



## Experiential Learning

### ***What “struck” attendees***

- Generational differences encountered by young people at employers with more traditional “green jobs”
- Significant risk aversion tendencies of undergraduates, who tend to gravitate toward “safer” careers (e.g., accounting, nursing) due to concerns (often shared by their parents) about financial stability
- Environmental issues involve “unstructured” problems; it’s a challenge to help students become more comfortable taking on such problems
- “Green careers” do not always offer a clear linear path like others (e.g., doctor, lawyer)
- Rapid expansion of “intersections” between environmental concerns and new business opportunities
- There’s sometimes a gap between what students perceive as environmental issues and pressing environmental issues in the “real world”
- Increasingly, agencies are feeling “dumped on” by higher educational institutions seeking internships for their students
- Everyone is devoted to making this happen
- The issues are different at small, private schools than large, public universities
- Due to the economic downturn, paid internships are being reduced and/or converted to non-paid internships; some students are too discouraged to look for internships and jobs

### ***Ways to address challenges through experiential learning opportunities***

- Make clearer connections between “careers” and “majors.” Suggestion: bring in employed alumni at major declaration time to help students see the connection
- Help potential employers “see” potential interns and employees outside the context of the “job interview” by inviting them to public displays of their work

### ***What deserves more conversation, action, and/or follow-up***

- Ways to get larger numbers of students involved earlier in their undergraduate years so that relationships with agencies don’t just involve individual student interns, but true, multi-faceted educational partnerships that engage faculty and their classes more directly and often, and give more experienced students the opportunity to assist their peers through “bootstrapping”

- Finding more opportunities, especially paid ones, for students to complete experiential learning, including ones that students with limited transportation means can complete
- Need to develop better ways to convince employers to offer experiential learning opportunities, possibly including ways to offset the costs, and then train employers to ensure a quality learning experience
- Funding of experiential learning opportunities, especially technologically-focused opportunities such as the electrification of vehicles, since the cost of education goes up significantly—from increased materials costs to a need for more faculty to cover the additional work and make sure enough classes can be offered
- How to make experiential learning more systematic and with a collaborative and effective infrastructure to ensure maximum efficiency, especially for employers, who are irritated by numerous people from different schools contacting them
- Change the way faculty is evaluated to include outreach to the community, which is a critical part of any experiential learning program, as faculty need to have relationships off-campus; determine ways to prevent faculty burn out related to service learning – the number one complaint – because they have to do the majority of the work
- Prepare students better before they go out into the world
- Determine different ways to provide experiential learning opportunities on-campus related to environmental sustainability

## Curriculum Alignment

### ***Discussion Highlights -***

- Educational institutions have internal processes to ensure that new programs don't encroach on other departments and/or programs
- Best way to ensure alignment with market demand is to engage in closer collaborations with business and industry to elicit specifics about skills and specialized knowledge then to tailor programs accordingly
- Inter-institutional collaboration mechanisms important to avoid duplicative programs, certificates, curricula, ( e.g., currently proliferation of "weatherization" and solar PV related curriculum at community colleges)
- Long conversation about the merits of a liberal arts education; training students with sustainability principles such as integral and whole-systems perspectives, critical thinking capabilities and ability to navigate ambiguity and dynamic industries and occupations is among the bedrocks of liberal arts degrees— combine this foundation with certificates that offer the flexibility to provide specialized skills and knowledge that keep pace with changing marketplace.
- Provide occupation specific training and credentialing and create graduates who are also skilled in enabling the organizational and systems change that sustainability and the green economy requires
- Tension that sustainability reveals between generalist content and the specialists such as the sciences and economics fields. Interdisciplinary approaches seem to gaining ground
- Need to promote environmental citizenship knowledge as well as occupation specific training and education

### ***What resonated -***

- There is currently a significant disconnect between business and academia; this has been going on for at least four decades and has contributed to the current economic situation
  - The proposed solution would include developing an engaged advisory council for colleges and universities that is populated with business leaders, entrepreneurs, researchers and college curriculum advisors
  - This group would be responsible for discovering real needs from the business community and then design a curriculum based on problem solving tasks associated with those needs

- This would create an environment in which students would be working on real world problems and when they graduate they would have very relevant and timely skills
- There is a need for students to have a “school of hard knocks” experience
- Educators sense a growing sense of entitlement from the students, who view themselves as the client and expect the college to teach them
- The concept of mentoring was discussed with universal agreement that one on one face time with teachers and educators is critical
- The analogy was made with the traditional trade training model that includes a period of apprenticeship, journeyman status, and after a significant period of time a tradesman could earn the title of master; this would require a significant commitment between the teachers and the students and some form of a scheme that would allow students to mentor other students to ramp up capacity to meet need

***What deserves more time –***

- Developing a method to speed up the process for curriculum change; the needs are evolving almost daily and the curriculum needs to be adjusted at least once per year—this is currently a stretch for most programs
- Recruitment of industry leaders: this would include entrepreneurs and researchers working on innovative process; this will be difficult because these people are tough to recruit
- Ongoing integration between business, schools and colleges and students; this is critical to truly serve as a conduit between innovation and business

## Research/Tech Transfer

### ***Discussion Highlights -***

- Problems with technology transfer
  - Universities have draconian approach
  - Private sector discouraged from investing in university research because schools will sell technology back to investor or third party
  - Forced to work under their bureaucratic terms – no flexibility
  - Private sector is afraid of losing control of technology
  - Universities need to do policy research to find ways to finance companies with great ideas – find other ways to measure the risks
  - Universities are often an obstacle to innovation because they want to take ownership
  - Changing funding models

### ***What deserves more time –***

- Need to think about biomimicry – taking design of nature and use it during the design process. e.g., how does nature transfer hydrogen across membranes.

## Pre-College Information

### ***Discussion Highlights –***

- Change from knowledge-based to creative thinking/project based learning (Current learning standards in education becoming obsolete; hinder creativity)
- Get out of classroom more (field trips, engaged learning through real assignment internships) and bring in credentialed guests from employment sector to engage students (not just lecture; exciting and interactive presentations)
- Expand college access outreach to include K-12 , parents, and community and incorporate sustainability messaging (College Caravan in more schools and settings where children gather; special outreach efforts for parents/community restaurants and clubs, festivals, home days, etc.)
- Encourage network building between employment sector, school districts, education/workforce development-focused organizations, and higher education to begin and maintain a dialog
- Develop internship process by which students serve several different internships related to environmental sustainability throughout their secondary education

career (variety of internship experiences foster potential for participation/buy-in/innovation by students)

- Understand that youth get information in ways outside the traditional box (incorporate this into development of innovative, effective college access and green-career information outreach efforts, and to provide students w/interconnected global perspective (rather than the current extremely limited view of this student population))
- Schools must develop relationship with employers to establish project based, interesting, and competitive experiential learning/ internship programs

***What Resonated –***

- Students need to be engaged early and often for both ES and college access.
- Lack of funding and support for outreach and ongoing programming
- Knowledge-based learning virtually obsolete (ineffective); paradigm shift to project-based learning needed
- Need to promote networking/partnership/collaboration concept; report successes
- Overwhelming nature of issues related to underserved students and the critical need for inclusion and need for parent/community outreach to build leadership/role models
- Each generation of students absorbs information differently and K-12 education need to change requirements and standards to accommodate (train educators in project-based learning; collaborate on creative curriculum across disciplines; collaborate w/employment sector; etc.)

***What deserves more time –***

- Discussion on expanding current STEMM (Science, Technology, Engineering, Math, Medicine) to STEMMS (add Sustainability)
- More discussion/working groups to learn about what others are doing in order to forge partnerships and collaborative relationships in this arena
- Need to educate students on how environmental sustainability impacts their lives and what they can do about it
- Identification of passionate people in the higher education and employment sectors who are willing to share their passion about ES freely with students
- Create a portfolio of sustainability experiences at each grade level; incorporate into curriculum and experiential learning