Center for Research on Lifelong STEM Learning

Broader Impacts: Towards a Strategic Approach for Oregon State University

Julie Risien and John Falk

STEM: Science, Technology, Engineering and Mathematics

Introduction

The OSU Center for Research for Lifelong STEM Learning with support from the OSU Research Office and in collaboration with OSU Outreach and Engagement, convened a "Broader Impacts Invitational Workshop" in December 2012. The workshop solicited opinions and perspectives from 65 participating faculty who were broadly representative of OSU's diverse disciplines and units. The goals of the workshop were 1) to move OSU towards a more strategic and intellectually rigorous approach to broader impacts (BI) and 2) identify the specific tools and supports investigators and units need to effectively design, implement and evaluate quality BI efforts.

Campus-Wide Workshop

The December 2012 invitational workshop was organized to allow participants to grapple with the issues surrounding BIs at OSU. The morning hours were devoted to defining the current opportunities and challenges of designing and implementing BI efforts at OSU. The afternoon hours were spent trying to envision scenarios for moving forward and defining strategies for the future of OSU BIs.

Above: Student participating in OSU STEM Academy PreCollege program.

Left: Family exploring the touch tanks at OSU's Hatfield Marine Science Visitors Center.

Opportunities

There was striking unanimity of opinion around the current opportunities for BIs at OSU; these fell within three broad categories:

1. Supporting OSU's Mission as a Land Grant University.
2. Positioning OSU for Success.
3. Supporting the OSU Strategic Plan and Research Agenda.

Challenges

Workshop participants identified three major areas of challenge.

Culture and Reward

Participants emphasized a cultural imbalance present at many research universities. It's the tendency to value discipline specific scholarship and publishing over (rather than in balance with) generating positive impacts, engaging the public in research, and the types of collaborative approaches that make for successful BIs. This culture exists to some degree at all levels and most strongly manifests in promotion and tenure processes. Providing incentives for early career faculty successfully engaged in BIs is a recommended course of action for incremental change.

Capacity and Tradeoffs

Participants recognized dedication of time and resources to BIs implies a direct tradeoff with research and teaching. They invite a streamlined infrastructure to assist with BIs, but cautioned against introducing bureaucracy or stifling innovation.

Connections and Maximizing Existing Capacity

Faculty find it difficult to make and maintain connections with partners (units, programs and people connected with OSU or distinct from OSU). In general faculty do not have the tools to choose partners that match their BI needs. Partners emphasized difficulty responding to investigators on short notice often after a project is designed. The most successful BI efforts are likely to be those which are integrated into research and identify partners early enough in the proposal process to allow co-design of the project.

Left: As honeybees decline OSU researchers are working to help blueberry and clover farmers attract native pollinators.

Below: OSU research and extension helped define technology and standards for the international surimi industry.

A Vision Statement

Another result of the workshop is this draft vision of BIs at OSU.

"At OSU *Broader Impacts* represents a commitment to insuring a constant connection between the intellectual enterprise of the university and an enduring obligation to providing public value; a commitment to using the vast resources of the university to help build a healthier planet, healthier people and a healthier economy for Oregon and the nation. This commitment to Broader Impacts is reflective of the values and principles set forth in the OSU Research Agenda and integrated into every facet of university life from research (both fundamental and applied), to teaching, to community programs, and outreach and engagement. Accordingly, the University has functional and efficient processes that provide all faculty members with tools, incentives, and rewards to maximize the realized benefits to society of their work. OSU actively works to make its activities transparent and benefits accessible to the communities it serves. OSU has created an integrated "triple bottom line" structure to support the goals of healthy people, planet, and economy that actualize OSU's strategic goal of solving society's most intractable problems. This triple bottom line involves the integration of "intellectual merit", "broader impacts" and financial sustainability."

Institutional Action

Institutionalization of BIs is already taking shape at OSU and is being driven by the OSU Research Office. Future activities are likely to include:

1. Establish a two-tiered steering committee that includes both those with administrative authority and faculty and staff active with BI planning and implementation who are proven agents of change.
2. Conduct an analysis of OSU's current strengths and weaknesses with regards to BI and refining our understanding of the opportunities and challenges identified at the workshop.
3. Create a blueprint of campus infrastructure, capacities, and partners for designing and implementing BIs.
4. Develop a short and long-term strategy for sparking institutional change, especially with regard to our refined understanding of our strengths, weaknesses, opportunities and challenges from step 2.

Right: OSU research is helping Oregon vineyards produce higher-quality grapes and a better bottom line.

Below: OSU investigators and Extension agents work together to better understand, predict and help communities prepare for Tsunamis.