

Teaching Sustainability Through Problem Based Learning Communities

Professional Development for the Teachers of
Tomorrow's Green Economy Technicians

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Outline

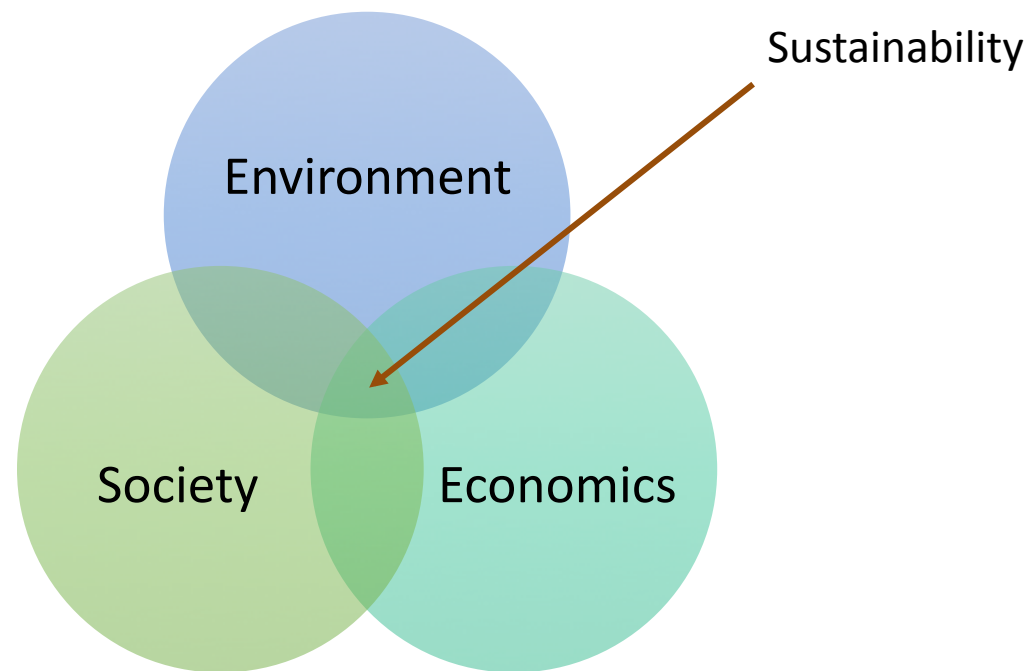
- Overview of recent observations regarding the "green economy"
- Our approach to training technicians for the new green economy
- Successes & challenges with our 1st cohort
- Plans for our next workshop

The Green Economy



- The “green economy” is growing
- Sustainability is being integrated into existing jobs
- New green job sectors of the economy are limited
- Industries in the Spokane region highlighted many sustainability skills gaps
- We feel these skills gaps can be addressed by teaching sustainability through integrated curricula and problem-based learning.

Sustainability



Traditional STEM Courses

- Specialized knowledge
- Problem solving
- Analytical thinking
- Ability to work independently



Spokane Area Workforce Development Council Initiative



- Initiative started as an attempt to create a consortium centered on Clean-Tech companies and their future workforce needs
- Defining Clean-Tech companies was difficult
- Companies involved represented many industries and finding commonality among them was even more difficult
- One commonality did start to emerge – the value placed on sustainability
- Clean-Tech Workforce Summit entitled “Sustainable Skills – Building the 21st Century Workforce.”

Sustainable Workforce Needs: Sustainable Skills



- Communication
- Analytical & Research Skills
- Computer / Tech Literacy
- Flexibility
- Interpersonal Abilities
- Leadership
- Multicultural Sensitivity
- Planning and Organizing
- Problem Solving
- Teamwork

<https://vimeo.com/54534878> (10:54)

Initial Concept



- Interdisciplinary learning communities centered around the theme of sustainability.
- Would allow students to earn general education requirements, while developing knowledge and skills in sustainability
- If students could earn a sustainability certificate in the process, it could make them more marketable with sustainability-minded businesses

NSF ATE Program



- Funding for research and education in 2-year STEM tech pathways

Our Approach

- Provide teacher training in STEM tech pathways
- Sustainability training
- Learning community training (interdisciplinary teaming)
- Problem-based learning
- Facilitate business partnerships



1st Cohort Successes

- Eight pairs of teachers
- Pre- and post-workshop surveys suggest that participants
 - improved their knowledge of STEM technician opportunities
 - improved their knowledge of sustainability
 - enhanced their problem-based learning community pedagogy.
- “How competent do you feel in developing integrative assignments with sustainability outcomes?”
 - Pre-workshop mean: 4.22
 - Post-workshop mean: 8.00
- “How would you rate your understanding of problem-based learning (PBL)?”
 - Pre-workshop: majority had limited or some understanding of PBL
 - Post-workshop: majority had a strong understanding of PBL

1st Cohort Challenges



- Participation in the online sustainability component was weak for various reasons, so some of the workshop was dedicated specifically to sustainability training.
- Due to weak online participation, many systems thinking components were removed from the workshop.
- Some teams had difficulty maintaining business partnerships.

Adjustments for 2nd Cohort



- Replace the Canvas LMS for online content delivery with a newsletter and blog
- Make better use of existing online materials for problem-based learning
- Integrate the learning community and problem-based learning components over three days
- Provide participants more time to develop their projects
- Proactively facilitate communication between teaching teams and business partners

The Next Workshop

Dates: June 19-23, 2017

Time: 8:30 a.m.– 4:00 p.m.

Location: Spokane Falls Community College, Spokane, WA

SpokaneCenterForSustainability.org



Acknowledgements



- The proposal for this work benefitted from the feedback of Mysti Reneau, Nancy Szofran, Barb Anderegg, and Elaine Craft. The PIs were part of the first SCATE Mentor-Connect cohort. Input and assistance from Laura Vickers of Avista Utilities was invaluable during project execution.
- This material is based upon work supported by the National Science Foundation under Grant No. DUE-1400699.
- Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.



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