

Creating a Workforce with 21st Century Skills:

*Developing the Strategy and Tools to Strengthen
Washington State's Talent Pool*

Prepared by

Sally Zeiger Hanson
Washington State University Energy Program

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905 Plum Street SE, P.O. Box 43165
Olympia, Washington 98504-3165

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Executive Summary

Washington has many robust economic development initiatives underway, and most rely on the promise of a skilled and educated workforce. That makes a purposeful Workforce Development System essential. We must ensure that our current and future workforce is prepared not only for our current economic needs, but for the emerging opportunities forecast to require new and different skill sets. This report compiles research about the skills needed by the workforce of the future and suggests some steps that could be taken in Washington state to strengthen our workforce development system. Recommendations in this report include:

Define 21st Century Skills for the Workforce

It will be important for Washington to create a framework that clarifies the skills that are needed in the workforce. Defining 21st century skills needed by the workforce would help job seekers and incumbent workers understand what skills they should be developing and honing to become – and stay – relevant and resilient in the workforce.

In this report, we note that a number of models could be used as a starting point. But to make the framework relevant for Washington's workforce, local partners must be convened to define the skills that will be needed by our 21st century workforce.

Connect Education, Industry and Students: Online Tool and Results Scorecard

To close the skills gap, educators and employers need to work more closely together, more often. Consistent interaction between these two worlds will help to ensure that education is relevant to the workplace. There are several ways to establish this connection between students, educators and employers: require

work-integrated learning opportunities, create an online tool, to connect employers and students, and develop a results scorecard for college programs which provides information in a single location about graduation rates, and wage and placement rates by program, so students can determine which program is most likely to help them reach their goals. In addition to helping students with their decision making, a results scorecard would also increase the transparency and accountability of the education system.

Communicate with Washingtonians about the New Workplace

Incumbent workers, students and educators need to be informed about the ways that work is changing. Washington citizens need both the information and the tools to manage their careers. As a skills framework for the workforce is created and online tools are developed, the information will need to be shared with the public so they can use these tools to prepare and manage their own careers.

Introduction

Four years after the official end of the Great Recession, Washington's economy is growing, albeit unevenly. While some parts of the state have only 4% unemployment, others seem stubbornly stuck in the double digits. But overall, unemployment numbers are coming down and funding for education has stabilized somewhat. This is the perfect time to take stock of where we are and to chart a course for the future.

Washington has many robust economic development initiatives underway, and most rely on the promise of a skilled and educated workforce. That makes a purposeful Workforce Development System essential. We must ensure that our current and future workforce is prepared not only for our current economic needs, but for the emerging opportunities forecast to require new and different skill sets.

In its broadest sense, Workforce Development is a process that begins in the very earliest stages of education as students gain their basic skills. Washington's education community is deeply engaged in efforts to improve preschool preparation, basic skills education, career readiness and high school graduation rates for all. This paper focuses primarily on that segment of Workforce Development that follows, between high school graduation and employment, and skill upgrade training for workers who are already employed.

*If Washington chooses to see its
human capital as a resource
and takes the time to
intentionally foster its growth,
Washington businesses, families
and the economy will reap
economic rewards for many
years to come.*

The Economy: Why Workforce Development Matters Now

While there is much talk about the economy recovering and things getting back to “normal,” it is important to note that the economy has undergone a structural change that indicates that *this* is the new normal: very lucrative markets and stagnant employment levels. While the country’s gross domestic product (GDP) returned to pre-recession levels in 2009, that was accomplished with 6 million fewer workers in the workplace (see Figure 1).

Mid-skill, mid-pay jobs that require some college but not a degree accounted for 9 of 10 of all job losses in the Great Recession.¹ Several interrelated forces enabled this to happen:

- Increased automation and increased productivity,
- Continuous change in workplace expectations that increased the skills gaps, and
- Slowing growth of the population, which requires more and different kinds of people to be trained for the workforce.

Automation and Outsourcing

Automating routine functions is a familiar story, particularly in America’s manufacturing sector.² To streamline production and cut costs, repetitive functions have been either outsourced to subcontractors that can perform the tasks less expensively – often overseas – or automated so they are performed by a

machine. The loss of low-skill tasks in many workplaces means fewer jobs overall, and the remaining jobs in those workplaces require high-level technical and problem-solving skills. As a result, the level of skills required for employment has ratcheted up.

Automation and other measures to increase efficiencies, such as computerized inventory management, have increased productivity: creating more outputs without increasing inputs. It used to be a standard economic axiom that increased productivity would result in economic growth. That is no longer the case. Now, instead of efficiencies allowing the same number of workers to be freed up to produce more goods, the number of workers can be reduced and still the outputs can increase.

A few years ago, it seemed as if the move toward efficient, sustainable business practices would result in a new class of “green collar” occupations. While industry continues to evolve its practices to be more environmentally friendly, the impact has been different than predicted. Rather than creating a whole new class of occupations, the result has been more of a “greening” of the whole economy. Many jobs now incorporate green skills and the demand for those skills will continue to grow. While the work is not new, the approach to it is.

For example, a craftsperson in construction is likely using their traditional skills now to install environmentally friendly materials, weather proofing projects that increase the longevity of buildings, and installing sustainable products such as solar panels. This greening of the economy will create a need for on-going incumbent worker training to develop the skills

¹ Jaimovich, Nir; Sie, Henry E., *The Trend is the Cycle: Job Polarization and Jobless Recoveries*, The National Bureau of Economic Research, 2012.

<http://www.nber.org/papers/w18334>

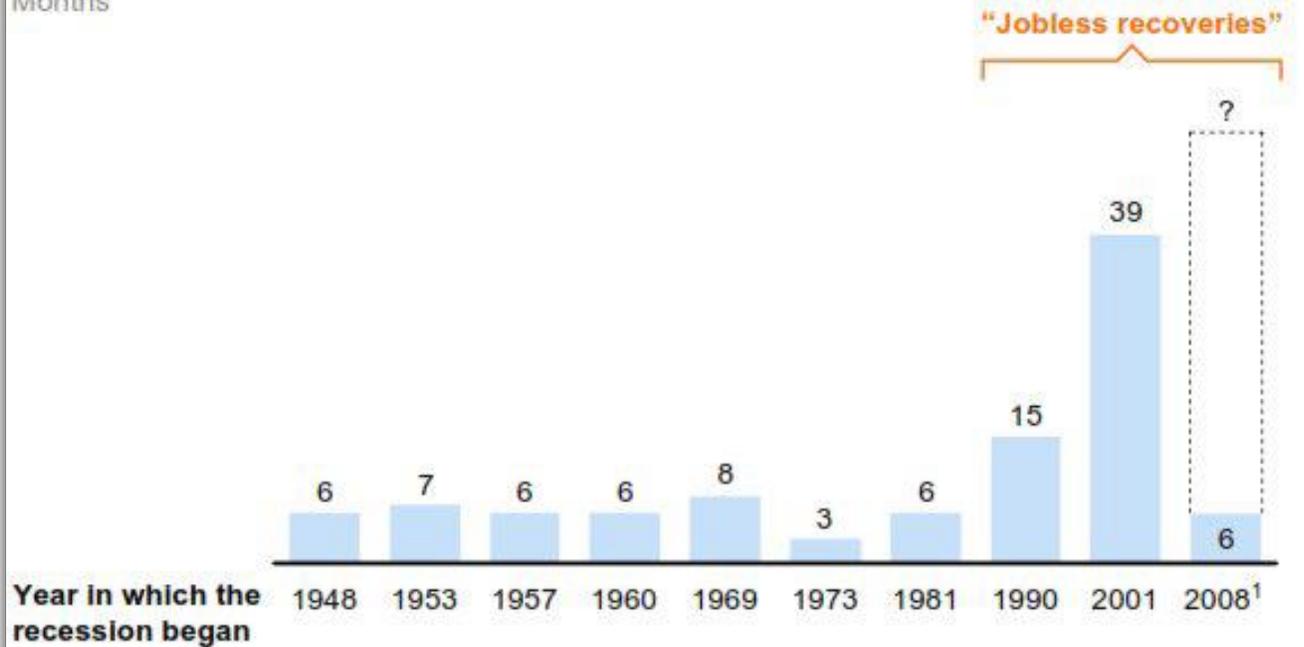
² Bland Jr., Gordon R., *The Effects of Job Automation on the Economy*, University of Old Dominion, Institute of Electrical and Electronic Engineers 2009.

<http://www.scribd.com/doc/12965589/The-Effects-of-Job-Automation-on-the-Economy>

Jobless recoveries: The time lag between GDP recovery and employment recovery has been increasing

Lag from when real GDP returns to prerecession peak to when employment returns to prerecession peak

Months



¹ The National Bureau of Economic Research estimates that the recession began in December 2007. GDP returned to its prerecession peak in December 2010.

SOURCE: US Bureau of Labor Statistics; US Bureau of Economic Analysis; McKinsey Global Institute analysis

Figure 1. Lag Time Between GDP Recovery and Employment Recovery

needed to implement more sustainable and efficient work processes.³

Skills Mismatch

Even at the height of the recession and at the highest rate of unemployment, employers reported that they could not fill some of their vacancies.⁴ While there was no shortage of unemployed people ostensibly available and ready to work, employers reported that the available candidates were apparently not qualified and, thus, not being hired for the available jobs.

The difference between the skills available in the labor pool and the skills required by the market is referred to as a skills gap. There is always some skills gap in an economy, but the skills gap now appears to be growing.

Skills mismatches continued to rise in almost all states even after the recession had ended, partly explaining the stubbornly high unemployment rate; in fact, Delaware and Washington state experienced a double-digit percentage increase in their skill mismatch index in 2010.⁵

Not having the skills to land a job hurts individuals and families. The longer an

³ *Green Economy Jobs Report*, State of Washington Employment Security Department, 2011. <https://fortress.wa.gov/esd/employmentdata/docs/special-reports/green-jobs-2011.pdf>

⁴ *Getting Ahead, Staying Ahead: Helping America's Workforce Succeed in the 21st Century*, The Springboard Project, Business Roundtable, Bill Green, Chair. <http://businessroundtable.org/studies-and-reports/the-springboard-project-releases-final-recommendations-to-strengthen-a/>

⁵ Estevao, Marcello; Tsounta, Ivridiki, *Has the Great Recession Raised U.S. Structural Unemployment?* International Monetary Fund, 2011. <http://www.imf.org/external/pubs/ft/wp/2011/wp11105.pdf>

individual remains unemployed, the harder it is for him or her to “catch up” with lost wages and the less chance they have of gaining employment in the future. Employer bias is sometimes a problem for the long term unemployed and older workers. Also, skills often erode during times of unemployment. Not being able to find people with the right skills hurts businesses, as well. Many employers have cited lack of skills in job candidates as being responsible for reduced output.⁶

This seems straightforward, but actually there are differing opinions about what the skills gap is and what it might mean. The common conclusion is that the applicants must not have the skills needed for those jobs and, in fact, employers do cite the lack of qualified candidates as a reason for not filling positions. However, other interpretations of this situation may also make sense. In light of the recent recession, employers may be reluctant to make the investment needed to actually hire someone unless they find a candidate who is an exact match for the position. Before this recession, they might have been more willing to hire someone who was a strong candidate but would need some additional training.⁷

A question that arises when discussing the skills gap is: “Are the right people really not available or are employers unwilling or unable to pay enough to attract the right people?” It appears that, in some cases, both ideas might be true: there are not enough people with the right skills

⁶ Finegold, David; Kochan, Thomas; Osterman, Paul, “Who can fix the ‘middle-skills’ gap?” *Harvard Business Review*, December 2012.

⁷ Editorial Board, “Don’t Blame the Workforce,” *New York Times*, June 15, 2013. http://www.nytimes.com/2013/06/16/opinion/sunday/dont-blame-the-workforce.html?partner=rss&emc=rss&_r=1&

AND there are employers who are unwilling to pay what it would take to attract the right candidates. According to the *2012 Talent Shortage Survey* conducted by Manpower, more than half of U.S. companies indicated that inadequate compensation makes it hard to hire the right candidates⁸.

While it may not be completely clear what causes the skills gap, it is clear that people are looking for work and companies are looking to hire, and the two groups are not easily finding each other. Washington's workforce development strategies will benefit from continuing to explore and address the skills gap phenomenon.

Navigating from School to Work Can Be Challenging

The road between high school and full employment can be bumpy. In 2012, McKinsey & Company, a global management consulting firm, conducted a study across nine countries and 8,000 educators, youth and employers to identify the components needed to create a system where people move smoothly from education to employment⁹. A metaphor used by McKinsey & Company in that study describes the school-to-employment process as a highway. To enter the road of employment, there are three main intersections, each a place where people can get "lost." These intersections are where disconnects in information occur that cause people to lose their way. As we know from our own driving, junctions are easy to navigate only if they bear

clear sign posts that are easy to find and follow. In this approach to thinking about our system, we can identify areas where improved signage would be helpful.

The three main intersections on this highway along which students move from high school to employment are:

- Transition from high school (deciding whether or not to attend post-high school training; assessing and selecting the appropriate option);
- Building skills (can be apprenticeship, internship, college, training, entry-level job); or
- Moving directly into employment.

Intersection One – Transition from High School

The first intersection is the transition from high school to a post-secondary learning opportunity. Helping students understand the value of pursuing at least some additional education beyond high school is a challenge. Many students say they cannot afford college and even if they could afford it, many do not see the value.

Even if students leaving high school are committed to continuing their educational journey, finding the information they need to take the next step can be hard. They encounter myriad questions: What should they study? What jobs will a program lead to? Who offers that program? Who has a track record of graduates having successful employment after completing that program? How will they pay for that education?

While career guidance efforts in Washington state are underway and continuously improving, the available tools mainly help students identify their strengths, learn about career options and figure out which colleges

⁸ ManpowerGroup's 2012 Talent Shortage Survey <http://manpowergroup.us/campaigns/talent-shortage-2012/>

⁹ McKinsey & Company, *Education to Employment: Designing a System That Works*, 2012. <http://mckinseysociety.com/education-to-employment/report/>

offer the programs they are interested in. The specific gap in Washington state concerns information about college program outcomes.

Currently, colleges do not make graduation rates or wage and employment data available to the public in a way that is easy to navigate. While there are several sites that attempt to provide this data there are still gaps in the information that is made available. While some technical colleges post such information on their website by program, other colleges do not. Tracking students to provide such information is complicated and there are not currently any incentives or requirements to provide such information. Prospective students are on their own to find out which colleges offer which programs. Once that information is known, the program outcomes are often not available. How, then, do students in Washington decide between Program A at one college and Program A at another college?

Intersection Two – Skill Building

If students successfully navigate the first intersection and arrive at their chosen post-high school option, they enter into a skill-building phase of their journey. During this phase, students need to learn not only specific content, but they are also tasked with becoming even more effective learners than they were in high school. Students who can develop a process for on-boarding new skills and information are poised to be successful in a work world that demands constant skill upgrades.

“Learning to learn” is now considered an essential employment skill. Experiential learning such as work-integrated learning, project-based learning, and on-line gaming experiences provide a platform for learners to practice and implement the skills they are learning. The

opportunity for work-integrated learning can be beneficial for students with a range of learning styles.

The challenge is to use this phase to build the skills that are needed for a viable career. Can a learner be sure that the skills they are learning will lead to employment? Not always. The degree to which various programs and training options provide the training and experience that employers value is sometimes unclear. In an effort to ensure that this skill-building part of the journey is efficient, Washington’s employers and educators need to link this skill-building phase closely to employment.

Intersection Three – Employment

The third intersection in this highway is the transition into the workforce. Because of the loose linkage between the skill-building experience and the process of becoming employed, many students get lost at this juncture. The closer the connection is between education and employment, the smoother this transition will be. If students have accurate employment information when they select their area of study; have accurate information about what skills to develop while in the skill-building phase; and have an opportunity for work-based learning, internships, mentorships or job shadow experiences, they may be more likely to move smoothly into employment.

The earlier that employers get involved with students and education, the more success they report in finding qualified applicants to fill their vacancies and the more satisfied students are with their resulting employment.

Often, students are on their own to secure employment after completing an educational experience. If their credential, whether degree or certificate, is valued by employers, then the

outcomes are good for both the individual and the organization that makes the hire.

A tighter linkage between the skill-building experiences and the employers would result in a much higher conversion rate from student to employee. In lieu of this strong linkage, employers are left to grumble about not finding the right skills in the labor market and individuals are left to struggle with under- or un-employment if they do not make the transition into employment.

The McKinsey study reports that there is a discrepancy between educators and employers when it comes to evaluating how well education prepares students for employment. Among educators, 72% report in the McKinsey study that their students are well prepared for work. Only 42% of employers indicate that education prepared candidates for employment. When asked about the number of students who were employed within three months of completing their education, more than one-third of educators could not provide an estimate. Those who tried overestimated the number by 20%. It is important to examine why educators do not have a sense of how employable their students are and it would be interesting to see how this compares to data from Washington educators and employers. The disconnect may be due to distant, casual or infrequent communication among employers and educators. Working to better connect and align educators and employers could help to improve Washington's workforce system.

Workplace Expectations are Changing

The workplace of the 21st century is constantly changing, and the rate of that change is accelerating. Technology improvements, increased global competition, changing consumer demand, market fluctuation and

other forces compel businesses to be in a continual state of flux. The result is that workers are also in an environment of continuous change that requires nearly non-stop learning and skill upgrades.

Because we know that technology and the economy are changing, evolving and requiring new skills faster than we can plan for, new approaches for workforce development are needed.

Time is of the Essence

Incremental changes to the workforce development system are not going to occur fast enough to meet the needs of employers in this economy. Because workforce training and education systems are tied to annual budgets and include long-term training programs, they do not tend to be able to change as quickly as the businesses they serve. As businesses adapt in response to customer demands and technology innovations, these factors can alter what businesses look for in prospective hires.

A Call for Disruptive Innovation

In much the same way that “disruptive innovation”¹⁰ (the introduction of new technologies, products or services in an effort to promote change and gain advantage) can be used to disrupt current business and break through existing patterns, Washington will need to consider large-scale, creative interventions to make a big impact on the workforce system. A call for disruptive innovation in our system means making large-scale, disruptive, and radical changes that make our workforce development system more effective. This improved workforce development system would effectively prepare a talent pool of new

¹⁰ Term of art coined by Clayton Christensen, Harvard Business School.
<http://www.claytonchristensen.com/key-concepts/>

employees that includes a broader range of participants than ever before and enables incumbent workers to effectively manage their careers across many years and many changes.

Examples of disruptive innovation include:

- Funding the first two years of college for everyone.
- Expanding game simulations, work-based learning and apprenticeship opportunities.
- Participating in Massively Open Online Courses (MOOCs), which are proving to be a disruptive technology in education.
- Connecting employers and students using a structured social media platform that does not require intensive staffing.
- Using summer and quarter breaks to set up work or work-simulation experiences.
- Using industry professionals for short-term or substitute teaching assignments.
- Integrating self-directed learning into credentials.
- Bringing students into the design process for new workforce development initiatives.
- Creating a results scorecard that allows students to compare college programs' graduation, employment and wage results in one place.
- Learning from breakthrough models from around the country and around the world.

Employees as Learning Managers, Employers as Learning Organizations

The rate of change in the economy is forecast to accelerate and the social contract between workers and employers has also changed. As long as the needs of the workplace continue to change at a rapid pace, people attempting to get and hold jobs will need to think of

themselves as “learning managers.”¹¹ Rapid change will require workers to use their ability to learn-to-learn and manage their own learning to stay ahead of the curve. Even if workers complete their education fully ready to work in their field, the skills and demands of their occupation will continue to evolve and even new graduates may quickly find their skills are outmoded.

Employers will need to become “learning organizations” to support their current employees and to more effectively connect to new employees. While this concept has been around for a while, it is more important now than ever for organizations and individuals to keep up with the changing world of work. Being a learning organization means that people are learning together, expanding their capabilities and fostering creative patterns of thinking.¹² To develop such a culture, it is essential for employers to encourage, support and practice learning in the workplace. Leaders can create an environment that fosters learning by:

- Encouraging individuals to continually upgrade their skills,
- Providing the time and tools needed to learn,
- Promoting shared learning opportunities, such as reading common texts or attending training together, and
- Encouraging debriefing sessions so work groups can decide together how to improve.

¹¹ The Springboard Project, Business Roundtable, *Getting Ahead, Staying Ahead: Helping America's Workforce Succeed in the 21st Century*, Bill Green, Chair. <http://businessroundtable.org/studies-and-reports/the-springboard-project-releases-final-recommendations-to-strengthen-a/>

¹² Senge, Peter, *The Fifth Discipline: The Art and Practice of the Learning Organization*.

Once such a culture is established, the employer will be well positioned to host job shadow opportunities, internships, and work-integrated learning experiences that will connect the best and the brightest job candidates to their organizations. It will benefit employers to have their employees acting as teachers and mentors to college students because this will require that the employees utilize and demonstrate skills the new employees will need in their day-to-day work. Organizations that value teaching also value learning and, thus, support their employees' continuous efforts to gain new skills and stay ahead of the demand for new skills.

More and Different Kinds of Employees are Needed

Because the state's population is aging and growth is slowing, workforce development strategies will need to be intentional about training more and different kinds of people with the skills needed to be employable.¹³ Leaving segments of the population behind will not work.

Minority populations – Because of the huge need for new, skilled entrants to the workforce, including minority populations, workforce training is essential. Traditionally, Hispanic and African American students have had lower high school graduation rates, college attendance, and employment rates than their Caucasian counterparts. While participation in higher education is up for this population, completion rates continue to be a problem that needs to be addressed with specific workforce strategies.

To fill our state's need for a well-trained workforce, a diverse range of students needs to be prepared to enter the workforce.

¹³ "High Skills, High Wages 2008-2018," Washington Workforce Training and Education Training Board. <http://www.wtb.wa.gov/Documents/HSHW2008Workforce.pdf>

Aging workforce – There is also change in the ages and mix of generations in the workforce. Some estimates forecast that as much as 90% of the labor pool increase until 2018 will be in employees over the age of 50.¹⁴ Much of this is due to the fact that people are living longer, the recession reduced people’s retirement funds, and people are interested in staying engaged at work longer than previously expected.

Keeping this population employed and engaged is one strategy for addressing the skill gaps. If employers are strategic about offering short-term training for skills upgrades for experienced employees, they can increase the length of time those employees can be contributing members of the workforce. This expanded timeframe also gives employers more time to work on a knowledge transfer plan to make sure that the expertise residing in long-term employees is not lost when they do decide to move on.

In Seattle, the Workforce Development Council and the Seattle Community Colleges have a program sponsored by CAEL (Council on Adult Education and Learning) designed to help mature workers stay connected and relevant in the workplace. The initial findings from their project indicate that mature workers do feel the need for skills upgrades and are most comfortable working on their career issues with colleagues and advisors in their same age range. Project coordinators noted that experienced workers benefit from having time to process the changes in their work life and need specific conditions and types of support in learning to create and maintain a professional network.¹⁵

¹⁴ Kaslow, Amy, “8 Steps for Closing the Skills Gap,” *Huffington Post Business*, April 8, 2013.

¹⁵ Workforce Development Council of Seattle-King County, *Lowering Employment Barriers*, <http://seakingwdc.org/workforce/older-workers.html>

At the same time that employers are thinking about keeping and effectively utilizing their legacy workers, they must also be concerned about attracting and retaining younger employees. No generation lasts forever. Generation X, now 34 to 48 years old, is a small generation without the numbers needed to fully replace the retiring baby boomers.

Generation Y, born between 1980 and 1999, is a cohort that is even bigger than the Baby Boom generation. They are now between the ages of 13 and 33. They are in our high schools, colleges and in their early careers. They are a diverse, technically savvy group that seems to be seeking work that provides a flexible schedule and mobile access so their work accommodates other aspects of their lives and makes a contribution to the greater good. Gen Y is seeking lifestyle flexibility, learning opportunities and significance. In order to attract and retain this generation, employers may have to adapt their cultures to include these features.

While Generation Y is known for being optimistic and ambitious, it is important for employers and educators to remember that many members of this group came of age during the worst recession since the Great Depression. While they may aim high, members of this group often have not had the work experience that youth from previous generations acquired during their youth and young adult years. Many employers are surprised by the level of training that is needed to convey to these employees the norms of the workplace. Chains of command, attendance expectations, and organizational goals all need to be communicated explicitly.

The generational mix in workplaces now calls for employers to implement a menu of new

approaches to ensure that their employees have the tools they need to be effective and committed to their organizations. Some employers report success when supervisors are trained to provide instruction and feedback more effectively to workers of all generations. Others have successfully paired employees from different generations to share their skills and knowledge. Experienced employees can provide information about organizational culture and expectations, and younger employees can offer on-the-job technology training.

It is also important to note that each generation has different career goals. Traditionally, boomers are trying to build a legacy and are interested in participating in projects that will have a long-lasting impact on their organizations. Generation X-ers are trying to add skills to their personal skill portfolio and respond well to projects that require them to develop new skills and try new things. Generation Y-ers are interested in developing a parallel career, which means that they often have two jobs going on at once, such as a daytime job and start-up company or a short-term project and a philanthropic activity. These employees will be interested in doing work that advances both endeavors. Working with individuals to find ways for them to meet their goals within the organization is a great retention strategy.¹⁶

Preparing a broad range of diverse populations to contribute to the workforce means that specific strategies for engaging these populations need to be built into workforce development initiatives.

¹⁶ Howe, Neil, "Millennials in the Workplace," Lifecourse Associates, 2010.

Washington's Plan to Create a 21st Century Workforce is Underway

Washington has a robust and varied approach to economic development, and it includes tending to the state's educational and workforce needs. From adopting Common Core Standards in K-12 education to recruiting academic researchers from around the world to develop innovations in our universities, Washington has many initiatives underway. As compiled in "Advancing the Innovation Economy in Washington State," this state has many resources and initiatives in place that are working, mostly independently, to advance the skills of our workforce. As identified in that study, "learning-to-learn" is the crucial new skill required by this economy.¹⁷

Governor Inslee is committed to improving our workforce development system as a tool for improving the economy. Efforts to align the state's workforce system with economic development efforts are already underway. Inslee has proposed creating the Alliance for Student Success in Education and Training (ASSET) Program, which would create work-based learning opportunities for at-risk high school students and create an on-line platform for connecting employers and students. As a starting point for connecting high school students to employability skills, Inslee proposes to establish National Career Readiness Certificate assessment centers in the state to verify students' mastery of workplace skills. He also wants to ensure a continued emphasis on STEM (Science, Technology, Engineering and

Math) talent development by creating "Return to Industry" grants to enable instructors in colleges that offer aerospace programs to teach the latest technologies and manufacturing processes.

K-12 education must be part of any discussion about developing employability skills. Considerable effort has been made to ensure that high school graduates have the baseline skills needed to begin their journey into the economy. Research conducted by the State Board for Community and Technical Colleges and the Workforce Training and Education Coordinating Board indicate that earning only a high school diploma will limit a person's earnings over a lifetime compared to those who go on to earn higher credentials¹⁸. Without a high school education, a person may not even have the minimum skills required to continue their learning and work progression.

K-12 standards are important because, in order to even begin to develop the skills deemed essential for the new global economy, every worker needs a baseline set of skills from which to work. In the same way that a poker player needs the minimum bet or "table stakes" to even enter into the game, our citizens need baseline skills they can use to leverage and grow the more advanced skills required in this changing economy. Washington cannot afford to leave its citizens on the sidelines because they do not have the baseline skills needed to move forward. This is why the Legislature and educators continue to work to implement the standards and assessment that will ensure that high school graduates are prepared for their next steps.

¹⁷ Hardcastle, Alan; Kester, Kyra, *Advancing the Innovation Economy in Washington State: The Critical Role of Workforce Development*, 2012. <http://www.energy.wsu.edu/Documents/Innovation%20and%20Workforce%20Development%20in%20Washington%20State%2012-31-12.pdf>

¹⁸ Economic Impact Report 2009 <http://www.sbctc.ctc.edu/college/studentsvcs/SBCTC-StudentQR-0910-Final.pdf>

Partners' Roles in Workforce Development

Washington's Workforce Training and Education Coordinating Board is tasked to provide the framework and coordination for the state's workforce development system. This is a big undertaking because Washington's system is complex and ambitious. In 2012, the Workforce Board published their ten-year strategic plan for workforce development, "High Skills, High Wages." Undergirded by detailed economic research and information about changing demographics in the workforce, this document provides the foundation for Washington to move forward in building the 21st century workforce. *High Skills, High Wages* emphasizes the demographic and economic reasons why it is imperative for Washington to develop a training system that reaches a broader range of participants than ever before, as discussed above.¹⁹

In 2009, the Workforce Board launched a website designed to help high school students explore careers, investigate average earnings and find training opportunities. This site, Careerbridge.com, provides a substantial amount and variety of information in one place. Only recently, however, has that included program outcomes that can help potential students select which college to attend. This is the first website in the nation to offer a "consumer reports" type of feature, which lists how many students graduated, how many were hired, and what their earnings were. This effort is still evolving because critical data is not yet available. Washington's workforce development system could be strengthened by creating an incentive to make this data available and expanding this site to include information

¹⁹ *High Skills, High Wages 2008-2018*, Washington Workforce Training and Education Training Board. http://www.wtb.wa.gov/Activities_HighSkills.asp

beyond that sought by high school students so this website becomes a tool that serves the whole workforce.²⁰ Washington also has a P-20 education data project underway, funded by the Department of Education. It currently gathers retention and completion data but does not include employment or wage data for graduates²¹.

Earlier discussion also illustrated that access to and participation in college is not enough to hone the skills needed by the new workforce. Completion and credentials are needed to positively impact a student's experience in the labor market. Washington's two-year colleges are taking steps to create a type of results scorecard. The Student Achievement Initiative, introduced in 2009, offers performance funding for colleges that post improvement along a spectrum of achievement measures. While these measures – 15 credits earned, 30 credits earned, and certificates or degrees earned – are indicators of future success in the labor market, the Initiative currently stops short of measuring students' employment outcomes. Employment outcomes are needed to help prospective students determine whether their programs of study will lead to a job.

Table 1 shows points along the path to graduation that are considered to be indicators of student progress as measured by the state's community and technical colleges. These measures do not currently include employment data for these students.

²⁰ Washington Career Bridge website, Workforce Education and Training Coordinating Board.

<http://www.careerbridge.wa.gov/Default.aspx>
²¹ State of Washington Education & Data Research Center. <http://www.ofm.wa.gov/hied/dashboard/index.html>

Table 1. Student Achievement Measures, Points that Build Momentum²²

	Total Headcount	Basic Skills	College Readiness	1st 15 Credits	1st 30 Credits	Quantitative/ Computation	Certificate, Degree, Apprentices	Total Points
2006-07 Baseline	467,809	70,950	61,581	60,422	45,385	33,989	22,932	295,259
2008-09	486,927	94,796	73,652	70,127	52,300	36,000	25,544	352,419
% Change from Baseline	4%	34%	20%	16%	15%	6%	11%	19%
2009-10	489,932	08,219	86,888	73,824	57,128	39,332	27,952	393,343
1 Year % Change	1%	14%	14%	5%	9%	10%	9%	12%
2010-11	486,223	97,640	89,861	70,625	55,713	41,411	41,411	387,921
1 Year % Change	-1%	-10%	3%	-4%	-2%	5%	17%	-1%
Total % Change from Baseline	4%	38%	46%	17%	23%	22%	42%	31%

²² State Board for Community and Technical Colleges. http://www.sbctc.ctc.edu/college/e_studentachievement.aspx

New Skills Needed in the Workplace

Learning to Learn

The most essential skill in today's workplace is the ability to learn. While it is important for individuals to develop expertise in specific content areas while in school, that information is going to change so rapidly that individuals need to have a strategy and skills to help them stay current in their field. Workers who have learned to learn will be able to anticipate and incorporate new skills into their repertoire.

There is no shortage of research investigating what learning is, how it occurs and how to manage it. Most of the research is focused on teachers and instructors who manage and measure their students' learning. The workforce focus on learning to learn is more about helping individuals develop the ability to manage and measure their own learning as their careers progress and jobs evolve.

In today's economy, which is reliant on continuous innovation, individual workers need to be able to accurately assess their own skills, identify the skills that will be needed in the future, find the ways in which those skills can be developed, and manage the process of developing and using those new skills.²³

Self-Management

Peter Drucker, the modern management expert from Claremont Graduate University, declared that self-management skills are at the heart of

To what extent are we preparing workers to use both the left and right sides of their brains to create solutions and bring forth new ideas?

²³ Hardcastle, Alan; Kester, Kyra, *Advancing the Innovation Economy in Washington State: The Critical Role of Workforce Development*, 2012. <http://www.energy.wsu.edu/Documents/Innovation%20and%20Workforce%20Development%20in%20Washington%20State%202012-31-12.pdf>

workplace success.²⁴ Self-management is the ability to understand what kind of learner you are, set goals, manage time, and plan for a career that spans a (long) lifetime.

The days of having a life-long employer to direct your career are over. It is now expedient for employees to think of themselves as self-employed even during the periods in which they are employed inside an organization. Thinking and acting as if one is self-employed calls for being responsible for project outcomes, identifying areas for skill development, and keeping a portfolio of projects and skills to carry into the next job. Importantly, if educators are aware of the importance of this transferable skill, self-management can be embedded in initiatives designed to teach people how to learn.

Intersection of Disciplines

One vital reason for continuous learning is to develop and maintain skills that are broader than a single discipline or degree. Economic resilience – the ability to remain relevant and employable – calls for versatility. It has been predicted that the workforce of the future will require employees to have skills that meet at the intersection of disciplines.²⁵

It is no longer enough to have expertise in one skill area. For example, mathematicians who understand marketing, computer programmers with engineering backgrounds, or communication staff with policy experience are going to be the employees in highest demand.

²⁴ Drucker, Peter, “Managing Oneself,” *Harvard Business Review*, 2005.

<http://hbr.org/2005/01/managing-oneself/ar/1>

²⁵ “Thrive: The Skills Imperative” Council on

Competitiveness, Compete 2.0 Initiative

<http://www.compete.org/publications/idea/29/compete-20/>

As the Council on Competitiveness has stated,

“...The margin of advantage will flow from the fusion of cutting-edge capabilities with entrepreneurial, creative and interdisciplinary talent.”

If the new economy calls for a combination of skills from different disciplines, the traditional approach of having students’ studies become narrower as they move up the educational pathway will be called into question. This specialization is very effective for building specific content expertise, but it is less effective when encouraging students to think and work across specialties.

As policy makers and educators work to design workforce development strategies, the instinctual thing to do is to drill down to more detail and to assess specific skill sets and competencies. But the reality of individuals needing to develop a range of skills in order to be adaptable and employable may require that a different lens be used to evaluate the effectiveness of workforce training.²⁶ An effective frame for this evaluation might be: To what extent are we preparing workers to use both the left and right sides of their brains to create solutions and bring forth new ideas?

Big Data

A clear illustration of the need for versatility can be found in employers’ searches for Big Data experts: employees who can gather, organize, manage, analyze *and make decisions* using the

²⁶ Pink, Daniel H., “A Whole New Mind: Why Right-Brainers Will Rule the Future.” Riverhead Trade, 2006.

vast streams of data that are now available in most industries.²⁷

Retail companies, financial services, insurance companies and many others now have access to data about their customers and potential customers. Data from different aspects of consumers' experiences can now be brought together in ways that were previously not possible. In many cases, employers say that they already have the data or even just have access to the data, but they do not have the skills on staff to maximize the use of the data. There is currently not a clear or consistent educational path for people who would like to prepare to meet this need in the workforce.

Where degree programs in this field are emerging, they tend to be at the baccalaureate or graduate level. While four-year degrees prepare specialists to deal with high-level data analysis and decision making, the gathering, organization and use of big data is a skill set that cuts across many levels of occupations. Two-year degree programs that prepare people for middle skills jobs in big data would find that their graduates are in demand in a range of industries.

²⁷ Hardy, Quentin, "The Business of Big Data." *New York Times*, October 24, 2011.
<http://bits.blogs.nytimes.com/2011/10/24/big-data/>

Education 2.0: MOOCS, New Types of Credentials, and Other Disruptive Technology

Because not every worker can afford to take time away from the workplace to attend traditional academic programs, the emergence of new educational opportunities is a breakthrough, as demonstrated by the popularity of these options.

MOOCS

Massively On-line Open Courses (MOOCs) are college-level courses offered online on various platforms by universities around the world. The technology enables university courses to be offered free to multiple thousands of students, in a variety of languages, with assessments built into the system.

Because the initial MOOC offerings did not provide an opportunity to earn credit, colleges did not initially view MOOCs as a threat to our current system. As time goes on, MOOC platforms such as Coursera, EdEx, Udacity and others are finding ways to offer credentials and, in some cases, college credit. The career planning and recruitment tools available on these systems are robust and useful. Employers looking to identify top performers in certain math and engineering courses are already recruiting directly from these courses.²⁸

MOOCs came into their own in 2011, and have already demonstrated that they have the potential to disrupt education as we know it. To illustrate their rapid growth, look at Coursera's

²⁸ Weber, Harrison, "Coursera Launches Career Services to Connect Students with Jobs at Companies Like Facebook and Twitter," The Next Web, December 4, 2012. <http://thenextweb.com/apps/2012/12/04/coursera-launches-career-services-to-connect-students-with-jobs-at-companies-like-facebook-and-twitter/>

growth: from five participating universities in spring 2012 to more than 80 universities serving 3.1 million students around the world by April 2013. At the very least, MOOCs can augment our current system to serve people who do not have the time, money or learning style needed to participate successfully in a bricks-and-mortar school.

MOOCs are proving to be the right educational option at the right time for many reasons. Many students and families are dissatisfied with the current college experience. When students graduate now, in addition to their degrees, it is likely that they have incurred huge debt burdens.²⁹ In addition, many college graduates are not able to find professional-level employment after graduation. It is clear why families may not think that their college investment will pay off.³⁰

MOOCs are about more than just a new way to deliver course content. The technology that undergirds the MOOCs allows education to be customized in ways not possible before. Most courses are a combination of short videos with quizzes built in to assess student learning. The system collects data at every point of the student's experience. It can tell where videos have been stopped and replayed. It gathers information about how individuals are responding to specific questions on the quiz.

²⁹ Brown, Meta and Caldwell, Sydnee, "Young Student Loan Borrowers Retreat from Housing and Auto Markets" Federal Reserve Bank of New York, April 17, 2013. <http://libertystreeteconomics.newyorkfed.org/2013/04/young-student-loan-borrowers-retreat-from-housing-and-auto-markets.html>

³⁰ Berman, Jill, "America's Youth Unemployment Problem Could Cost \$18 Billion Over the Next Decade: Analysis" Huffington Post, May 20, 2013. http://www.huffingtonpost.com/2013/05/20/america-youth-unemployment_n_3306089.html

This data can – and is – being used to revise the material in real time as the class is being offered.

MOOCs make use of social media. Because the classes are so large, it is not possible for the faculty to communicate directly with students. Instead, the learning segments are augmented by social media-type forums and peer-to-peer assessments. Students report that having the opportunity to help other students pushes them to learn the information more fully in order to assist others.³¹

MOOCs offer courses that learners in the workforce need to upgrade their knowledge and skills. Classes are built based on demand. Because students can choose the pace at which they participate and the classes are free, MOOCs are good tools for workers to keep their skills sharp. The format brings the best teaching and presentation talent to students who would not otherwise have access to those professors because of location or funding. MOOCs are a combination of education and entertainment, and this factor alone may push traditional educators to reconsider their approach.

Employers like MOOCs because of their convenience, affordability and relevance. MOOCs allow workers to access the learning modules anytime, anywhere, so learning can be scheduled around work hours. Because most MOOCs are free, employers are not incurring costs or asking their employees to pay out of pocket for their learning. Because MOOCs are new and constantly being revised based on real-time feedback built into the system, the courses

that are available contain new and relevant information that employers like their employees to have access to. Figure 2 illustrates some of the pros and cons of MOOCs.

When a Stanford professor offered the first Udacity course in the fall of 2011 on Artificial Intelligence, he predicted that there would be great interest in his course and that as many as 10,000 students might enroll.

What actually happened surpassed everyone's expectations. By the time the class started, 160,000 students were enrolled.

³¹Young, Jeffery R., "'Badges' Earned On-line Pose Challenge to Traditional College Degrees," *Chronicle of Higher Education*, January 8, 2012. <http://chronicle.com/article/Badges-Earned-Online-Pose/130241/>

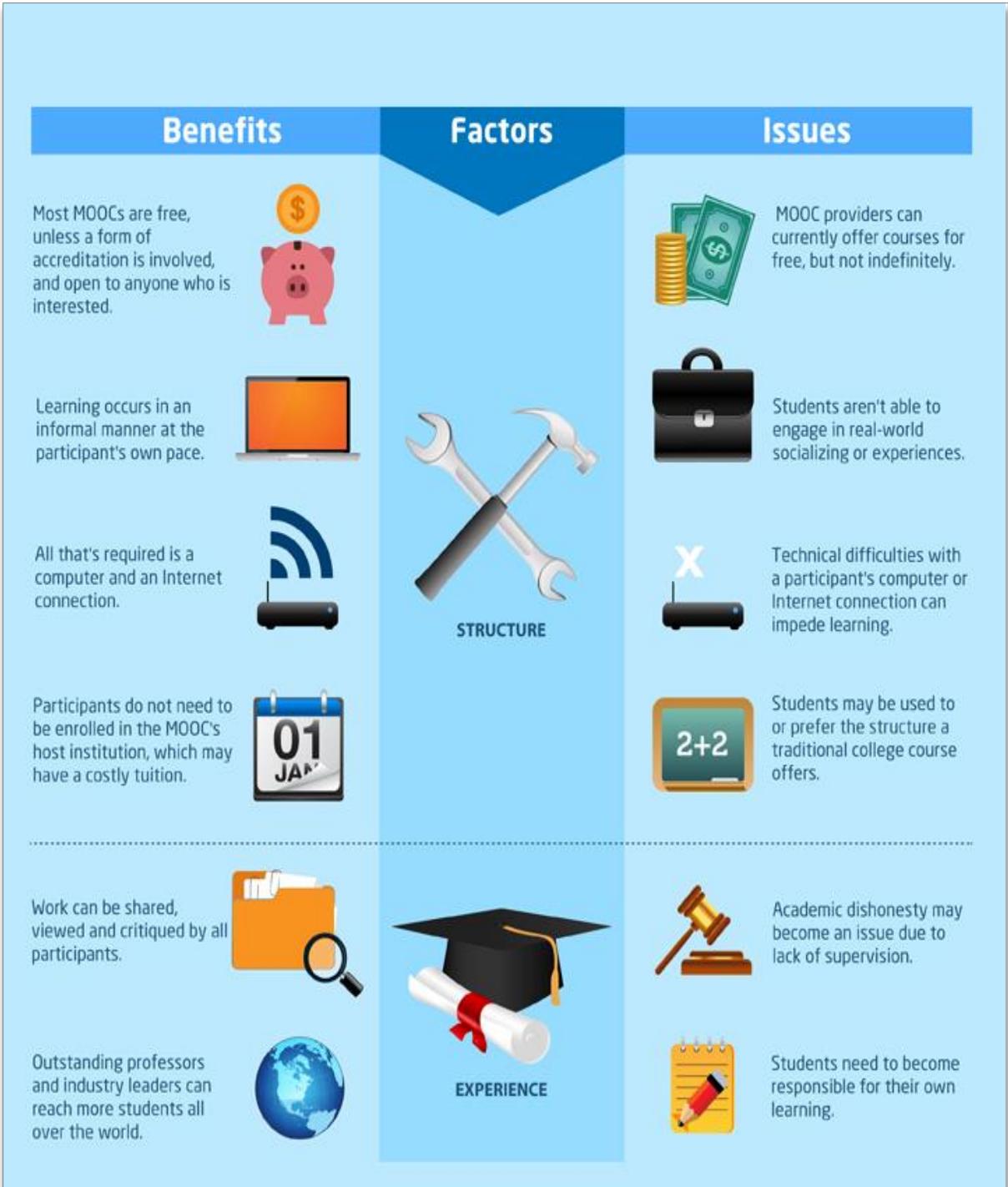


Figure 2. Pros and Cons of MOOCs
 Source: *onlinecolleges.net*

New Kinds of Credentials

New educational opportunities warrant new ways to certify skill attainment. Badges are a new kind of online, competency-based credential that is becoming more broadly available. A badge is a visual representation of a learned skill. The badge itself is linked to data about the skill it represents and the organization that endorsed it. Initially developed as a spin-off of Boy Scout badges, which indicate mastery of specific scouting skills, Internet badges are rapidly becoming an accepted way to indicate someone's mastery of a very specific skill. NASA, the Smithsonian, Disney-Pixar, University of Illinois and many others are already involved in issuing badges. Employers are likely already seeing resumes filled with skill-specific badges. The small unit of learning that each badge represents means that job seekers can use the badges as they accumulate them; they do not need to wait for a degree to begin to claim the skills to potential employers.

Mozilla Open Badges, supported by the MacArthur Foundation, has created a free, open-source platform where people can earn badges for skills they learn, and organizations can offer badges for skills they teach. Badges can be earned both online and offline.

Figure 3, from the Mozilla website, shows the range of ways that badges can be earned (online, at work, in an internship) and displayed (on resumes, Facebook, websites), and illustrates that the results can be a new job, increased learning and more opportunities.

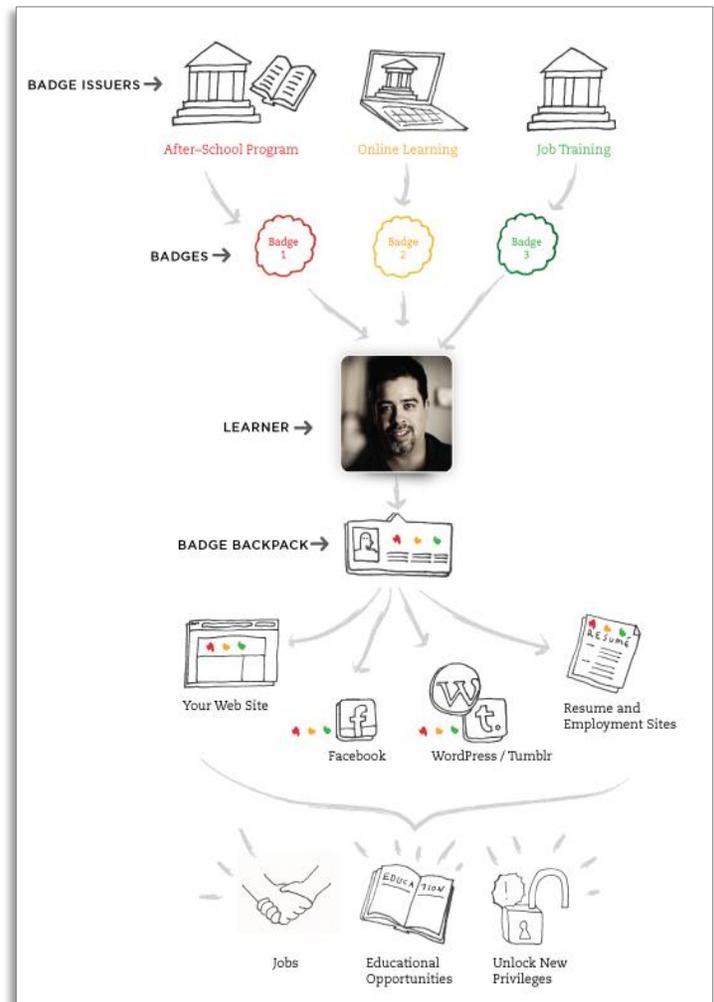


Figure 3. Earning and Displaying Mozilla Open Badges

The Khan Academy, a free, on-line learning platform for K-12 math, science and some humanities, has built rules, levels, and structures into its system that mimic video games to entice participants to stay connected and keep learning. This works well because the Khan Academy is designed for young learners who are already game players and who like to earn “levels.” The Khan Academy has its own system of badges that reward all kinds of participation, skill building and knowledge acquisition. Learners can self-navigate their way through the various offerings independently or with the help of online mentors. The site provides a knowledge map (Figure 4) and other tools that help independent learners set, measure and achieve goals.

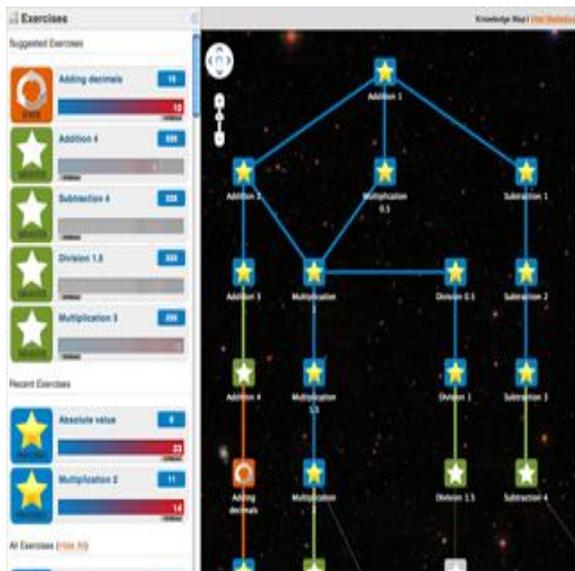


Figure 4. Khan Academy Map of Knowledge
Source: <https://www.khanacademy.org/about>

Other Disruptive Technology

Western Governors University

In Washington and 13 other western states, Western Governors University (WGU) – a private, nonprofit, online university – is pushing the boundaries of education as we know it by offering online, competency-based baccalaureate degrees. WGU made the list of *Fast Company's* Most Innovative Companies of 2013. Fully accredited and able to offer their students federal financial aid, WGU is doing things in a new way. Students pay tuition in six-month increments and are encouraged to complete as many credits as possible during that time in order to compress their time in school and complete credentials more quickly.

WGU has divided the typical faculty position into three discreet functions: 1) curriculum developer, 2) content delivery and 3) assessment. These functions are carried out by different specialists and supported by mentors who work by phone to ensure that students are staying motivated and have the tools they need to be successful.

Students are responding well to this opportunity to pay less tuition, complete degrees faster, and find jobs quickly. Among employers of WGU graduates, 95% report that the graduates' job performance is better than that of graduates from other schools.³²

These new platforms, organizations and credentials underscore the idea that learning can happen anytime, anywhere. Our workplaces and educational institutions have not yet begun the extensive reorganization that will be required by these new technologies.

³² Data from Western Governors University website: http://www.wgu.edu/about_WGU/graduate_success

Having so many on-line learning and credentialing opportunities available now is beginning to blur the lines between being in school and not being in school. Where, when and how learning happens is no longer linear. This is appropriate because the rate of change in the economy – and now in these new learning environments – calls for nothing short of a culture shift.

It is no longer true that learning comes to an end at a specific time, such as after earning a credential, and then work happens continuously for the rest of one’s life. It is increasingly likely that learning and work are going to happen simultaneously, or at least alternate more frequently, as people re-tool and up-skill continuously throughout their working lives and beyond.

What is needed now is for our society to become “learning intensive.” We need to shake old notions of school and work happening in separate spheres.

The Risk of Inaction

Globalization has changed the economic game. The labor market is now international and American workers must compete with candidates from across the globe. The global labor market quadrupled between 1980 and 2005 as large economies in India, China and Brazil modernized and developed global trade.³³ Organizations can now locate their operations anywhere where the workforce, incentives and infrastructure support them. This change has been called “The Death of Distance.”³⁴ The way to win in this game is not to lower salaries, but to increase skills and marry skill sets in new and innovative ways.³⁵

If we do not respond to the increasingly clear signals that we have entered a new age of globalization, we will be left behind, playing catch up. New policies and new approaches are required. Cultivating skills for the jobs we need here and now – and tomorrow – is one way to gain a competitive advantage.

The double-digit unemployment rate among young people indicates that potential employees are not getting the work experience and training necessary to prepare them for middle or high skills jobs with livable wages. Potential employers are missing out on young talent, skills and energy. And if these young people are denied the opportunity to gain experience and pay their own way, there is also the risk is that they will need to rely on social services and assistance, which will create a negative drag on the state’s economy. Entering

³³ *Compete 2.0, Thrive. The Skills Imperative*, Council on Competitiveness, 2008.
<http://www.compete.org/images/uploads/File/PDF%20Files/Thrive.%20The%20Skills%20Imperative%20-%20FINAL%20PDF.PDF>

³⁴ Ibid.

³⁵ Ibid.

the labor market late can negatively impact an individual’s earnings over a lifetime.³⁶

The risk of letting each job-seeking individual struggle alone to make a career choice and execute a skill-building plan is that talented people will continue to fall through the cracks. Students and current workers alike are unclear about what skills will be needed in the future and even less clear about how to develop those skills. The social and economic cost of not providing the information that individuals need to organize their career path is steep. Individuals and families suffer. Employers lose essential workers. Ultimately, our state’s economy will struggle unless strategic action is taken.

Menu of Options

Determine 21st Century Skills for Washingtonians

Relevant knowledge changes as societies change. As the economy has evolved from the industrial age into the knowledge economy, and now into what Daniel Pink refers to as the “Conceptual Age,”³⁷ the skills that are in demand have evolved. Exactly which skills are in demand has not been settled. Educators, employers and policy makers around the world have tried to define the skill sets that the new economy requires.³⁸ In addition to the traditional reading, writing and arithmetic, these lists include computing skills, media and

³⁶ Ayres, Sarah, “The High Cost of Youth Unemployment,” American Progress.org, April 5, 2013.

<http://www.americanprogress.org/issues/labor/report/2013/04/05/59428/the-high-cost-of-youth-unemployment/>

³⁷ Yong Zhao, *Catching Up or Leading the Way? American Education in the Age of Globalization*, Alexandria, VA: ASCD, 2009.

³⁸ *Review of 21st Century Skills Frameworks*.
http://www.bie.org/research/21st_century_skills

information literacy, cultural competencies, project management, and problem solving.

The various initiatives designed to define what skills will be needed in the future also tend to include a range of skills and habits of mind that are not typically included in core competency lists, such as learning to learn, economic/financial literacy, curiosity, understanding systems, college knowledge, and relationship building.

Clearly, the line between consumers and producers of content is becoming less clear as social media and web content development tools improve; it used to be that “experts” created websites and laypersons “used” them. Now, anyone can create a website, image or message and broadcast it online to millions of others. The implications for education may include adding core production and consumption skills to the computer literacy core, which is considered basic for all students.

The acceleration of information technology further blurs the line between the consumer and the producer of content. Customers are no longer passive receivers of content; they are also content creators. This change has the potential to redefine the relationships between consumer and seller, employer and employee, student and teacher. The relationships become collaborations, which calls for a different set of skills than those needed previously.

Educators appear to be suffering from “standards fatigue.” In the K-12 system, there has been no shortage of attempts to define what is essential for students to know and master during their time in school. Assessment systems have been created and students and teachers are measured against the standard of the day. The current national push is to adopt

the Common Core Standards as developed by the College Board, with the goal of having states agree to and unify these standards.

The Common Core Standards are well articulated and measureable, but they are geared to preparing students to be successful in their life immediately after high school. They ensure preparation for college or entry-level employment; they do not attempt to define what is core or essential in the work world for experienced employees.

While Washington has adopted the Common Core Standards for K-12 education, there is no agreement about the essential knowledge and skills needed for the workforce. The Career Readiness Partner Council defined career readiness in 2012:

A career-ready person effectively navigates pathways that connect education and employment to achieve a fulfilling, financially-secure and successful career. A career is more than just a job. Career readiness has no defined endpoint. To be career ready in our ever-changing global economy requires adaptability and a commitment to lifelong learning, along with mastery of key academic, technical and workplace knowledge, skills and dispositions that vary from one career to another and change over time as a person progresses along a developmental continuum. Knowledge, skills and dispositions that are inter-dependent and mutually reinforcing.³⁹

This definition could be a good foundation for developing the skills deemed important by Washington employers. If Washington

³⁹ Career Ready Partner Council: <http://www.careerreadynow.org/>

education leaders were to identify or adapt a framework of 21st century skills, it could serve as a compass for employers, educators and learners to use as they work together to develop the workforce of the future.

The Partnership for 21st Century Skills created a framework of the skills (Figure 5) they deem essential for graduates to be successful in the workplace.⁴⁰ While it is focused on school outcomes, this framework could provide a good starting point for Washington to determine the skills needed for the 21st century workforce.

While the 21st century student outcomes system strives to prepare students with the skills they will need in the workplace, the list of 21st century skills identified by the Gallop/Microsoft/ Pearson report⁴¹ in 2013 introduces a list of skills and traits needed by those who have experience in the workplace.

Of the participants who helped to develop this list, 59% indicated that they learned these skills outside of a classroom. If Washington created or adopted such a list of 21st century skills, it could help to guide the training and opportunities that are offered to incumbent and displaced workers who have already completed their formal schooling.

Industry/Education: Step Into Each Other's World Early and Often

In a comprehensive study conducted by the McKinsey Center for Government in 2012,⁴²

employers were divided into three categories based on their level of involvement with education partners: stalled, neutral or racing:

- **Stalled:** 44% of employers. These were the least involved in paying for or offering training, or partnering with education, and were unwilling or unable to change their strategy.
 - 75% of these employers report that they were unable to find the skilled employees they needed.
- **Neutral Gear:** 25% of the polled employers reported that they interacted with education partners, coordinated within their industry, and did some outreach to youth. While this group has the right initiatives in place, they were not doing them with the frequency or intensity needed to produce a pipeline of qualified job candidates.
- **Racing:** The highest performing group represented 31% of the employers. This group was more likely to both offer and pay for employee training.
 - 75% of these companies worked with educational partners on developing curriculum and providing instructors with industry experience. These efforts paid off; 69% of this group reported that they had no challenges finding the skilled workforce they needed.⁴³

⁴⁰ Framework for 21st Century Learning.

http://www.p21.org/index.php?option=com_content&task=view&id=254&Itemid=120

⁴¹ Gallop-Microsoft-Pearson, "21st Century Skills and the Workplace," 2013.

<http://www.gallup.com/strategicconsulting/162821/21st-century-skills-workplace.aspx>

⁴² The McKinsey Center for Government in 2012 studied 100 education-to-employment programs in

25 countries and surveyed 8,000 students, educators, and employers in nine countries.

⁴³ McKinsey Center for Government, "Education to Employment: Designing a System that Works."

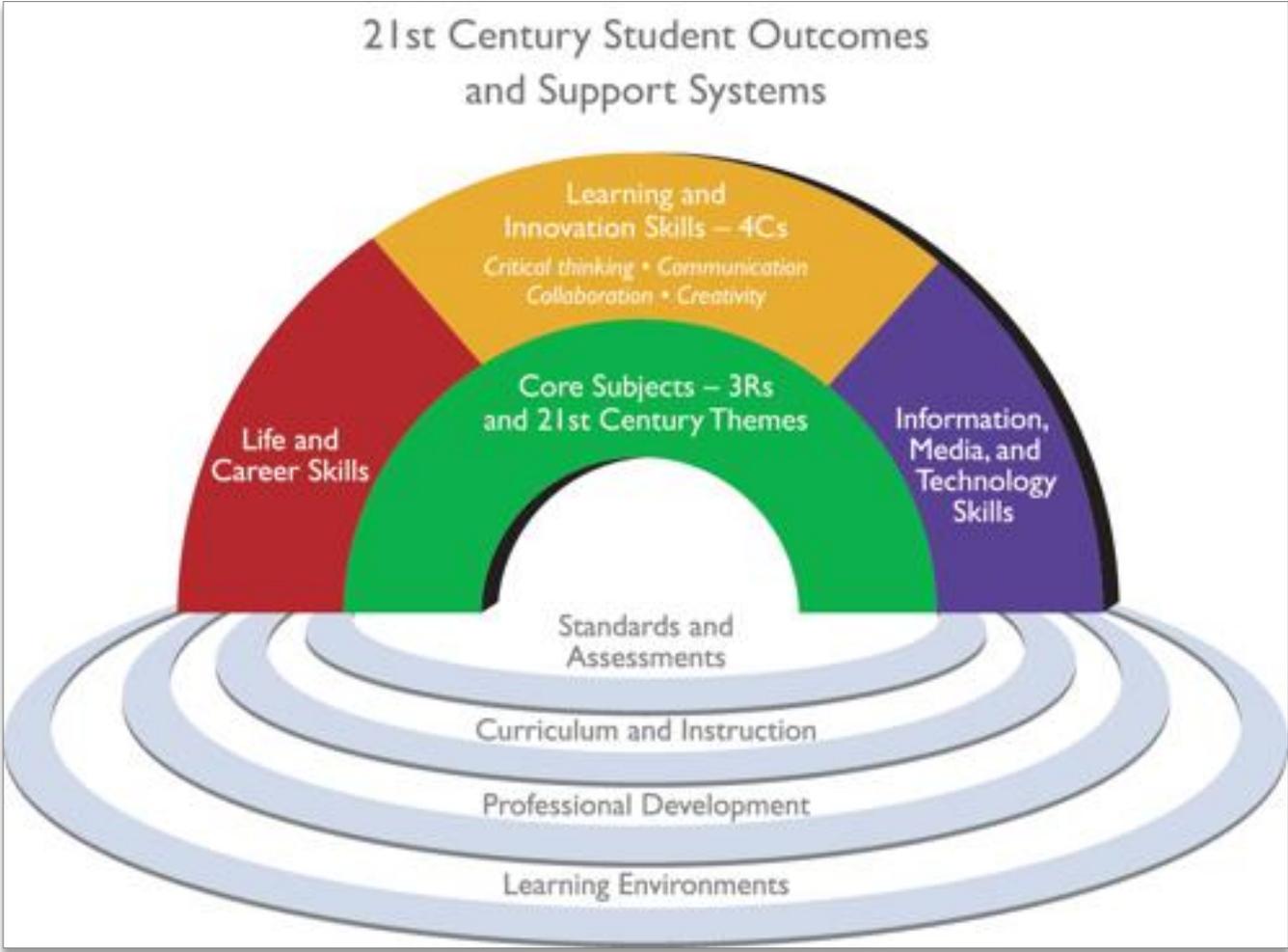


Figure 5. Framework of Skills

When education programs are closely linked to employers, they tend to have better retention, higher graduation rates and better employment outcomes. This is because, when employers are involved in education, the programs tend to be relevant and evolve more quickly to include skill sets that are at least state-of-the-industry, if not state-of-the-art. When employers are involved, the education tends to be more experiential and to involve students in ways they find compelling. Companies that invest time and money into building the talent pool in partnership with their local colleges and universities report the highest rates of success in finding the skills and people that their business requires.⁴⁴

Based on the McKinsey Center research, it seems essential that a core part of Washington's workforce development strategy focus on fostering industry/education partnerships. As proposed by the Workforce Board, work-integrated learning is one way to do that. Broader than work-based learning, work-integrated learning is a robust portfolio of activities and initiatives designed to more closely link education and employment. There are at least four possible components to work integrated learning:

- 1. Employers participating in education** – Employers who participate in college advisory committees to review program content can ensure program relevance. Employers may also participate in education by serving as mentors, participating in career fairs and participating as guest speakers. All of these initiatives help to bring the world of work to life in the classroom.

⁴⁴ Ibid.

- 2. Teachers return to industry** – Employers may choose to offer internship-type experiences for faculty and instructors. When educators return to industry, they gain a very current understanding of workplace requirements.

- 3. Students at the workplace** – When students participate in job shadowing experiences and full internships, they get to see a workplace in action and can begin to envision their role within it. When programs that require work experience put students in the driver's seat when it comes to identifying and qualifying for placement, those students also have a chance to learn job search and interviewing skills.

- One barrier to work-integrated learning is a shortage of job site positions for students. It is time- and resource-intensive for a company to take on an intern. It requires a supervisor and work must be designed with the student's learning in mind. In rural communities, there are often not enough employers to provide the opportunities for students. In these cases, simulated work environments online might provide the experiential component that prepares students for the world of work. Some speculate that the online work simulation may be the apprenticeship of the 21st century.⁴⁵
- While Washington educators and employers have worked to create more work-integrated learning experiences, another barrier is that the tools needed

⁴⁵ Dede, Chris, "Interweaving Assessments into Immersive Authentic Simulations," K-12 Center at ETS, May 2012.

<http://www.k12center.org/rsc/pdf/session4-dede-paper-tea2012.pdf>

to develop an effective system of matching students to worksite opportunities has not yet been created.

4. *Comprehensive Employer/Education*

Program – In this type of program, employers get involved with students and their educational institutions early and stay connected. In Washington state, Boeing’s internship program is a model practice because it provides opportunities early and continues to invest in the students’ development by providing work experience through college. Boeing is intentionally building their talent pipeline by participating in high school dual-enrollment efforts such as Tech Prep. Boeing staff members participate in high school career and technical education, as well as college-level advisory committees. They offer paid summer internships for college students, which are designed to give students the opportunity to work in several divisions before they graduate. When Boeing hires new college graduates, they are often put into a program that is described as a three-year rotation. New employees spend one year each in three different divisions in order to grow their skills and build their network. This group of new employees is also encouraged to network through social media and company-organized events designed to strengthen the connection among these young employees and their employer. This comprehensive initiative not only works to get the right talent through the front door; it also works to encourage retention.

Companies that invest time and money into building the talent pool in partnership with their local colleges and universities report the highest rates of success in finding the skills and people that their business requires.

Employer Collaboration by Sector

During the Great Recession, many employers had to make deep cuts to stay afloat. Often, training budgets were the first thing to go. Remnants of training dollars for incumbent workers may have been protected, but any budget focused on building a future talent pool were typically released in an effort to keep the doors open.⁴⁶ As the economy comes back online, many companies are in the position of rebuilding their training initiatives. They are thinking about how to address the skills gap they see in their candidate pools. One strategy for getting around the skills gap is what Manpower calls “teachable fit,” which is hiring people with the potential and the capability to learn job-specific skills once they are hired. This requires the employer to offer training to get the employees they need. This need for job-specific training raises the question of who should pay for the training.

Many employers express a reluctance to invest in training, especially for small numbers of employees, because it is expensive and they worry that the talent they develop will then be poached by other employers.⁴⁷

One way to address this is for employers to collaborate either by sector or by region to offer the training that is needed to develop the workforce that will keep them competitive. By working together, employers can realize some economies of scale. While it may not be worthwhile to develop training for two or three

⁴⁶ “Training is Taking a Beating in Recession, Studies Find,” Workforce.com, 2009.

<http://www.workforce.com/article/20090126/NEWS01/301269979/training-is-taking-a-beating-in-recession-studies-find#>

⁴⁷ Hardcastle, Alan, et al., “Workforce Challenges of Electric Power Employers in the Pacific Northwest” Washington State University Energy Program, 2013. <http://cleanenergyexcellence.org/resources/>

employees, it may be worth it if a class of ten can be brought together through the partnership. Companies will benefit if:

- Their employees have access to training offered by partner organizations,
- Classes are full,
- They do not have to worry about poaching from competitors, and
- They can avoid duplicating efforts, which is likely if they develop training classes in isolation from their competitors.

For example, in the energy sector, so many utilities are looking for experienced employees that one of their hiring strategies is to recruit directly from other utilities or even other industry sectors.⁴⁸

Online Tool to Connect Students and Employers

Workers – incumbents and those who are just getting started – are often unclear about what it will take to prepare for the jobs of the future. Two factors, constant change in the economy and the lack of a central source for employment information by program, exacerbate this difficulty. The Business Roundtable asked a group of tech-savvy people to pretend that they were job seekers to test the usability of the online tools that are currently offered. The mock job seekers reported both a sense of frustration with the scattershot nature of the information and an increased respect for those job seekers who do manage to navigate through the maze.⁴⁹

⁴⁸ Ibid.

⁴⁹ The Springboard Project, Business Roundtable, *Getting Ahead, Staying Ahead: Helping America’s Workforce Succeed in the 21st Century*, Bill Green, Chair. <http://businessroundtable.org/studies-and-reports/the-springboard-project-releases-final-recommendations-to-strengthen-a/>

One glaring omission in the information is data about employment outcomes by program. If someone decides to become a teacher, how do they compare the employment results for the teaching programs across the state? Part of the reason that this data is missing is because it is challenging to collect:

- Data systems between educational institutions and Washington’s Employment Security Department are not linked,
- This data collection is not yet a state priority and no resources are allocated for the effort.
- Tracking students if they leave the state is tricky, and
- Maybe more importantly, there is no incentive or requirement to do so.

The amount of state support a college receives is calculated based on enrollment numbers and does not currently take employment outcomes into account. Colleges and universities know and readily report all of the data about their admissions process: students’ average test scores, GPA comparisons across high schools, etc.

But on the graduation end of the college experience, it is hard to find out how students are doing as a result of participating in a particular program. Some graduation rates are available. Technical colleges have employment and wage rates posted, but it is only available at the department level at each school’s website. This makes it difficult to find the data needed so a student/consumer can compare programs.

In the ideal world, students and employers would be connected via an online tool in what Anthony Carnavale calls the “Learning and Earning Exchange”: “Information systems that

make the connections between Career and Technical Education (CTE) programs and job openings transparent are the crucial reform going forward.”⁵⁰ Carnavale proposes a system that connects CTE high school students’ records to employers’ wage data and creates an exchange. Building on this idea, we recommend also connecting academic and technical college programs to the wage data and to colleges’ employment track records by program because students from all types of programs are heading into the workforce.

Information about placement rates and wage data is often the missing piece when students are trying to make their post-high school education and training decisions. Systems are in place that provide some of this information, but each student must navigate the systems to compile an aggregate idea of what careers are in demand and who is offering the training that is most likely to result in employment.

One regional online tool for connecting employers and students is already in place in Spokane.⁵¹ Billed as the “Pathway from talent to careers,” this tool, organized by local workforce development councils, is a great model of what could be done using an online platform for connecting learning and work. The focus of this site is internships, but the platform could be enhanced to include all kinds of school and work connections.

⁵⁰ Carnavale, Anthony, P., et al., *Five Ways that Pay Along the Way to a BA*, Center on Education and Workforce, Georgetown University, 2012. <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/CTE.FiveWays.ExecutiveSummary.pdf>

⁵¹ Spokane Area Workforce Development Council <http://inspirewashington.org/>

**Communicate New Workplace
Expectations with Washingtonians**

As Washington creates a new focus for its workforce development strategies, an intentional effort must be made to let individuals know about workplace expectations, the skills that will be needed, and the tools that are available for managing their careers.

Because students from all types of programs are heading into the workforce, we recommend connecting academic and technical college programs to wage data and to the employment track records of the colleges by program.

Conclusion: What Should Be Done Next?

Define 21st Century Skills for the Workforce

It will be important for Washington to create a framework that clarifies the skills that are needed in the workforce. While technical skills are not static enough to be included in such a framework, broad competencies that will help people be effective in a rapidly changing work environment can be defined.

In this report, we noted that a number of models could be used as a starting point. But to make the framework relevant for Washington's workforce, local partners must be convened to define the skills that will be needed by our 21st century workforce.

Connect Education, Industry and Students: Online Tool and Results Scorecard

To close the skills gap, educators and employers need to work more closely together, more often. Consistent interaction between these two worlds will help to ensure that education is relevant and will help employers create connections with talented people while they are still in school. There are several ways to establish this connection between students, educators and employers: require work-based learning opportunities, create an online tool for employers and students to connect, and develop a results scorecard for college programs.

Require Work-Based Learning Opportunities

Exposure to professional environments through work-integrated learning experiences helps accelerate students' learning. Ranging from job shadow experiences to extended paid learning opportunities, work-integrated learning is one way for students to put their learning into action.

Defining 21st century skills needed by the workforce would help job seekers and incumbent workers understand what skills they should be developing and honing to become – and stay – relevant and resilient in the workforce.

When work-integrated learning is managed by the career center or seen as one more obligation outside of the classroom, it results in programs that are time-intensive to manage and have low participation rates. Requiring work-integrated learning as part of academic programs embeds these experiences into the educational infrastructure and creates a way for students to manage their own learning and earn credits at the same time.

Create an Online Tool

An online tool that connects students with learning opportunities in the workplace would be a strategic way to increase the opportunities for students to gain skills in a workplace environment. This does not have to be a cumbersome web tool that requires lots of staffing and infrastructure investment. It could be built using social media tools that are already in place and that many students and employers are already using. This approach would allow it to exist in real time and for users to manage the content themselves.

Create Results Scorecard for College Programs

Washington's economy would benefit from the creation of a results scorecard for two- and four-year colleges. This scorecard should provide data in a single location about graduation rates, wages and placement rates by program so students can determine which program is most likely to help them reach their goals.

Currently, data about program outcomes is either unavailable or hard to find. Making this type of data available in a user-friendly format will help students make informed education and employment decisions, and increase the transparency and accountability of workforce education providers. Washington has a great starting point with

<http://www.careerbridge.wa.gov/> and <http://checkoutacollege.com/>. These sites could be connected, enhanced and expanded to become the results scorecard.

Communicate with Washingtonians about the New Workplace

Incumbent workers, students and educators need to be informed about the ways that work is changing. Washington citizens need both the information and the tools to manage their careers. As a skills framework for the workforce is created and online tools are developed, the information will need to be shared with the public so they can use these tools to prepare and manage their own careers.