

Bioenergy Education Initiative at Oregon State University

USDA-NIFA. 2011-68005-30407. "System For Advanced Biofuels Production From Woody Biomass In The Pacific Northwest". Regional Approaches to Sustainable Bioenergy Regional Coordinated Agricultural Project (CAP). PI Rick Gustafson, University of Washington.

Oregon State University



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Bioenergy Education Team

Oregon State
UNIVERSITY

Program Staff

Kate Field: Program Leader

Darlene Russ-Eft: Evaluation

Jay Well: Program Coordinator

Darr Tucknott: Advisor

Renee O’Niell: SMILE Coordinator

Ryan Collay: SMILE Director

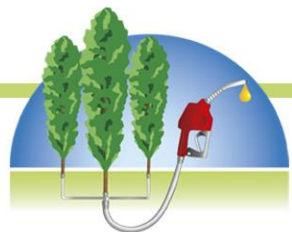
Graduate Students

Micki Halsey Randall: Ph.D., Science
Education

Laia Robichaux: Ph.D., Environmental
Science

Adam Talamantes: Ph.D., Science
Education

Jenny de la Hoz,: Ph.D., Science
Education

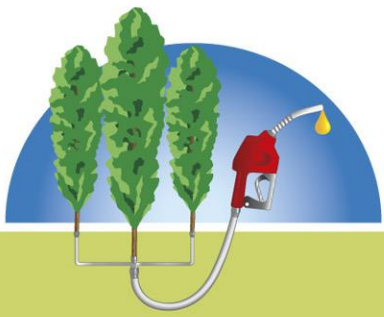


Advanced **Hardwood Biofuels** Northwest
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AHB BIOENERGY EDUCATION PIPELINE:

- Family and Community Programming
- Pre-College Programs
- Community and Technical College Workforce Development
- Bioenergy College Transition Program
- Undergraduate Bioenergy Education
- Masters-level Programs



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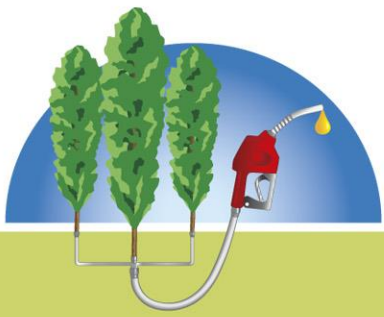


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Bridge Into College

Oregon State
UNIVERSITY

Design: 14-day residential Bioenergy College Transition program

- Assists minority, first generation college students with their transition into college
- Authentic experiences mimic the rigors of college classes, connects students to academic resources to increase their retention and success
- Focused on bioenergy concepts, real world applications and careers
- Connects students directly to bioenergy research and researchers

Delivery: 11 students in 2012, 24 in 2013 and 32 in 2014



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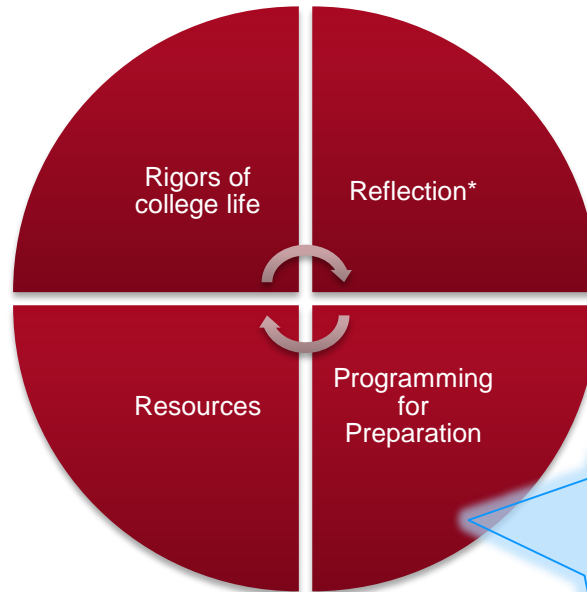
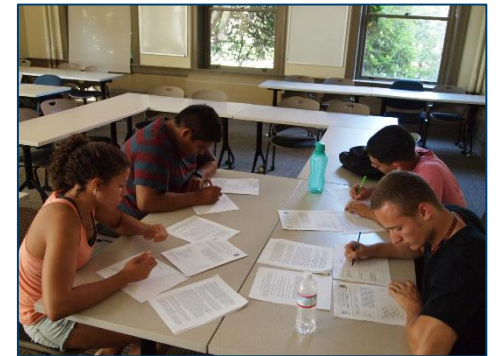
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Experiential Education Philosophy

Authentic Experiences & Content in Context



High expectations*
 Timely feedback*
 Peer assessment
 Mentors
 Social support



Week 1: Acclimate Students

Goal: for students to develop a connection to OSU and to campus resources as they are adjusting to college life within a supportive community.

- Resource scavenger hunt
 - Video and PowerPoint presentation to peers
- Informational meetings with cultural centers, student resource groups (TRIO, EOP, CAMP), financial aid office, academic centers, health center (mental, physical, and sexual), and discussions with previous Bridge students and OSU president Ed Ray.
- Skills: videography, interviewing, presentation, use of campus email and online programs, classroom technology, and collaboration.





Week 2: Engage in Research

Goal: for students to develop an interest in bioenergy and an awareness of bioenergy research on campus, while engaging in authentic research activities. As well as an awareness, of their own academic strengths and weaknesses.

- Bioenergy Research Project and presentations related to student interests (social, economic, or technical)
 - Visit research labs on campus related to bioenergy
 - Conduct a literature review and compose an annotated bibliography
 - Reports findings and insights in a PowerPoint presentations to peers, and **then to parents**
- Social research survey on the public's understanding of bioenergy
- Skills: reading an academic article, literature searches, interviewing, survey design, presentation, communicating science to the public, academic writing, and collaboration



Evaluation and Impacts

Evaluation Team:

Darlene Russ-Eft

Micki Halsey Randall

Laia Robichaux

(publication forthcoming)

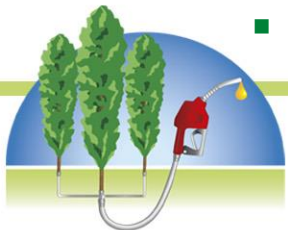




Program Goals & Evaluation

Evaluation is focused on these program goals:

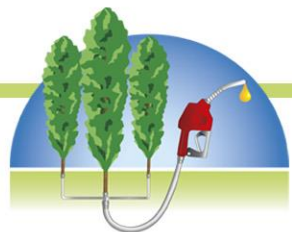
- Students will gain tools and strategies supporting academic success
 - Gain skills and knowledge that will support their study skills and work habits
 - Goal setting
 - Time management
 - Study skills
- Students will learn about a number of research programs at University
 - Learn about Bioenergy science and research at University
 - Think critically about the role of programs, research, and higher education in addressing society's challenges
- Students will access programs that will support their transition to college
 - Learn about the available resources for student success





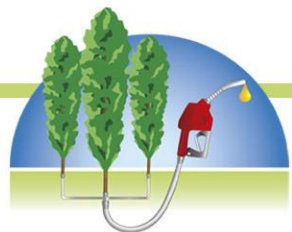
Evaluation: Sample Size

Demographic	Students 2013 (N = 24)
Ethnicity	
Hispanic	16
Asian	2
African American	1
Pacific Islander	1
Low-income White	1
Multiple Ethnicities	2
Gender	
Female	12
Male	12
First Generation College Students	16



Evaluation: Survey Design

- Qualtrics online survey software
 - Combination of open ended questions and Likert questions
 - University of Chicago's SMART goals
 - Dartmouth Academic Skills Center
 - Huffington Post 9 Awesome Study skills
- Pre-Post and Delayed
 - Currently administering delayed
- Analyzed Pre-Post responses using a paired T-Test
 - Alpha .05



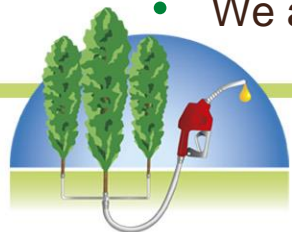


Importance of Social Relations

Perceived percentage of time afforded each activity in order to be successful in college
(N=24)

Activity	Pre-Program	Post-program	t	p-value
	μ	μ		
In class	26.04	25.64	-0.60	0.56
Studying/Homework	37.16	37.20	-0.79	0.44
Work	9.76	9.76	-0.28	0.78
Friends/Social	10.16	13.36	2.27	0.03*
Relaxing/Hobbies	12.08	12.52	0.02	0.98
Other	0.80	1.65	1.41	0.17

- Increase from 10% to over 13%
- Spending time with friends and meeting new people was a consistent theme throughout the analysis.
- Social Integration to the campus community is integral to student success in college.
- We are unsure if the social desire is a direct result of the Bridge program



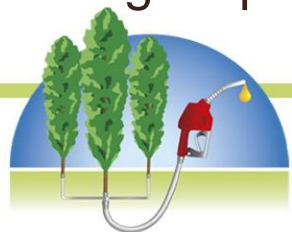


Importance of Goal Setting

Results regarding planning and studying (N=24)

Question	Pre-Program μ	Post-Program μ	t	p-value
Do you put daily plans on paper (or equivalent electronic device)?	3.13	3.8	3.82	<0.01*
Creating a daily list/plan	3.63	4.04	2.46	0.02*
Invigorate yourself	3.29	3.72	2.32	0.03*
Take a break	3.46	3.96	3.71	<0.01*
Taking breaks during studying	3.79	4.28	2.14	0.04*

- Students' perceptions of putting plans on paper and creating a daily plan or list increased in importance.
- Students viewed taking breaks and invigorating themselves during goal planning and study times as more important after the program.



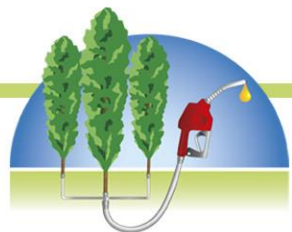


Increased Interest in Bioenergy

Although not significant, student interest in bioenergy increased from 39% pre-program to 64% post-program

Indicated level of interest in Science (N=24)

Subject Area	Pre-Program μ	Post-program μ	t	p-value
Science (biology, chemistry, etc.)	3.96	4.28	1.78	0.09
Technology	3.67	3.80	0.89	0.38
Engineering	3.13	2.88	-1.74	0.10
Mathematics	3.17	3.20	0	1



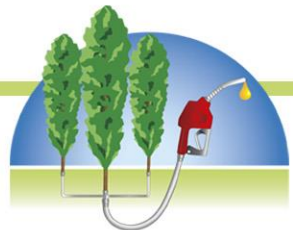


Difficult to Communicate Science

What do you think are some of the challenges when it comes to communicating science to the general public?

Response Category	n=24
Vocabulary/Terminology	12
Accessibility/Understandability	9
Interest	7
Preconceived Ideas	1

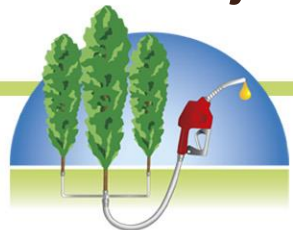
“Some challenges are explaining in scientific terms and translating them in a way the public will fully understand” (Vocabulary/Terminology).





Future Evaluation & Challenges

- Delayed survey analysis
 - Will help to elaborate on the role of social support provided by the Bridge.
- Tracking the 2013 and 2014 Bridge students
- Historical study comparing past bridge participants to other Oregon State students by demographics
- Increase student interest in Engineering by adjusting Bridge programming.

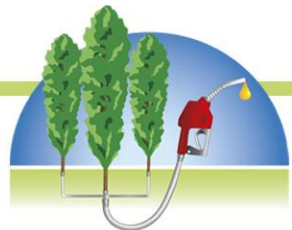




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Thank you!
&
Questions



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