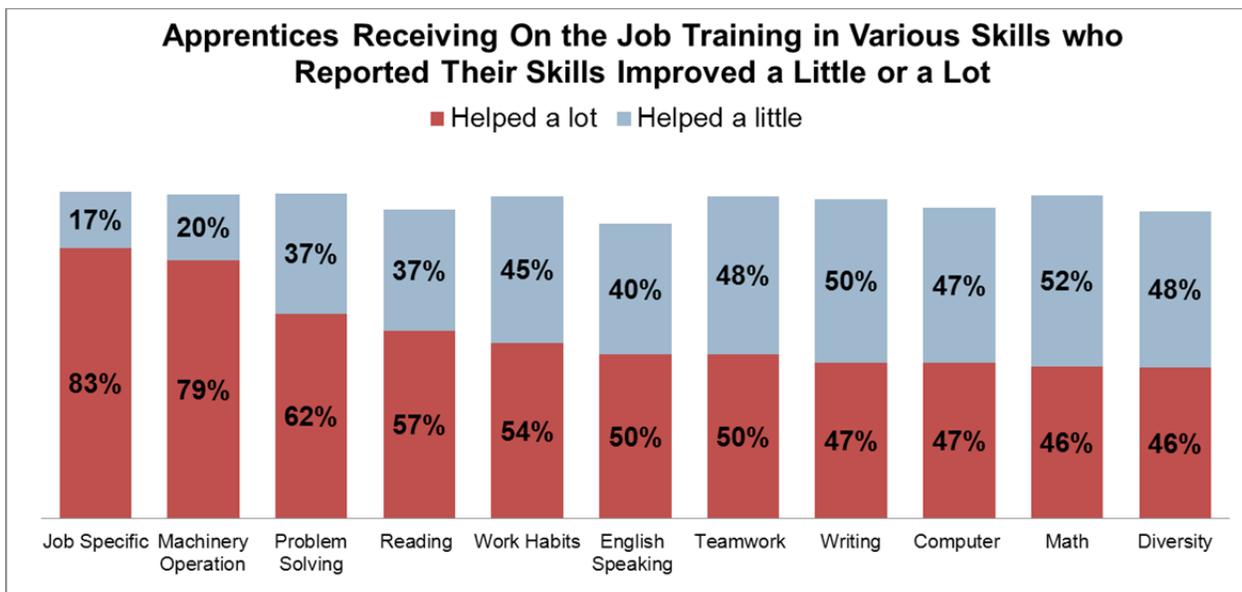
On-the-Job Skills Training

As in the previous survey, high percentages of apprentices reported receiving on-the-job training in job-specific skills, machinery operations, work habits, and teamwork. The percentage of apprentices receiving training in various skills has remained mostly the same between 2008 and 2011. The exceptions are the level of apprentices receiving training in work habits and math skills, both of which increased 7 and 6 percentage points respectively. However, the level of apprentices receiving training in problem solving skills declined 10 percentage points in the same time period.



Source: Workforce Board's Participant Satisfaction Survey 2011.

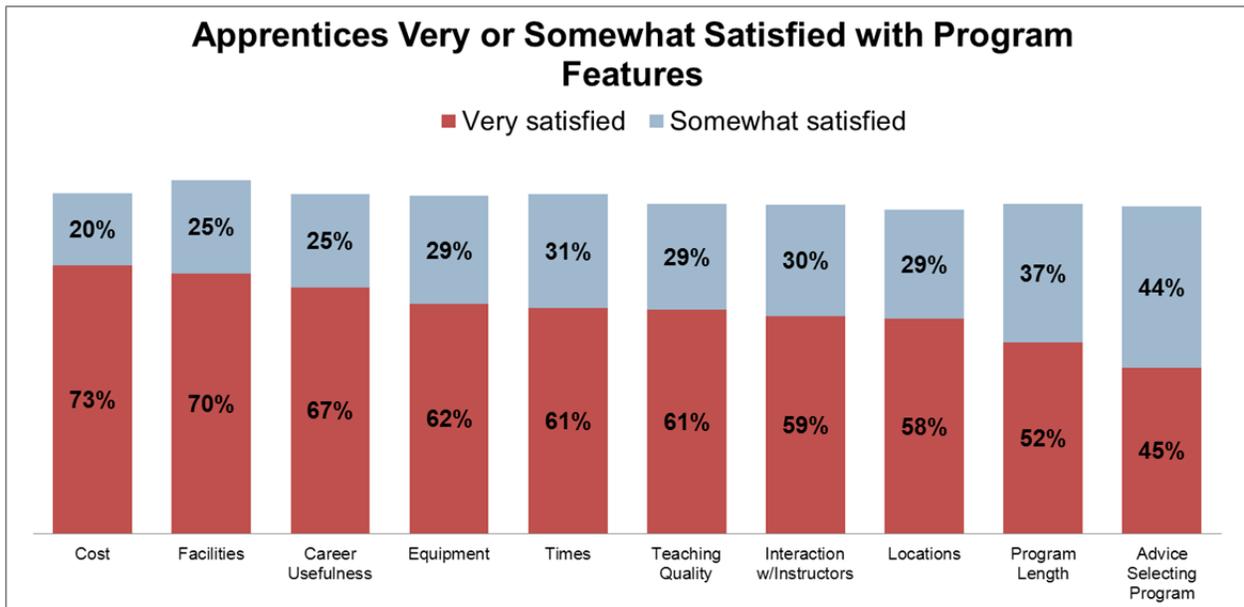
Apprentices continue to highly rate the skills received from on-the-job training. As expected, the highest percentages indicated "a lot" of improvement in their job-specific and machinery operation skills. In fact, the percentage of apprentices who indicated their job-specific skills improved "a lot" increased by 7 percentage points.



Source: Workforce Board's Participant Satisfaction Survey 2011.

Participant Satisfaction

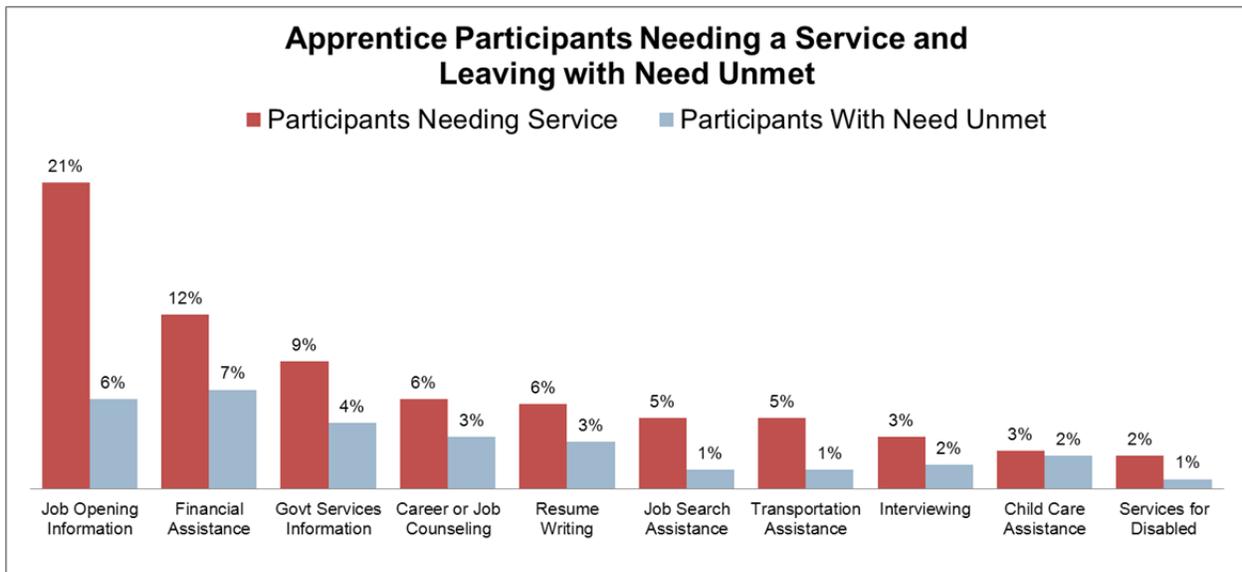
The 2009-10 apprentices expressed similar high levels of overall satisfaction as in the previous study: 90 percent expressed satisfaction with their classroom training and another 88 percent with their on-the-job training. Some 86 percent met their educational objectives by participating in the training, up from the 75 percent of the apprentices in the 2008 survey. Overall satisfaction with program features has increased in every category. The largest gains in satisfaction have been in cost (“very satisfied” up 15 percentage points) and in location (“very satisfied” up 15 percentage points). However, apprentices reporting that they are “very satisfied” with program facilities and career usefulness has dropped 9 percentage points in both categories.



Source: Workforce Board’s Participant Satisfaction Survey 2011.

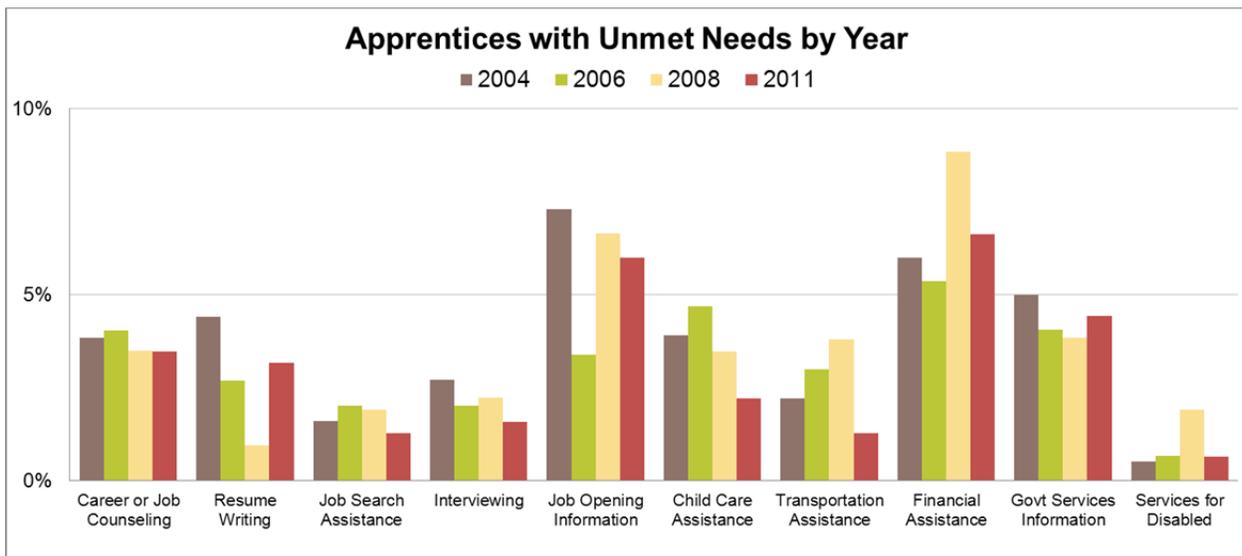
Apprentices reported a much lower need for support services than participants in the other programs included in the survey. Their greatest needs were for information on job openings, financial assistance, and government services information. In some cases their needs were not met. Of apprentices leaving their program, 7 percent left with an unmet need⁷ for financial assistance, and 6 percent left with an unmet need for job opening information.

⁷ Unmet need refers to cases where the student reports that either they did not receive the required service or what was provided did not meet their needs.



Source: Workforce Board's Participant Satisfaction Survey 2011.

The percentage of apprentices with unmet needs has dropped in nearly every category since the last survey. However, the percentage reporting unmet needs for government services information and resume writing has increased since 2008.



Source: Workforce Board's Participant Satisfaction Survey 2011.

Relationship of Training to Employment

To measure the extent to which a participant's education program and training related to employment, we asked participants three questions:

1. How related was the program to their job?
2. How important was the training in getting hired?
3. Are the skills they learned useful in their job?

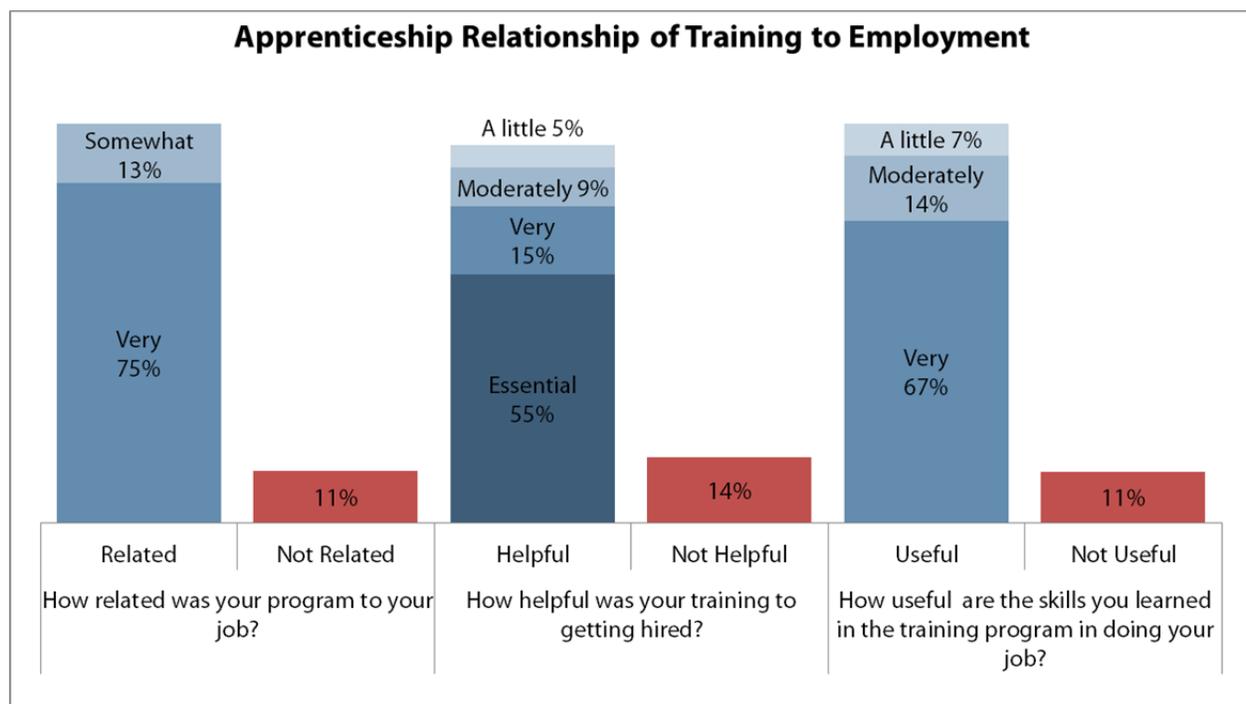
Asking about the relationship between training and employment in different ways can produce more complete information. For example, some participants said their training was not related to their job, but nevertheless found the skills acquired were useful on the job.

Among apprenticeship participants employed seven to nine months after leaving a program, 75 percent said their training was “very related” to their job. A further 13 percent reported the training was “somewhat related” to their job. Only 11 percent indicated that the training was not related to their job. In 2008, employed participants reported lower rates of training related to employment; only 72 percent indicated their training was either “very” or “somewhat” related to their job.

Apprenticeship participants surveyed in 2011 also indicated the training was helpful to them in getting their job. Of those participants, 55 percent indicated their training was an “essential requirement,” another 15 percent indicated it was “very important,” and 9 percent reported it was “moderately important.” Only 14 percent indicated their training was “not important at all” to getting their job.

Nearly 90 percent participants said the skills they learned in their training program were useful in doing their job. Some 67 percent of participants indicated the skills were “very useful,” 14 percent said “moderately useful,” and 7 percent “a little useful.” The remaining 11 percent of participants who were employed indicated the skills were “not useful at all.”

When combining two of the questions about the program’s relationship to the job and about whether the skills acquired were helpful, a small percentage of participants answer negatively to both. Just 7 percent of participants employed the third quarter after exit said the training they received was *neither* helpful in their job nor related to the job they obtained.



Source: Workforce Board's Participant Satisfaction Survey 2011.

Net Impact – Did Program Make a Difference in Participant Success

Every four years the Workforce Board conducts net impact and cost-benefit analyses of workforce development programs. This detailed study compares participants and non-participants. The net impact part of this study attempts to measure whether the program made a difference in the participant’s success. Washington is the only state to periodically conduct rigorous net impact evaluations of its workforce programs.

The net impact analysis was conducted by the W.E. Upjohn Institute for Employment Research (Upjohn), a national leader in evaluating training programs. To do the analysis, Upjohn studied program participants to see what results they achieved and compared these results with a control group. Individuals who participated in an Apprenticeship program were compared to

individuals who had similar demographic characteristics, but who did not participate in any of the programs included in the study. The comparison group members were selected from among those who registered with WorkSource, Washington’s one-stop career center system.

Apprenticeship programs have very large, positive impacts on employment, wages, hours worked, and earning. Training substantially increases the lifetime earnings of apprentices.

The most recent net impact analyses examined the short-term (Program Year 2007-08) and long-term (Program Year 2005-06) experiences of participants who left the Apprenticeship training program.

Apprenticeship	All Apprenticeship		Completers	
	Short Term [^]	Long Term [^]	Short Term [^]	Long Term [^]
Net Employment Impact*	7.80 percentage points	9.80 percentage points	24.70 percentage points	24.00 percentage points
Net Hourly Wage Impact**	\$7.87	\$8.75	\$13.24	\$14.54
Net Hours Employed per Quarter Impact	46.9	26.4	71.8	43.0
Net Annualized Earnings Impact**	\$18,520	\$17,654	\$32,339	\$30,125

[^]Short-term is 3 quarters after program exit; Long-term is average across 3 years since program exit.

*Percentages listed are employment percentage points above those of the control group of non-participants.

**Wages and earnings, expressed in first quarter 2009 dollars, represent the average difference between Apprenticeship participants who got jobs and those in the control group who were employed.

As can be seen above, apprenticeship programs had significant positive net impacts on employment, wages, hours worked and annualized earnings, when apprenticeship participants are compared with non-participants. These impressive results get even stronger over the longer-term. For example, long-term apprenticeship completers earned about \$30,000 more per year than those who did not participate in such a program. Also, it's clear that completing an apprenticeship yields nearly twice as much in annualized earnings, hourly wages and employment compared with those apprenticeship program participants who exited a program early. The benefits of not only starting but completing an apprenticeship program are clear.

Costs and Benefits

The cost-benefit analysis estimates the value of the net impact on earnings, employee benefits (estimated at 25 percent of earnings), UI benefits, and certain taxes.⁸ Program costs include both direct program costs and support payments borne by taxpayers and the tuition paid by participants, as well as the earnings participants would have otherwise received had they continued working.

Benefits and costs are calculated for both the observed period of time and based upon a statistical model that estimated the benefits and costs out to age 65. To compare benefits and costs in terms of net present values, post-program benefits and costs are discounted by 3 percent per year and all figures are stated in 2009 Q1 dollars to control for inflation. The benefits and costs presented here are based on impacts estimated for apprentices leaving programs in 2005-2006, because a longer-term follow-up is required for this analysis.

Participant and Public Benefits and Costs per Apprentice

Benefit/Cost	First 2.5 years		Lifetime (until 65)		Sum of Costs and Benefits
	Participant	Public	Participant	Public	
Benefits					
Earnings	\$35,285	\$0	\$302,116	\$0	
Fringe Benefits	\$7,057	\$0	\$60,423	\$0	
Taxes	-\$9,256	\$9,256	-\$79,245	\$79,245	
Transfers					
UI	\$825	-\$825	\$1,476	-\$1,476	
Costs					
Foregone net comp.	\$21,715	\$5,767	\$21,715	\$5,767	
Program costs	-\$1,719	-\$3,343	-\$1,719	-\$3,343	
Benefits	\$33,911	\$8,431	\$284,770	\$77,769	
Costs	\$19,996	\$2,424	\$19,996	\$2,424	
Total (Net)	\$53,907	\$10,855	\$304,766	\$80,193	\$384,959

Note: Benefits and costs are expressed in 2009 first quarter dollars.

⁸ Upjohn estimated the impact of the net change in earnings on social security, Medicare, federal income, and state sales taxes.

For each apprentice in training, the public (taxpayer) cost is \$3,343 over the length of their enrollment, and the participant cost is \$1,719 in tuition. By definition, apprentices work during their program participation and their net earnings during training was \$21,715 higher than those who were not in training. During the course of working life to age 65, the average apprentice will gain about \$324,000 in net earnings (net impact earnings plus earnings while in apprenticeship training) and about \$60,400 in employee benefits.⁹ These are net gains compared to the earnings of similar individuals who did not participate in a program included in this study. Including program costs and the net impacts on taxes and unemployment insurance benefits, the total net benefit per participant is \$304,766.

Projected participant net benefits to age 65 far outweigh public investment in apprenticeship training by a ratio of \$91 to 1, or \$304,766 to \$3,343.

From the time of leaving training to age 65, the public is expected to gain about \$79,245 per apprentice in net additional Social Security, Medicare, federal income, and state sales taxes. The estimated lifetime net benefit to taxpayers is \$80,193 per participant.

Projected taxpayer net benefits to age 65 outweigh public costs invested in apprenticeship training by a ratio of \$23 to 1 or \$77,769 to \$3,343.

⁹ This employee benefits amount does not account for the employee benefits associated with the earnings during participation. If the same benefit percentage (20 percent) were applied to such earnings, the gain in employee benefits in the longer term would be about \$46,000.