

It's All in the Teamwork: Global Change and Sustainability at the University of Utah



Ask anyone who is involved in current global sustainability efforts what the most important aspect of their work is, and nearly all of them will give the same answer: teamwork.

Global sustainability is an area of research that, by its very nature, requires the input of scientists and experts from virtually every discipline imaginable, and it was this idea that led to the inception of the Global Change and Sustainability Center [GCSC] here at the University of Utah in 2011.

“Many of the environmental challenges of today can not be tackled by an individual discipline,” said Jim Ehleringer, Director of the GCSC. “So the critical and essential feature of the GCSC and its affiliated research, is that it’s all about faculty coming together that need input from different disciplines in order to tackle each research opportunity. Building the bridges across colleges so that people get to know each other, and understand what each can bring to the table has led to the point that we are able to submit successful programs for research and training.”

Those programs have led to research in a number of areas of global sustainability ranging from international research into sustainable economic planning and development in places like Curitiba, Brazil, to studies of Salt Lake City’s air quality, and even environmental research and conservation along Red Butte Creek here on campus.

When it comes to addressing issues of global sustainability, there is no such thing as a simple problem. Whether it be a project dealing with water, climate, energy conservation, social justice and equity, or urban planning, every area of these sustainability issues come with their own series of complex issues that, according to GCSC Associate Director, Brenda Bowen, simply can't be addressed within any individual college.

“These problems are so big that one department or college can't simply say, ‘We're the sustainability college,’ even with a majority of their faculty working on sustainability,” Bowen said. “Because these are problems that span the natural sciences including biogeochemical cycles, decision making, infrastructure, policy and more, you need to have the overarching group coming together to address these things.”

This is where the GCSC comes in, not only as a concept of interdisciplinary research across campus, but a proven program that has gained a fair share of recognition for its efforts across the University of Utah.

The center initially started in 2011 with only 15 to 20 faculty from the colleges of social and behavioral sciences, engineering, mines and earth sciences, and law who came together in search of a way to connect their various fields of study under one common goal, global sustainability.

“Within the university we have gained the support of colleges across campus who were not interacting before. We have shown to our colleagues and to the administration that we can work for the common good on interdisciplinary issues and that we are not trying to promote one particular agenda over another,” Ehleringer said. “And I think by coming together we are able to show to the outside world that we have a stronger program than the program you might expect to see out of a single department or laboratory.”

The success the GCSC has seen since its inception has been dramatic. As of fall 2014, the GCSC has seen significant growth to include over 100 affiliate faculty, representing eight different colleges and a total of 18 participating departments.

With such a large, cross-campus initiative being undertaken, one of the most difficult aspects of working within the GCSC has been the breaking down of traditional academic practices. In particular the idea of many faculty, not only at the University of Utah, but within academia in general, becoming completely entrenched within their own field of study.

“You go to grad school, or you're a faculty or staff member, then your department becomes your home, and for many people, that's just where you choose to function. You don't really need to go outside of that because your expertise fits within that departmental home. Those are your students, your people, and your resources. In the end, so much of what we're trying to do is to get people to bridge outside of that,” Bowen said. “The center was started as a way to sort of bridge the colleges. There are often many institutional barriers that make things like teaching across colleges, or working with students across colleges, or even just getting funding across multiple colleges very difficult. So we are trying to overcome some of these institutional barriers.”

But what exactly does it take to break down those institutional barriers, and more importantly, why does it matter if we do?

According to Bowen the issue isn't so much the idea of bringing faculty together just to do more of their own work, but rather the significant gain to research that comes from the new interactions you obtain when you bring departmental experience from multiple sources all to one place.

“Obviously it's really important to have your own field of expertise because without that you have nothing to bring to the table to begin with, but it's taking that expertise and then meeting with other experts to say, ‘okay, now how can we really address some of these issues,’” Bowen said. “We're not trying to do something that any one of these departments would just be doing anyway. We're trying to do something where the whole is greater than the sum of its parts. In taking what each college and department has to contribute and bringing them together we can better address these sustainability issues.”

A local example of this synergy at work took place within one of Bowen's own classes. She teaches a number of geology courses here at the university in addition to her work as an associate director for the GCSC. The course led to an ongoing project revolving around Red Butte Creek here on the University of Utah campus.

The Red Butte Creek project started as a student led initiative three years ago. As part of a project based course here at the university, the students were interested in looking at Red Butte Creek as a potential subject for future research and possible restoration. They discovered that around 40% of students, staff and faculty on campus didn't even know that the creek existed despite the fact that it cuts directly across campus property from the Bonneville Shoreline trail to Foothill. Originally, the creek wasn't even on the university campus map.

“They wanted to learn more about it and explore what the responsibilities of the university were as stewards of that environment,” Bowen said. “Is it okay that the area is neglected, or is that a problem, and what could it be if it were used as a research opportunity for students and faculty? What could it be if it were used as an outdoor recreational space as part of the experience of connecting to the community? It seemed like a fairly underutilized resource.”

Her class then spent the next few years studying all of these things, and in particular focusing on problems such as shore degradation due to the severe amounts of storm runoff that pour into the creek from the university.

They've finally reached the point where they are looking into getting funding to restore areas around the creek.

“I think if you come back and look at this project in 10 years things are going to be completely different,” Bowen said. She shared hopes of seeing the creek act as a focal point for water and sustainability research for both faculty and students here on campus, as well as the potential it would have for environmental outreach to schools within the community.

The creek project is only one of the many successes the GCSC has seen through its collaborative efforts.

The importance of interdisciplinary research is not something that is campaigned for only by Bowen and Ehleringer, but by GCSC Associate Director Steve Burian as well.

Burian echoed many of the ideas Ehleringer said formed the foundation of the GCSC, and are really what drives the core of making the center such a successful initiative for the university.

“We’ve learned that there are great opportunities that are available if you can address issues from multiple disciplines with multiple perspectives. The synergy that you can gain through this is much greater than a single discipline, and that’s something that has been proven in a great many areas,” Burian said. “I think that [interdisciplinary work] is critical. I don’t think you can have as great of an impact if you don’t have this cross-institution interaction between disciplines, and that’s exactly what the GCSC facilitates. It’s so broad and so massive that it provides a major benefit.”

For many the idea of impact on such a large scale can be vague at best, or downright impossible to measure at worst, but one look at the numbers shows that the impact the GCSC has had both for students as well as in pushing critical research at the university is a lot more than simple lip service in favor of the program.

Since its inception in 2011, the GCSC has provided 36 full graduate fellowships, offered 43 student research grants totaling \$93,000, and 76 student travel grants totaling \$34,000.

These grants are funded directly through the GCSC through support from the central administration at the university, returned overhead on interdisciplinary, externally funded research projects, and more.

In addition to the number of graduate fellowships the GCSC offers to students interested in sustainability, the center has just begun work on a graduate certificate program in sustainability.

The 16 credit-hour certificate would provide graduate and non-matriculated students with a bachelor’s degree the opportunity to jump directly into the type of interdisciplinary work that makes the GCSC so unique.

“As an institution that is charged with educating the next generation of problem solvers, we would be doing our students a disservice if we did not offer them experience doing this sort of thing,” Bowen said. “I think people are realizing now, as we experience global change, and it not just some hypothesis that might take place in a hundred years, but rather something we are actually seeing now, this is something we need to think about. Especially here in institutions of higher education, where you are often at the forefront of this sustainability revolution, we need to be setting the standard.”

The benefits that GCSC extend to students here at the University of Utah extend beyond the research and travel grants they offer to students participating in sustainability research.

Ehleringer feels that the research opportunities and cross-disciplinary environment the GCSC places students in provides them with a distinct edge as they move into their professional careers.

“In the commercial arena and in the business arena afterward, having this interdisciplinary experience gives students an advantage because most of the environmental problems that are tackled today, whether they be environmental solutions or development, will require this idea of a multi-team approach,” Ehleringer said. “So we are better preparing our students for the job opportunities that are out there today.”

Beyond academia, the efforts of the GCSC extend into the future of our efforts in sustainability in regards to global change in general.

“As a result of population growth and globalization, the world is going to be changing at a faster rate than it has historically,” Ehleringer said. “So trying to understand and predict some of the consequences of these changes for the long term sustainability of a particular region is an important planning asset that people need to have to maintain long-term economic viability. At an international level, we provide an arena in which we can begin to help those parts of the world that are now developing and would like to learn how to develop sustainable societies while at the same time growing rapidly from an economic perspective.”

But with the terms like sustainability being bandied about as the latest buzzword among not only learning institutions, but governments as well and international interests, what sets the GCSC apart?

According to Bowen, one of the key efforts of the GCSC has been to specifically avoid making the idea of their work in global sustainability just another marketing push, but instead focusing on the bottom line: the results.

“At the GCSC we are really all about getting things done and are very solution oriented. There are a lot of people studying the problems related to global change, which is important, but we are very focused on the potential solutions while we continue to study the problems,” Bowen said. “With the collection of faculty that we have here that are working on these issues who are solution-oriented, creative and at the forefront of their fields along with the resources that the GCSC can provide, we are able to push our research in directions that traditional, discipline-focused groups would not have been able to reach.”

This core principle of solution-oriented, cross-disciplinary efforts is something that is represented by all of the projects that the GCSC is currently undertaking, and is something the Stephen Goldsmith, GCSC faculty affiliate and Associate Professor of City and Metropolitan Planning, feels is what makes the GCSC work so well.

“When I look for evidence of evolution, people who are advancing ideas for the sake of the whole, rather than the individual, groups like the GCSC exemplify this,” Goldsmith said. “I’m happy to do something with them whenever I can, and if trend is destiny, then the impact of the GCSC on campus will continue to be felt across disciplines where people work together as collaborators rather than competitors to solve the greatest problems of our time.”

