

Sustainability and Workforce Education in Washington's Community and Technical Colleges

Briefing Paper

Prepared by: Alan Hardcastle &

Sally Zeiger Hanson

June 28, 2011

WSUEEP11-031



905 Plum Street SE, Bldg. 3

Olympia, WA 98504-3165

www.energy.wsu.edu

(360) 956-2000

Sponsorship

Financial support for this project was provided by the Pacific Northwest Center of Excellence for Clean Energy at Centralia College, through Centers of Excellence funding from the Washington State Board for Community and Technical Colleges.

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Acknowledgements

The author would like to thank Barbara Hins-Turner, Executive Director of the Pacific Northwest Center of Excellence for Clean Energy (Centralia College) for her vision and guidance in the design and completion of this project.

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Abstract

The primary focus of this report is to provide a framework for Workforce Education professionals to have a discussion about infusing sustainability concepts into a broad range of Workforce Education programs.

The report begins by presenting the context for sustainability and provides sustainability-related definitions. The business case for sustainability and how it impacts the workforce is discussed next, followed by a description of the three ways that sustainability initiatives and approaches are implemented within Washington's colleges. One regional and several state examples of college sustainability efforts are presented. An overview of national initiatives and state reporting requirements is provided.

Finally, based on the conclusion that many Workforce programs already have a number of sustainability concepts built into the curriculum and that sustainability concepts are universally needed in Workforce curriculum across a range of programs, the following potential action steps are put forward for discussion:

- Save money by collaborating among the colleges to meet reporting requirements and reduce the expense of participating in multiple sustainability initiatives.
- Provide training on sustainability concepts to faculty across Workforce programs.
- Connect faculty to industry partners to ensure that current, relevant sustainability information continues to be part of the curriculum.
- Identify Workforce Programs that are most ready for sustainability to be in the curriculum and develop new courses and modules as needed.

Introduction

This report investigates the integration of sustainability principles into programs and curriculum in Workforce Education programs in Washington's two-year colleges. The report was commissioned by the Pacific Northwest Center of Excellence for Clean Energy, and funded by the State Board for Community and Technical Colleges' Centers of Excellence funding.

The goal of this study was to understand what motivates college programs to support green and sustainable initiatives within their own curriculum, to learn the ways in which this is happening, and to identify the incentives and barriers to the integration of sustainable practices into a broad range of Workforce Education programs.

The Context for Sustainability

What is sustainability? Conceptually, the term "sustainable" seems straightforward. In practice, however, the term is enormously complex, and there are many different definitions in use today. The United Nations published *Our Common Future* (aka The Brundtland Report) in 1987 which became the cornerstone document of the sustainability movement. The definition of sustainable development described in the Brundtland report is:

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.¹

An extension of this definition later appeared in the 2000 Earth Charter report, which describes three pillars of sustainability.² Collectively, the pillars are often described as the core targets of sustainability needed to achieve a "Triple Bottom Line."

The three pillars of sustainability include the environment, social equity, and the economy. A strong resilient economy depends upon a vibrant and equitable society which in turn relies on a vigorous flourishing environment. The balance of the three pillars leads to prosperity and peace for future generations.

While there are overt and sometimes subtle differences between these definitions, there is a common theme: the shift toward more efficient, fair and conscientious use of resources.

Business Case for Sustainability

There is a compelling business case for sustainability: Recent research is finding a strong correlation between businesses that exercise sustainability leadership and positive financial indicators, such as return-on-investment and earnings per share. A growing body of research

¹ See: Brundtland, G. (ed.), (1987), *Our common future: The world commission on environment and development*, Oxford, Oxford University Press.

² For more information about the Earth Charter, see: <http://www.earthcharterinaction.org/content/>

suggests that corporate commitment to sustainability is having a positive impact on business success.³

Most businesses have taken at least some action to improve sustainability. These actions may be as simple as implementing a recycling program, promoting employee ride-sharing programs, or conserving energy and reducing environmental impacts via new production processes. Some companies have developed “Corporate Sustainability Plans”⁴ (an evolution of the ethics-focused term Corporate Social Responsibility) in an attempt to augment long-term shareholder value, as companies embrace new markets and product opportunities, implement organizational improvements, and work to manage the social, environmental and economic risks associated with pursuit of the triple bottom line.

An Evolutionary Process

A recent global analysis on sustainable manufacturing and eco-innovation by the Organization for Economic Cooperation and Development (OECD) concluded that while many companies are engaged in sustainability activities, most corporate sustainability efforts fall far short of addressing concerns such as global shortages of natural resources, climate change or energy security.⁵ Other industry observers assert that only companies that make sustainability a priority will achieve a competitive advantage, and that means re-thinking business models as well as changes to products, technologies and processes.⁶

The OECD report describes how three main facets of eco-innovation (targets, mechanisms, and impacts) together form the basis for a model that describes the levels and ways in which organizations can pursue goals that result in increasingly beneficial outcomes for the environment (see Figure 1).

The model is instructive because the same factors can logically be applied to organizations that are intent on pursuing any combination of environmental, social and economic goals. It also recognizes that technological changes are associated with the majority of sustainability initiatives which, in the case of college programs, is usually tied to specific student outcomes or improvements to institutional processes. Changes in other business functions and structures such as marketing, infrastructure, or the design of organizations themselves, tend not to be as heavily tied to technology changes. Functional and structural changes are typically more complicated and difficult to implement however, and are therefore not as common. This model underscores the idea that getting started with even very small steps is an important way to

³ See: Nidumolu, R., Prahalad, C, & Rangaswami, M. (2009). *Why sustainability is now the key driver of innovation*. Harvard Business Review (September). See also: Oekom Research, Sustainability and Business Success, 6/2005 http://www.oekom-research.com/index_en.php?content=studien. See also: *Measuring business success from sustainability certification*. United Nations-Global Impact and Rainforest Alliance, 2007: http://www.unglobalcompact.org/docs/news_events/8.1/UN_Rainforest_alliance.pdf

⁴ Examples of Corporate Sustainability Plans: <http://www.greenbiz.com/news/2010/06/28/deloitte-creates-six-step-plan-corporate-sustainability>

⁵ OECD Policy Brief, June 2009, “Sustainable Manufacturing and Eco-innovation: Towards a Green Economy” <http://www.oecd.org/dataoecd/34/27/42944011.pdf>

⁶ See: Nidumolu, R., Prahalad, C, & Rangaswami, M. (September, 2009). *Why Sustainability is Now the Key Driver of Innovation*. Harvard Business Review.

begin building momentum. Moving an organization towards sustainability is a process, an evolution that takes time.

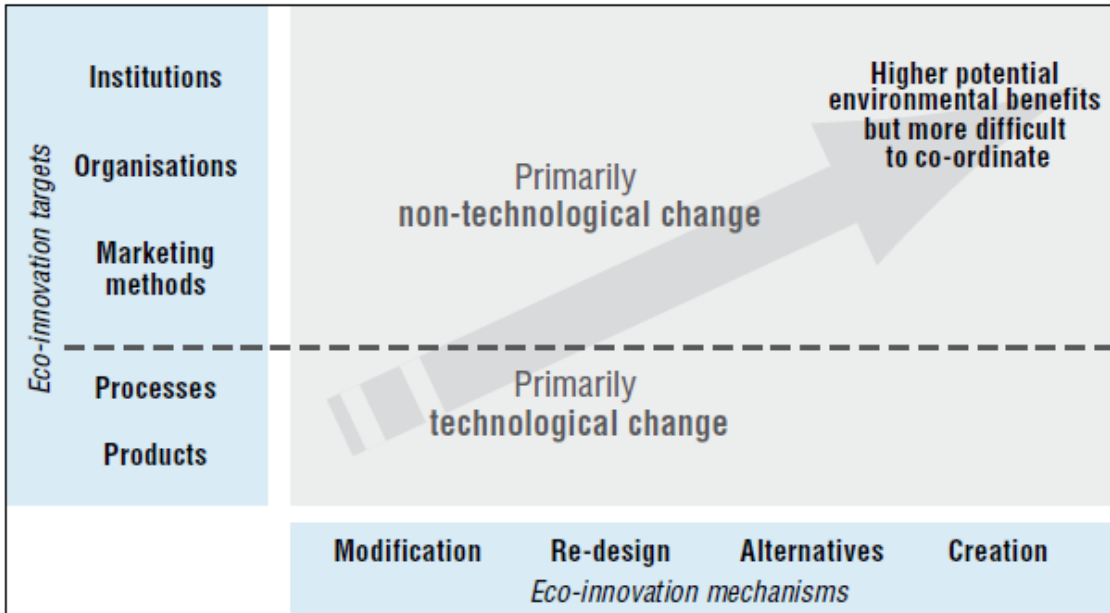


Figure 1 OECD “Eco-innovation Mechanisms”

Sustainability and the Workforce

Continued growth in consumer markets for sustainable goods and services, and the ongoing application of sustainable business practices, are likely to drive new expectations among employers about employee knowledge and skills. For some employees, such as production workers who are already applying lean production techniques, the changes may be relatively minor, requiring incremental adjustments and upgrade training in the use of new technologies or techniques that help to achieve higher levels of sustainability. For new employees or incumbent workers for whom sustainable goals or practices are relatively new, the learning curve may be dramatic and require considerable preparation and training in the theory, philosophy, principles and techniques of sustainability.

These requirements are also likely to vary by department and by level of occupation. Some engineers, managers and other professional-level employees may need to acquire extensive knowledge of certain facets of sustainability and the broader strategic implications of these initiatives, but less about the specific techniques used to achieve desired improvements in product quality or efficiency. Conversely, employees who are responsible for implementing specific production or process improvements may need direct instruction and time to develop expertise through the hands-on application of techniques that collectively enables an organization to achieve its sustainability goals.

Regardless of the job type or level of occupation, it seems likely that the larger the commitment to sustainability an organization makes, the more that employees will need to know about sustainability principles and methods, and how to apply them. As the use of these principles and methods expands, knowledge of specific systems and requirements will extend beyond the organization to customers, supplier networks, public agencies and competitors.

Sustainability initiatives also tie directly to the development of new technologies and work processes, since these innovations require a high level of awareness among employees about how their actions can affect the quality and even the properties of their work. Nanotechnology, for instance, requires interdisciplinary training in many fields rather than just one science.⁷ This same cautionary note can be logically extended to the application of sustainability practices and techniques, in which a broad, systems-level understanding of the social, technical and environmental context of the organization and its goals provides an integrated foundation for supporting and achieving sustainability goals.

Student and Employee Expectations

As employers and educators know, students graduating today have high expectations of the workplace; it is not enough that good-paying jobs are available. Employees are also looking for work that has a purpose in the larger world, and they tend to choose companies that share their values. Companies that are working to reduce their carbon footprint, improve the environment, or positively impact in their community by organizing volunteer opportunities for their employees, tend to attract a more stable workforce. A 2010 study by the Center for Creative Leadership showed that employee perceptions of an organization's commitment to community and the environment are linked to their own feelings of commitment to that organization. The higher employees rate an organization's corporate citizenship, the more committed they feel.⁸ Anecdotally, employers report that some workers are willing to forego some compensation in order to work for leaders who are committed to sustainability.⁹

Connecting Sustainability Practices and Workforce Education

There are three primary ways that colleges can play a role in building sustainability skills in the future workforce:

- Using the college's facilities as a "lab" for sustainability is a good way to role model good practice for their students and local communities. Many of Washington's colleges are already working to increase efficiency within both their facilities and their operations.
- Offer specialized programs. Currently, many of Washington's colleges offer degree and certificate programs, especially in the energy field, that have sustainability features built into the curriculum. Examples include Edmonds' degree in Sustainability, Cascadia's

⁷ *Societal Implications of Nanoscience and Nanotechnology*, Section: Implications of Nanoscience for Knowledge and Understanding (Pg 110) <http://www.wtec.org/loyola/nano/NSET.Societal.Implications/nanosi.pdf>

⁸ Center for Creative Leadership - <http://www.ccl.org>

⁹ <http://www.sapsustainabilityreport.com/sustainable-workforce>

Environmental Technology & Sustainable Practices program, Centralia's Energy Technology programs, and Bellingham Technical College's Sustainable Energy Certificate.

- Infuse sustainability principles and practices into the curriculum for all Workforce programs. For liberal arts curriculum, there is a project at the Washington Center for the Improvement of Undergraduate Education that is focused on helping faculty to integrate sustainability into curriculum.¹⁰ Such a focused initiative is not yet available for Workforce programs.

A review of Washington's colleges' websites revealed that there are many colleges that have included sustainability into their core mission or value statement. It is less clear how many colleges would be able to confirm that sustainability is informing their culture, or the extent to which sustainability is part of all of their programs. It appears that some colleges are making great strides that their websites do not yet reflect. In other cases, the websites portray advanced initiatives, but closer study shows that initiatives are still in a development phase.

Sustainability: A New Basic Skill?

Incorporating sustainability practices into curriculum and classroom experiences may be part of the "new basics" that is required for all students. In 2005, the United Nations declared 2005 – 2014 the Decade of Sustainable Education. Recognized internationally as the skill set needed to move the world's economies forward, a series of initiatives are underway. According to the UN:

Education for Sustainable Development is a visionary approach to education that seeks to help people better understand the world in which they live, and to face the future with hope and confidence, knowing that they can play a role in addressing the complex and interdependent problems that threaten our future such as poverty, wasteful consumption, environmental degradation, urban decay, population growth, gender inequality, health, conflict and the violation of human rights.

The goal of the UN Decade of Education for Sustainable Development is to have this vision of education integrated into education plans at all levels and all sectors of education in all countries.¹¹

Various Sustainability Initiatives and Reporting Requirements

The American Association of Community Colleges (AACC) officially adopted the United Nations' resolutions for global sustainability. By aligning with the UN's Decade of Sustainable Education, the AACC is encouraging its member institutions to develop approaches that enable people to develop the knowledge, values and skills to participate in decisions that will improve the quality of life now without damaging the planet for the future.

¹⁰ <http://www.evergreen.edu/washcenter/project.asp?pid=62>

¹¹ http://www.unesco.org/education/tlsf/TLSF/decade/uncomESD_FS.htm

Colleges and universities around the country created an Association for the Advancement of Sustainability in Higher Education (AASHE).¹² This organization is founded on the idea that education has a responsibility for training the workforce of the future, for whom sustainability skills are essential. Currently, about one-third of Washington's two year colleges and three of the state's university's are participating members in this organization.

Thirteen of Washington's college Presidents signed on to the American College and University Presidents Climate Commitment which is a result of work by AASHE. By signing, they are agreeing to a document which includes this text:

Campuses that address the climate challenge by reducing global warming emissions and by integrating sustainability into their curriculum will better serve their students and meet their social mandate to help create a thriving, ethical and civil society. These colleges and universities will be providing students with the knowledge and skills needed to address the critical, systemic challenges faced by the world in this new century and enable them to benefit from the economic opportunities that will arise as a result of solutions they develop.

We further believe that colleges and universities that exert leadership in addressing climate change will stabilize and reduce their long-term energy costs, attract excellent students and faculty, attract new sources of funding, and increase the support of alumni and local communities.¹³

As signors of this Commitment, colleges are required to submit detailed reports that track colleges' sustainability progress across several dimensions, including curriculum development and research tied to sustainability education and integration.

Washington's colleges are also required to submit a Greenhouse Gas report and subsequent Climate Action Plans to the Department of Ecology as required since 2009 by RCW 70.235.050 and RCW 70.235.060. This state law requires all state agencies, including colleges, to significantly reduce greenhouse gas emissions below 2005 levels over the next 40 years, with regular strategy, methodology and results-based reporting requirements that will include research and the provision of compliance data by individual institutions.

Sustainability Initiatives Add Up

While the colleges are not lacking in organizations to join or reports to file that reflect a growing requirement or commitment to support sustainability initiatives and related educational programming, active participation in these organizations and practicing

¹² <http://www.aashe.org/>

¹³ <http://www.presidentsclimatecommitment.org/>

sustainability internally does require new investments of time and resources: membership fees, data collection and analysis, report preparation and local implementation activities which all have implications for resource allocation, staffing and coordination that can be an added burden on these institutions, especially in the current economic climate.

Washington's colleges may benefit from reviewing the cumulative cost of joining these various initiatives and the staff hours required to comply with the reporting. There may be benefits and savings to working collaboratively as a state. Currently, signatories to the Presidents' Climate Commitment pay \$1000 - \$3000 (varies based on institution size) per year. To access STARS, the reporting tool provided by AASHE, colleges pay \$900 annually in addition to their \$260 - \$510 AASHE membership. These fees do not take into account the cost of the staff time spent on each of the 34 campuses to prepare these multiple reports.

Regional Sustainability Example

In the Spring of 2006, Maricopa Community Colleges, a system of ten colleges in Arizona, began a sustainability initiative that was adopted by all ten colleges. This initiative is designed to be implemented into all disciplines. Beyond the forecasted demand in green jobs and sustainability positions, Maricopa is committed to producing graduates that are educated in sustainability principles so they will be in position to make informed decisions on social, environmental, and economic issues they will face no matter what field they go into:

The Maricopa Sustainability Initiative is a cross-disciplinary program that recognizes that our students need to be appropriately educated to make informed choices on the social, environmental and economic issues facing us today. The goal is to answer the call to prepare our students to meet the needs of the present and improve the quality of life for us and for people around the world without jeopardizing the future.¹⁴

In addition to infusing sustainability into curriculum in all disciplines, Maricopa's initiative also encompasses intentional professional development for faculty and staff. The colleges are committed to purchasing socially and environmentally responsible products, building and renovating facilities sustainably, and to developing sustainability-related service learning opportunities for students.¹⁵

¹⁴ <http://www.maricopa.edu/workforce/energy.php>

¹⁵ <http://mcli.maricopa.edu/sustainability>

Washington Examples

All 34 of Washington's Community and Technical Colleges have some sustainability initiatives underway. Here are a few examples:

Everett Community College has a commitment to Sustainability in their mission statement. Putting that mission into action has been an iterative process that requires implementation and evaluation. In December 2010, three staff members at Everett Community College published a report that compared the efficacy of short term certificate programs focused on green or sustainability skills, full ATA green or sustainability degrees and infusing sustainability and efficiency into a broad spectrum of programs. After talking with educators and industry representatives¹⁶, the report came up with several policy recommendations for the college. While the study recommended that the college not offer short-term green certificates because current job opening require a more comprehensive education along with "green" expertise, the study goes on to recommend a broader infusion of sustainability into a range of programs:

- Incorporate sustainability and energy conservation into courses and programs whenever and wherever relevant and applicable.

As the Everett researchers noted, "Living in a world with fewer resources and increasing demand on those resources requires a shift in perspective. In this sense, appreciating and practicing greenness is a value, even an ethical imperative." They further asserted that faculty could follow this policy recommendation without compromising academic or professional/technical outcomes.

In 2010, students in Phi Theta Kappa at Centralia College participated in an energy audit of the Student Services Center organized by the Pacific Northwest Center of Excellence for Clean Energy. The project was facilitated by first year Energy Technology faculty. Many of the students who volunteered to participate were enrolled in one of the college's energy programs so they were able to use the project both as a lab situation to enhance their classroom learning and to share their expertise with other student participants who were not energy students. The audit targeted lighting, computers/printers/copiers, doors, windows, insulation and the over-all seal of the building envelope. Findings were organized into no-cost, low-cost, and high cost recommendations that were presented to the President. In this case, the energy audit project used the college facility as a lab for the energy students, provided opportunities for the broader campus community to get involved in discussing and working towards sustainability, and resulted in recommendations for energy efficiency retrofits for the building that will lower the use of electricity and produce an overall costs savings.

¹⁶ Plastics Foodservicing Food Group, Owens Corning, EarthShift LLC, Herman Miller, Kimberly Clark, Kraft Foods, McKinstry, SM Stemper (architects), SRG (architects), Snohomish County PUD

The Greenforce Initiative, a collaboration between Jobs for the Future and the National Wildlife Federation, recently announced funding for six regions of the country and Seattle was one of them. The Initiative has two goals: Strengthen workforce development and sustainability practices at community colleges; and Support community college “green pathways”—not simply green jobs—for low-skilled adults. South Seattle Community College is taking the lead and they intend to use the funding to work in partnership with Northwest Ecobuilding Guild to work with subject matter experts who are engaged in “deep green” residential construction and retrofits (lighting, water, site location, building envelope, energy, etc.) to develop training for incumbent workers in residential construction and remodeling.

In June 2010, the Construction Center of Excellence collaborated with Sellen Sustainability to offer a train-the-trainer summer institute called Green Collar Workforce. The Institute provided an in-depth, 16 hour course to twenty-five professional/technical and state approved apprenticeship instructors. The course delivered industry-based, relevant, builder specific content to instructors to be integrated into their teaching. The Institute delivered core concepts that reduce environmental impacts; explained adjustment in skills and synergies between trades required to successfully install new green building systems; inspired and pragmatically equipped instructors to prepare students for new project delivery methods associated with the green building industry; offered meaningful information applicable to different skill levels and sectors; and leveraged the “Green for All” philosophy.

In 2010, the Aerospace and Advanced Manufacturing Center of Excellence conducted a study of workforce development and sustainability in Advanced Manufacturing. Through a focus group with employers, the study concluded that the demand for sustainable products and services is growing in response to changing consumer preferences. Employers recommended that sustainability principles be infused into colleges’ curriculum. They specifically requested that colleges collaborate on their curriculum and expand their use of programs designed in modules. As a result, the Center of Excellence has become the hub for all manufacturing curriculum in the state and is in the process of implementing a stackable certificate program endorsed by the National Association of Manufacturers (NAMs).¹⁷

Conclusions

The findings presented in this paper suggest that the momentum initially sparked by the United Nations’ focus on sustainability in education has grown rapidly. Educators across the nation have been intensely developing sustainability initiatives, programs and curriculum since at least 2006, and it seems likely that these initiatives will continue to grow in scope and importance. While all educational institutions can benefit from the many operational efficiencies and

¹⁷ For complete report:

<http://www.energy.wsu.edu/Documents/Advanced%20materials%20manufacturing%20and%20sustainability%20FINAL%206-30-10.pdf>

improvements that sustainability initiatives impart, the focus on sustainable action has quickly evolved to include all facets of the triple bottom line—economic, social and environmental.

Similarly, the targets of sustainability at many colleges have naturally expanded beyond operations to address the core business of these institutions: educating students. Colleges and college systems that fully embrace sustainability principles are working to design and implement educational programs that integrate sustainability concepts and techniques across disciplines. They are promoting and supporting professional development for instructors and staff to encourage integration of these principles into the curriculum to impart an appreciation of the inherent value of sustainability, but also as a practical skill that can enhance student career options.

It seems clear that industry and consumers are driving this trend, shaping demand and behavior in ways that is compelling educational institutions to take action. Colleges can be responsive by offering programs that ensure that graduates have the green skills required by employers and the knowledge necessary to be thoughtful citizens and consumers. And, while Workforce Education programs and their students will benefit from infusing sustainability principles into the curriculum, at most colleges this work is just beginning.

While most colleges are involved in moving their building and operations toward greater efficiency, and many have specialized programs in energy and sustainability, not many colleges have focused on infusing sustainability into Workforce Education as a whole. Fortunately, most colleges have some programs that already have sustainability principles built into them, and there are already curriculum models and faculty expertise available to help implement sustainability into a broader range of programs. The natural connections that exist between college workforce education programming and sustainability principles provide a good foundation for additional work to drive sustainability deeper into the mission of institutions and as tangible targets for student learning outcomes.

Looking ahead, it seems likely that Washington's two-year colleges will continue to pursue sustainability through internal operations and by imparting sustainability principles and techniques to students through educational programming. Because of its natural connection to industry and employers, most of whom are already applying sustainability concepts in their organizations, demand already exists for college workforce education and training programs that can raise student awareness about the importance of sustainability principles while also teaching them how to apply these techniques in their chosen careers. Yet, as this report notes, in the current economic climate one of the challenges colleges now face is how best to cover the costs associated with supporting the institution's sustainability agenda.

Discussion Points and Potential Action Steps

This paper is intended to provide a framework for Workforce Education professionals to have a conversation about infusing sustainability more broadly into their programs. In Washington State, initiatives are underway, regulations are in place, and there is a growing demand from

industry and students for Workforce education programs that include and teach sustainability concepts and practices. Some useful starting points for this discussion are offered below:

- **Explore savings from ‘sustainability collaboration’ among colleges and stakeholders.** Greater collaboration can help to identify best practices, leverage existing resources, meet reporting requirements, and reduce the expense of participating in multiple sustainability initiatives. Using existing resources wisely and reducing the administrative burden of complying with state laws will enable institutions to focus on expanding current sustainability activities and maximizing impact. Collaboration between institutions, individual programs, stakeholders and staff can help identify new opportunities for sharing resources and best practices that can accelerate progress and enhance outcomes for institutions and the employers, students and communities they serve.
- **Provide training on sustainability concepts and methods to faculty across all Workforce programs.** In order for faculty to support and advance sustainability through their programs they must achieve a fundamental level of knowledge and skill that will enable them to identify and integrate sustainability into their teaching. This common foundation of knowledge will promote a shared understanding about the importance Washington’s colleges attach to sustainability in operations and in the classroom, and promote the sharing of information and expertise among programs and staff.
- **Connect faculty to industry partners to ensure that current, relevant sustainability information is available and continues to be part of the curriculum.** Although the basic concepts that support sustainability have remained fairly constant, the strategies and techniques for achieving these goals continue to evolve. Staying current with trends in any workforce discipline should also include updates for sustainability as well. Knowledge of these universal trends and the implications will also help bridge the divide between academic transfer and professional-technical programs.
- **Identify Workforce Programs that are most ready for sustainability to be in the curriculum and develop new courses and modules as needed.** In order to maximize the use of limited resources and the benefits for colleges and stakeholders, assessments of ‘sustainability readiness’ should be conducted by colleges to determine whether the necessary leadership, resources and stakeholder support exists to generate the desired outcomes. This exercise could also be conducted on a system-wide level to identify common areas of interest, support and resources that can be targeted to launch programmatic changes and achieve results across institutions and program areas where sustainability is a high priority.