



The Skills Gap

Reversing Washington's Lack of
Skilled Workers Through Early Learning

A report by: **AMERICA'S EDGE**
Strengthening Businesses Through Proven Investments in Kids

Executive Summary

Despite high unemployment nationwide and throughout Washington State, thousands of jobs remain unfilled because employers cannot find qualified workers. One recent survey found that one in four companies trying to hire in late 2009 and early 2010 reported difficulties finding qualified job applicants, and more than 10,000 jobs went unfilled over this period in Washington State because companies could not find employees with the skills needed. With the recession reshaping the job landscape, and many lower-skilled jobs being eliminated or shipped overseas, many experts predict that the skills gap will widen and accelerate.

A key reason for the growing lack of skilled workers is that many high school graduates are not getting the training and additional education they need to fill the jobs that are now in demand. Consider these sobering statistics about expected changes in the job market between 2008

and 2018 from the Bureau of Labor Statistics and the Georgetown University Center on Education and the Workforce:

- Half of all new jobs created during this period will require some type of formal education beyond high school;
- One in three new jobs created will require at least a bachelor's degree;
- By 2018, demand for students in the U.S. with an associate's degree or higher will exceed supply by 3 million workers;
- The number of Washington jobs requiring postsecondary education is expected to grow 38 percent faster than the number of jobs for high school dropouts during this period; and
- By 2018, 67 percent of all jobs in Washington State will require postsecondary education, the sixth highest rate in the country.

Despite unemployment rates not seen since the Depression, more than 10,000 Washington jobs went unfilled in late 2009 and early 2010 because of difficulties finding qualified applicants.

-Washington's Workforce Training and Education Coordinating Board, 2010



In Washington State, there will be over 4,000 available nursing jobs each year between 2012-2017, but only 3,000 qualified applicants (a gap of 25 percent). The gap is even worse for accountants and repair workers, and 79 percent of openings for aircraft mechanics could go unfilled.

-Washington's Workforce Training and Education Coordinating Board, 2010

Our businesses and our state's economy are already experiencing the high cost that comes from a lack of enough skilled workers. A Washington Workforce Training and Education Coordinating Board survey found that over half of firms trying to hire new workers reported lower overall productivity as a result of hiring difficulties. Almost half of the firms reported reduced production output or sales. Hiring difficulties prevented 37 percent of surveyed firms from expanding their facilities, and 30 percent of firms from developing new products and services. One in 10 firms reported moving some operations out of the state due to hiring problems and skill shortages.

Washington State certainly needs to make every effort to train and retrain its current workforce, as well as improve and reform its K-12 system. But doing so is not sufficient to bring about the long-term infrastructure changes needed to ensure the burgeoning skills gap is reduced. Without this



infrastructure, businesses cannot grow, productivity will lag and long-term economic security will falter.

This report provides evidence that the first and most crucial step in building an infrastructure to address the skills gap is establishing high-quality early learning programs. Research has proven that high-quality early care and education can lay the foundation children need for school success so they will graduate with the 21st century skills employers require now and into the future. That research also establishes that quality early learning will increase adult earnings, which will help to fuel the economy and create long-term stability.

The skills gap is certainly only a part of a larger unemployment problem, and there are currently too few jobs available for all the workers who need them. But if we are to continue to lead the nation in information technology and other high-tech industries headquartered here, Washington State must ensure that its education system includes high-quality early care and education programs. We need to make tough decisions and invest wisely in what will keep America competitive. Quality early learning meets that test.

Nobel Prize-winning economist James Heckman, Ph.D. asks,



"How can we best invest in human capital development to increase workforce capabilities, raise productivity and social cohesion and assure America's economic competitiveness in the global economy? ... The answer is to invest in comprehensive early childhood development – from birth to age five – particularly in disadvantaged children and their families... Ignoring this finding will put our country's future in peril by producing a deficit of human capital that will take generations to correct." (2010)

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The United States Has a Skills Gap Problem

Today's Lack of Workers with 21st Century Skills

Although businesses have always needed workers proficient in the “3 Rs” – reading, writing and arithmetic – today's fast-paced, international and technology-driven marketplace requires even higher proficiency levels in these hard skills. But these skills are too often lacking, especially in young workers entering the U.S. workforce.

- According to the Nation's Report Card, only 26 percent of 12th grade students are proficient in math and 38 percent are proficient in reading.¹
- Only 24 percent of 2010 high school graduates taking the ACT admission test met college readiness benchmarks in the four core areas tested – English, math, reading and science.²
- As of 2006, about half of surveyed employers nationwide reported deficiencies in the math and science skills of new work force entrants with a high school diploma. Almost 40 percent saw deficiencies in reading comprehension.
- One in ten surveyed employers reported college graduates' math or science skills as deficient.³

Just as important as the hard skills are the critical “soft skills” – communication, collaboration, critical thinking, and creativity – which American businesses also often find lacking in the workforce. Before the recession, less than a quarter of surveyed employers reported that new workforce entrants with four-year college degrees had “excellent” overall preparation for the workforce. The deficiencies were even greater among those with only a high school diploma: 42 percent of employers reported the overall preparation of

high school graduates as deficient and 81 percent reported deficiencies in written communications. Seven in ten employers reported deficiencies in high school graduates' professionalism and critical thinking skills. Although preparedness increased with education level, employers still saw significant deficiencies among graduates of four-year colleges in professionalism (19 percent) and skills like leadership (24 percent).⁴

These soft-skill deficiencies continue to exist even with the U.S.'s persistent unemployment. In a 2010 survey of 2,000 executives conducted by the American Management Association, nine in ten executives said these enhanced soft skills are important to support business expansion, but less than half of those executives rated their employees as above average in those skills.⁵

A lack of workers with critical skills translates into American companies having difficulty filling existing job openings with the workers they need:

- Despite 300,000 unemployed Washington residents, more than 10,000 jobs went unfilled in late 2009 and early 2010 because of difficulties finding qualified applicants.⁶
- In a 2009 survey of manufacturers nationwide, one in three companies reported moderate to serious shortages of qualified workers and over half reported skilled production worker shortages (machinists, operators, craft workers, distributors and technicians).⁷
- In sectors like aerospace and defense and life sciences, six in ten companies nationwide report shortages of the skilled workers they need like scientists and engineers.⁸
- These shortages are not isolated to higher skill positions. In 2008, AT&T reported difficulties finding

If we're seeing a lack of skilled workers even in a down economy, what does that say about our workforce of the future?

Mike Sotelo,
President,
Approach Management Services
Seattle, WA

enough skilled customer service workers to move 5,000 jobs back to the U.S. from India.⁹ AT&T's CEO cited high school dropout rates as high as 50 percent in some areas and among some minority groups as a major contributor to the problem.¹⁰

- Clerical and Administrative Support Occupations (13 percent).¹¹

Acceleration of the Skills Gap

As the U.S. economy recovers, the shortage of skilled workers is expected to worsen. A recent survey showed that four in ten manufacturing companies expect increased shortages of skilled workers in the future.¹² Experts also believe the recession may accelerate a demand for higher skilled workers because many companies are turning to higher skilled workers while not replacing laid-off lower skilled positions because they have automated jobs or shipped jobs overseas. For example, 637,000 jobs in the Manufacturing and Natural Resources industries are expected to disappear by 2018 due to automation or cheaper offshore labor.¹³

Changing priorities may also accelerate the skills gap. Three out of four executives surveyed in 2010 believe the soft skills – communication, collaboration and critical thinking – will become even more important in the next three to five years because of global competition and the pace of change in the business environment.¹⁴ In fact, 60 percent of new jobs early in the 21st century will require skills that only 20 percent of the current workforce possesses.¹⁵

Rising Education Requirements

Why aren't there enough skilled workers? Thirty-two percent of Washington high school students do not graduate high school on time.¹⁹ And too few young people are getting education or training beyond high school. According to the Bureau of Labor Statistics, half of all new jobs created between 2008 and 2018 will require some form of formal education beyond high school, such as an associate's degree, bachelor's degree, master's degree or

Difficulty in Recruiting by Type of Skill

Percent of Hiring Washington Employers Reporting Difficulty Finding Employees with Needed Skills



2010 WA State Employer Workforce Training Needs and Practices Survey

In late 2009 and early 2010, one in four Washington companies that were attempting to hire had difficulty finding qualified job applicants with the needed skills.

-Washington's Workforce Training and Education Coordinating Board Employer Survey, 2010

The occupations for which firms had the most difficulty finding qualified applicants included:

- Service Occupations (21 percent of firms had trouble finding qualified applicants for positions in this occupation);
- Production, Construction, Operation, Maintenance and Material-handling (19 percent);
- Technical and Paraprofessional Occupations (16 percent); and

Projected Annual Supply/Demand Gap in Washington State 2012-2017

Occupational Group	Projected Yearly Demand		Annual Supply of Available Workers		Projected Yearly Shortage	Percent of Projected Jobs Without Trained Applicants
Accounting and Bookkeeping	2,069	–	710	=	1,359	
Aircraft Mechanics and Technicians	360	–	75	=	285	
Installation, Maintenance & Repair	2,040	–	819	=	1,221	
Manufacturing, Production	1,250	–	870	=	380	
Science Technology	575	–	80	=	495	
Registered Nurses	4,150	–	3,092	=	1,058	

The Washington Workforce Training and Education Coordinating Board predicts that demand for mid-skill jobs will exceed supply by 2014 in the State.¹⁶ These jobs typically pay well and often provide benefits. For example, if schools continue to produce the same number of nurses as they currently do, there will be an estimated supply/demand gap of 1,000

nurses each year between 2012 and 2017.¹⁷ By 2025, Washington is expected to need an additional 25,000 registered nurses if there is no increase in the numbers of nursing program graduates.¹⁸ The nursing shortage has continued throughout the recession, while other shortages will only appear beginning in 2012 and 2013 as the economy continues to recover.

Unskilled labor cannot be the engine driving our economic future.

Michael Cade,
Executive Director,
Thurston County Economic
Development Council,
Lacey, WA

nursing aide certification. One in three new jobs created over this period will require at least a bachelor's degree.²⁰ The mismatch between labor market demand and worker education means that by 2018, demand for students in the United States with an associate's degree or higher will exceed supply by 3 million workers.²¹

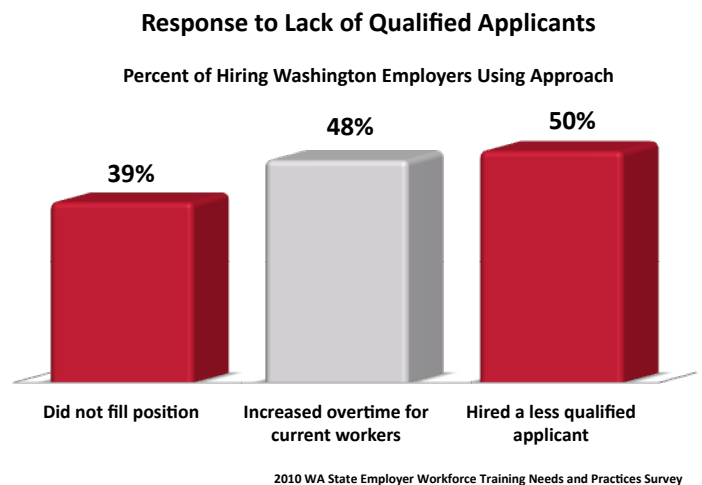
These are ominous trends given the increasingly technological and skilled labor market needs. In the early 1970's, not graduating from high school did not foreclose job opportunities. In fact, high school dropouts could still find ample employment, as more jobs were available to them than were available for college graduates.²² This is no longer true:

- The share of jobs for high school dropouts has plunged from 32 percent in 1973 to 11 percent in 2007.²³
- The percent of jobs requiring some college education has risen from 30 percent in 1973 to almost 60 percent in 2007.²⁴
- Fourteen of the 30 fastest growing occupations between 2008 and 2018 typically employ those with a bachelor's degree or higher.²⁵
- The 30 occupations with the largest projected employment declines over this period have no postsecondary degree requirement.²⁶

By 2018, 67 percent of all Washington State jobs will require postsecondary education, the 6th highest rate in the country.

—Georgetown University Center on Education and the Workforce, 2010

In Washington State, between 2008 and 2018, the number of jobs requiring postsecondary education is expected to grow 38 percent faster than the number of jobs for high school dropouts.²⁷ Washington employers are already having problems recruiting employees at certain education levels. Four in ten employers who were hiring in 2009 and 2010 had difficulty finding workers with vocational certificates, and one in four had difficulty finding employees for jobs that require an associate's degree or bachelor's degree. Companies responded to the hiring difficulties in a variety of ways.²⁸



Technology Advances

These rising education requirements are, in large part, being driven by technology. Computers and information technology have infiltrated across industries throughout the United States economy, especially in the fastest growing industries. As explained by the Georgetown University Center on Education and the Workforce:

[Skill-biased technological change] means that technological development and the organizational changes that come with it favor workers with more education because they have the expertise needed to handle more complex tasks and activities. Demand for these workers, in turn, grows across the board as the technology spreads throughout the economy.²⁹

From manufacturing, to banking, to e-commerce, to health care services, computers are increasingly central to many jobs. And jobs that are heavily reliant on technology are growing fast. Science, technology, engineering and math

Once a leader in math education, U.S. high school students now fall in the bottom half of teenagers from developed countries – behind such countries as Slovenia, Hungary and Poland, and far behind leading countries such as Korea, Japan and Finland.

-Organisation for Economic Co-operation and Development, 2010

(STEM) jobs are expected to have the third fastest rate of growth nationwide of all occupation groups between 2008 and 2018.³⁰ But workers need post-secondary education to capitalize on this technology and the accompanying jobs.

The United States Is Falling Behind

More and more American workers are now directly competing with workers from across the globe. Many employers have access to a worldwide workforce composed of people who do not have to move to participate in work teams that are truly global. Technology allows project teams to be located in different time zones and in different locales. How U.S. students stack up against students from other countries is, thus, increasingly important – but the United States is no longer on top.

The U.S. high school graduation rate ranks in the bottom third of developed nations.³¹ On an international test of applied knowledge and skills, the Programme for International Student Assessment (PISA), U.S. 15-year-old students score significantly below the average for industrialized nations in math and trail far behind leading countries like Korea, Japan and Finland in reading and science.³² Once a leader in math education, U.S. high school students now fall in the bottom half of teenagers from developed countries. The U.S. is getting worse results while spending 40 percent more. U.S. spending per student in 2007 was over \$10,700, compared to an industrialized nation average about \$7,600.³³

Although higher education attainment in the U.S. has continued to climb, we are not keeping pace with other nations and not growing fast enough to keep up with labor market demand. As recently as 1995, the U.S. was tied for first in college graduation rates. But as other countries dramatically improved their college completion rates, the U.S. has fallen to 14th out of 26 countries – we are now in the middle of the pack.³⁴

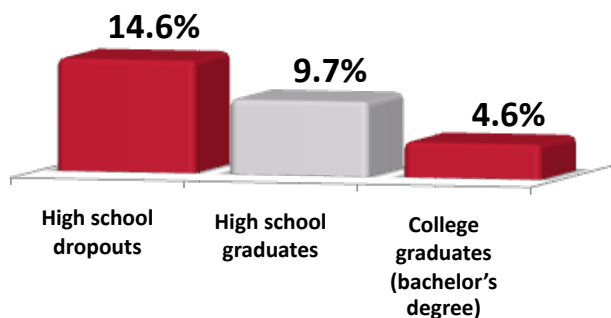
The High Cost of the Skills Gap

The lack of a skilled workforce comes at a high cost for individuals, businesses and the economy. Higher levels of education help protect against unemployment – even in a recession. In 2009, almost 15 percent of U.S. high school dropouts were unemployed. Those who were employed were only making an average of \$18,400 per year. In contrast, less than 5 percent of college graduates were unemployed and employed graduates could expect to make an average of \$47,500 per year.³⁵

High school dropouts are so much less productive than high school graduates that each new class of dropouts nationwide will earn \$335 billion less over their lifetimes than their high school graduate peers.³⁶ This translates to over \$500,000 less in lifetime earnings per dropout.³⁷ These staggering earnings losses translate into less spending power, fewer contributions to the tax base, and lower productivity. The returns from a college degree are even greater. The average lifetime earnings of an individual college graduate are \$2.1 million dollars higher than those of a high school dropout.³⁸

Unemployment Rate by Education Level

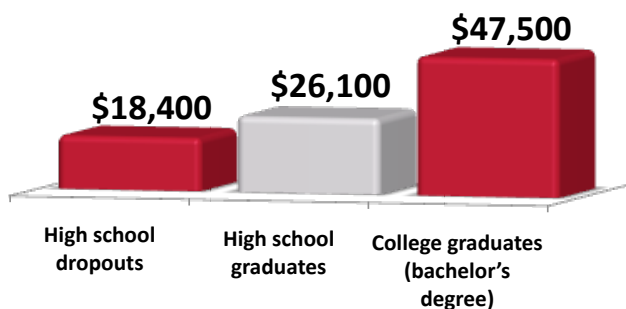
Unemployment Rate for People 25 Years and Over, 2009 Average



Bureau of Labor Statistics, 2009

Earnings by Education Level

Median Annual Earnings for People 25 Years and Over, 2009



American Community Survey, 2009

Remedial courses and training to help students catch up and get on track for higher education and training are helpful, but they are expensive and inefficient. The U.S. Department of Education estimates that 36 percent of students entering higher education require at least one remedial education class.³⁹ Less than half of the students who are referred to remedial education at community colleges complete all the classes to which they are referred.⁴⁰ Further, students who require remediation at two-year or four-year colleges graduate at a much lower rate than those who do not need remediation.⁴¹ The nation loses \$3.7 billion annually from the reduced earnings of unprepared students and the remedial education costs from community colleges alone. The true cost of remedial training would also include remedial education at four-year colleges and employer-based remediation – resulting in a much higher cost.⁴²

The inability to fill open jobs because of the skills gap will adversely impact the U.S. economic recovery. Unfilled jobs mean decreased productivity and less opportunity for businesses to expand. Unfilled jobs also translate into less contribution to the tax base, less consumer spending and less economic growth.

In Washington State, over half of firms trying to hire reported lower overall productivity as a result of hiring difficulties. Almost half of firms report reduced production output or sales, and one in 10 firms reported moving some operations out of Washington State due to hiring problems and skill shortages.

– Washington Workforce Training and Education Coordinating Board Employer Survey, 2010

Hiring difficulties prevented 37 percent of surveyed firms from expanding their facilities and 30 percent of firms from developing new products and services.⁴³ Without skilled employees, businesses cannot expand and strengthen the U.S. economy.

Changing Course

No immediate fix will eliminate the widening skills gap. As the U.S. economy recovers, steps to train or re-train the current workforce must

Consequences of Difficulty in Hiring



2010 WA State Employer Workforce Training Needs and Practices Survey

be implemented. But to ensure a lasting reduction of the skills gap, the infrastructure to create a *future* workforce with 21st century skills must be put in place. The country is now focused on reforming our K-12 system and that reform should include steps to improve academic outcomes, create graduation rate accountability, and ensure that funds are directed toward evidence-based approaches. But the education and development of a child does not begin on the first day of kindergarten. To the contrary, research has proven from the day a child is born, the foundations upon which all future learning will be based – including the foundations for the increasingly important soft skills – are built. Children must be prepared to enter kindergarten ready to learn, so they will succeed in school and ultimately graduate from high school fully positioned to go on to further training or higher education. They will then be ready to enter the job market with the hard and soft skills U.S. employers require. Unfortunately, many children who start kindergarten behind and unprepared to work well with teachers and peers will only fall further behind with each school year.

Quality Early Learning Is the Answer

High-quality early care and education can help lay the foundation children need for school success and to

A high school diploma today is no longer enough to ensure economic security.

**Mike Broadhead,
President,
Central Valley Bank,
Yakima, WA**

enter the workforce with the 21st century skills employers require now and into the future. Without access to high-quality early learning, many children, particularly at-risk children, may be in poor quality child care that research shows can be damaging. Only high-quality programs give disadvantaged children the solid foundation they need.

As I look at how our economy has become so technology and knowledge-driven, I am concerned that as we come out of the recession, the problem will not be finding jobs for people, but finding people for jobs.

**Mike Edwards,
Director,
Thurston First Bank,
Olympia, WA**

Enhanced Skill Levels

The skills children develop in high-quality early learning programs are critical to developing the hard and soft skills necessary to compete in a global economy. Research shows that these programs help children begin developing critical literacy and math skills. Test scores of children in Oklahoma's pre-k program increased by 52 percent on letter and word identification, beyond the gains that would be expected as a child naturally ages, and their spelling scores increased by 27 percent.⁴⁴ Children from families of all income levels showed gains, with the largest gains among low-income students.⁴⁵

Research by James Heckman, the University of Chicago Nobel prize-winning economist, shows that high-quality early learning not only helps children develop a foundation for reading and math, it also helps them develop the "soft skills" needed throughout their careers, like how to get along with others, to trust others, and to follow directions. Children participating in Oklahoma's pre-k program demonstrated greater social-emotional maturity at kindergarten entry. They had less inappropriate behavior toward their teachers, and were less timid and apathetic.⁴⁶ These are important precursors to creating a workforce of communicators, collaborators and critical thinkers.

Dr. Heckman also argues that early education is an essential investment because these basic social skills are prerequisites for acquiring further knowledge and skills in school and in the workforce. Heckman says that investing in early education can help prevent "downstream problems in education, health, social and economic productivity that place large burdens on local, state and national budgets, as well as weaken our global competitiveness and security."⁴⁷

Increased School Success

Results from longer-running programs show that the benefits continue as students progress through school. Chicago's Child-Parent Centers have served over 100,000 three- and four-year-olds since 1967.

Researchers found that children attending Child-Parent Centers were 40 percent less likely to need special education or be held back a grade than those children who did not attend. They were also 15 percent less likely to drop out.⁴⁸ Similarly, children who

attended the model Perry Preschool Program in Ypsilanti, Michigan were 44 percent more likely to graduate from high school.⁴⁹

Earnings and Productivity

Higher academic skill levels and more developed soft skills mean more productive adults who can earn more throughout their lives. And enhanced skills and increased productivity can be tied directly to early learning.

- Children who attended the intensive Abecedarian infant development and preschool program were 74 percent more likely to hold a skilled job by age 21 than children randomly assigned to a control group (47 percent vs. 27 percent).⁵⁰

Over time, high-quality early education programs for at-risk children can save as much as \$16 for every dollar invested. That is a return on investment that is unmatched by almost any other public investment.

– Schweinhart et al., 2005

Early Learning in Washington

In Washington State, Head Start serves over 12,000 low-income children and the Early Childhood Education and Assistance Program (ECEAP) serves about 8,000 additional children.⁵⁸ Unfortunately, over 13,000 more children are eligible for ECEAP, but not served by either ECEAP or Head Start. The waitlist for ECEAP has more than tripled from about 1,350 to over 5,100 children in the 2009-10 school year and does not include other families who may not have bothered to add their names to such a long list.⁵⁹ Washington ranks 33rd nationally in access to public pre-kindergarten for 4-year-olds and 17th for access for 3-year-olds.⁶⁰

ECEAP is a relatively high-quality program, meeting nine of the ten quality benchmarks established by the National Institute for Early Education Research. Advocates

suggest that additional quality improvements, such as more hours of service per year and better trained and educated teachers, could make the program even more beneficial.

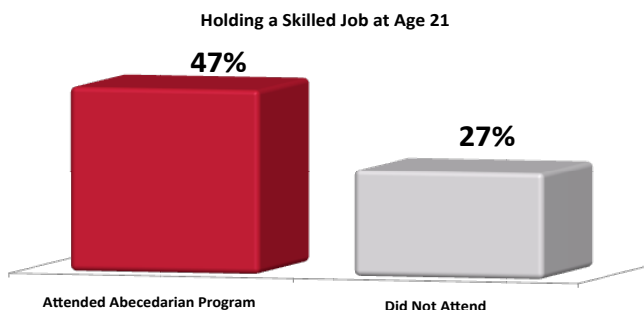
The need for additional and higher quality early learning opportunities is clear. A preliminary teacher assessment study shows that more than a third of kindergarteners enter with below expected skill levels in four critical developmental domains. Nearly half of children are not entering kindergarten with adequate skills in the area of language, communication, and literacy.⁶¹ Children enrolled in ECEAP typically experience major developmental growth over the program year, but too few children have access and the quality of programs may be uneven.

- Children who participated in the Child-Parent Center program, were 31 percent more likely than their non-participating peers to hold a job considered semi-skilled or higher.⁵¹
- The children who attended the Perry Preschool program were 22 percent more likely to be employed at age 40.⁵²

Abecedarian participants had lifetime earnings beyond age 21 estimated to be \$37,500 higher than if they had not had access to high-quality early learning. And, the children of participants will be expected to earn more (\$5,700) as a result of their parents' preschool experience.⁵³ Children who participated in the Perry Preschool earned 36 percent more at age 40 than children left out. This produced a range of meaningful impacts on their lives. For example, 80 percent of the males who attended Perry owned a car at

High-Quality Early Education Improves Skills

Children who attended the intensive Abecedarian program were 74 percent more likely to hold a skilled job by age 21 than children randomly assigned to a control group.



Campbell & Ramey, 2002

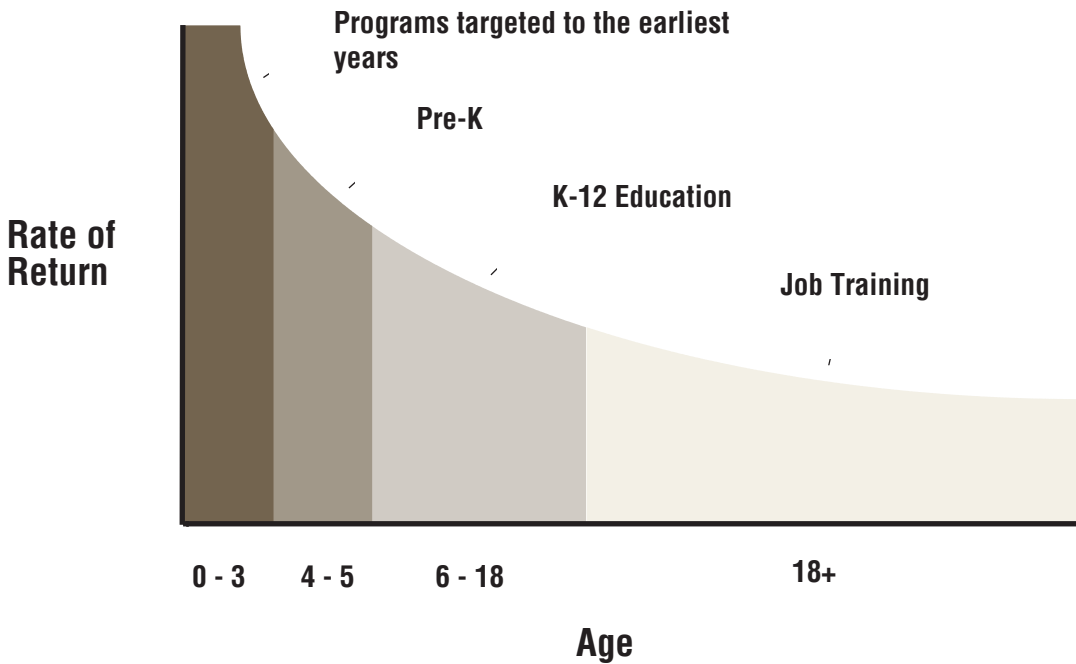
age 40 compared to just 50 percent for the males left out of the program.⁵⁴

We must put our children on the right path early if we are to meet the demands of a competitive global economy.

**Dave McFadden,
President,
Yakima County Development Association**

Children in the Abecedarian program were 2.5 times more likely to be enrolled in a four-year college or university at age 21 than children left out of the program – which is good news for businesses and the economy.⁵⁵ As noted earlier, more education is associated with lower unemployment – something that became increasingly clear during the recession. As the economy recovers and we strive to ensure long-term economic security, increasing

Rate of Return to Investments in Human Capital



Adapted from
The Heckman Equation, 2010

education levels of our young people may better allow the U.S. to weather future economic downturns. The first step toward that goal is quality early learning.

Similarly, increased education is also associated with increased productivity, which can strengthen our economy. According to research by the Organisation

for Economic Co-operation and Development (OECD), each year of additional education in OECD countries is associated with a 4 to 7 percent increase in per capita output.⁵⁶ One additional year of schooling also leads to an 8.5 percent increase in manufacturing productivity, and more than a 12 percent productivity increase in other industrial sectors.⁵⁷

Business is a global competition: If we're going to compete with an international rival with access to a technically proficient workforce, we must match up.

**Sue Krienen,
Refinery Manager,
Shell Oil Products USA,
Anacortes, WA**

Conclusion

The United States is now engaged in the vitally important, and too-long-delayed, discussion of education reform. Education reform must occur if we are going to prepare young people to enter the workforce with the skills and education businesses will require. But we must understand that education reform cannot only be limited to K-12 and post-secondary education. Quality early care and education is the foundation upon which success in school and later in the workforce is built. Policy-makers and the public must shift their thinking and incorporate quality early learning in any education reforms our country implements.

The price we pay for an unskilled workforce is enormous. If we want sustainable economic security, we can't wait any longer to fix this problem.

**Bob Watt,
Chair of Seattle Foundation,
Former President,
Greater Seattle Chamber of Commerce,
Seattle, WA**

Endnotes

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