The Journal of Service-Learning in Higher Education is an online, international, peer-reviewed journal for the dissemination of original research regarding effective institutional-community partnerships. Our primary emphasis is to provide an outlet for sharing the methodologies and pedagogical approaches that lead to effective community-identified outcomes. The Journal of Service-Learning in Higher Education is a subscription-free journal with a review board made up of various academic disciplines of the member institutions of the University of Louisiana System as well as other nationally and internationally accredited colleges and universities and affiliated organizations.

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An Introduction to Sustainability Service-Learning Course for the Creation of Sustainable Citizens to Engage Wicked Problems

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Introduction

In an op-ed piece that appeared in the *Los Angeles Times* (April 11, 2011), Gregory Rodriguez cited a poll indicating that 69 percent of Americans think fellow Americans are becoming "more rude and less civilized." Another poll reported the vast majority of respondents as believing the overall level of civility in the country is a problem. Interestingly, Rodriguez seems to blame democracy itself for this apparent lack of civility. "Democratic culture is part of the problem," he writes. In other words, if our democratic society is predicated on a glorification of individual rights, there is little time to think about the common good or shared values. Rodriguez cites Yale law professor Stephen Carter, who has argued that Americans have lost a sense of common purpose. "There are no bounds because there are no fellow passengers whose lives or needs or hopes we must respect."

Rodriguez's characterization of democracy is cynical. We may live in a country or culture that emphasizes individual rights, but we also live in a country ruled by law, with these laws serving to protect

ABSTRACT

The current era of American discourse and dialogue is increasingly characterized as becoming less civilized. This lack of civility, whether real or perceived, negatively impacts our ability as a society to address our most wicked problems. The vast majority of students pursuing undergraduate degrees today seem blissfully unaware of the problems that surround them on their campuses and in their communities. For this study, an introductory sustainability service-learning course was developed that exposed students to community dialogues while simultaneously teaching effective dialoguing skills. Desired course outcomes include increasing student awareness of wicked problems and better equipping students to engage in conversations centered on the problems.

The introductory sustainability service-learning course viewed dialoguing as a community need that can be effectively met by all undergraduate students even if they are new to the community. We explored the notion of democracy as an "organized" partner suitable for service-learning courses with enrollments of approximately 75 students. Examples of community dialogues and student academic work relating to these dialogues to a deeper understanding of course content are presented and discussed. A framework for evaluating and assessing the course is outlined and community contribution metrics and reciprocity indicators are discussed.

and provide some rules of engagement, similar to the structure provided in a constructive classroom dialogue. It may be true that the partisan conversations that dominate the airwaves and the bulk of our public discourse are far from the controlled engagement envisioned by those who have developed the formal approach to democratic dialogue. And the irony is that for real problems to be solved, whether they be problems of rapid population growth and alarming natural resource depletion, or simpler problems, such as what kind of playground should my service learning group help build for the local community, it is crucial for a real and civil dialogue to occur.

The term "wicked problems" was first posited by Horst Rittel, a professor of urban planning at the University of California, Berkeley (Rittel & Webber, 1973). He used the term to refer to problems that can't be solved in a linear manner and for which there are no clear solutions. In fact, each solution offered up to solve a wicked problem often simply creates a new set of problems to be solved. And there is no clear point at which the problem has actually been solved. Eventually you will run out of time or money or other resources, throw up your hands and say, "I just can't work on this anymore." But this doesn't mean the problem has been solved, only that you have reached your own endpoint. Another feature of wicked problems is that there are no clear solutions, as the rightness or wrongness will always be judged from a variety of perspectives from the multiplicity of stakeholders involved in the problem.

Service-Learning and Wicked Problems

Service-learning in the context of community dialogues is one way for students to experience the multiplicity inherent to the "real-world" wicked problems. The practice of service-learning in higher education can vary in approach and depth from the perspective of the institutions and from the vantage of faculty that facilitate courses utilizing service-learning pedagogy (Hepburn, 2000; Westheimer & Kahne, 2000). We take the view of Bringle and Hatcher (2009, p.38) who state that:

> "service-learning is a credit-bearing experience in which students participate in an organized service activity that meets identified community needs and reflect upon the service activity in such a way as to gain fundamental understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility."

We highlight the key words *organized, community need* and *course content* in the definition as we make a case for our approach to service-learning instruction in a medium enrollment introductory sustainability service-learning course (75 students) at a large public university.

Our approach embraces the concepts presented by Ernest Boyer in his work entitled "Creating the New American College" (Boyer, 1997), where he extols the value of educating students for a life of responsible citizenship in addition to any preparation for successful careers that may occur. We must continue to value the tradition of engagement citizenship at the highest levels of all institutions in both the public and private sectors.

Dialoguing as a Community Need

Many of us enjoy sharing our opinions, whether about the best ice cream place in town or the best sports team, our favorite books, movies and music or the fastest way to get to the park

during peak traffic hours. These topics are what we might consider "low-stakes" issues; few, if any, friendships have ended because of a disagreement over music choice. However, glancing at any media source quickly reveals contentious issues that divide America.

Our love of self-expression is one basic reason to try democratic dialogues, but a more compelling reason relates to our role as citizens.

"However one defines it, dialogue is a democratic method aimed at resolving problems through mutual understanding and concessions, rather than through the unilateral imposition of one side's views and interests. For its part, democracy as a system of government is a framework for organized and continuous dialogue." (Pruitt & Thomas, 2007, p.XIII)

In a nation as diverse as the United States, varied opinions routinely fly out of people's mouths and out of all media sources. We have the right to ignore the dialogues around us, but some argue that our freedoms are inseparable from our duties as citizens. Political journalist Norman Cousins once noted (Jordan, 1999, p.63):

"In a democracy, the individual enjoys not only the ultimate power but carries the ultimate responsibility."

Cousins kept "ultimate responsibility" pretty vague, but one possible meaning is active engagement in our democracy. For many of us, engagement involves responsibly sharing our opinions no matter the size arena in which we share them.

Given this need for responsible opinion sharing, we view it to be critical that students in higher education, especially those in interdisciplinary introductory courses, be systematically immersed in the ongoing dialogues on their campuses and surrounding communities. We intend the dialogues to help students that are new to the community understand that truly meaningful service rarely occurs by simply stepping out and saying, "I'm here to help."

In fact, the first step toward meaningful service for a student new to the community may actually be to *do nothing.* It may be to take a step backward, to look, to listen and to try to understand on a deeper level what, if anything, it is that *needs* to be done. It requires understanding that communities are complex organic systems, and that any change made, may not be sustainable in the case of this particular community and the multifaceted needs and perspectives of its citizens. In other words, a willingness to help must be positioned within a framework of sustainability and a slow, considered approach to understanding the needs of a community, what Donella Meadows calls *getting the beat of the system* (Meadows, 2008).

The Introduction to Sustainability Service-Learning Course

To address the need for increased community dialoguing in the context of sustainability and in support of fostering more meaningful community service, we've developed an Introduction to Sustainability service-learning course that emphasizes sustainability knowledge, skills and habits as means to shape one vision of a sustainable citizen. The course promotes the basic skills of literacy, applied math and finding information as students are challenged to increase their abilities toward democratic dialoguing and with attention to increasing larger system sizes. The traditional sustainability knowledge areas of society, economy and environment are explored before moving toward more intersecting themes, such as informed consumerism, eco-economies and livable environments (Figure 1).
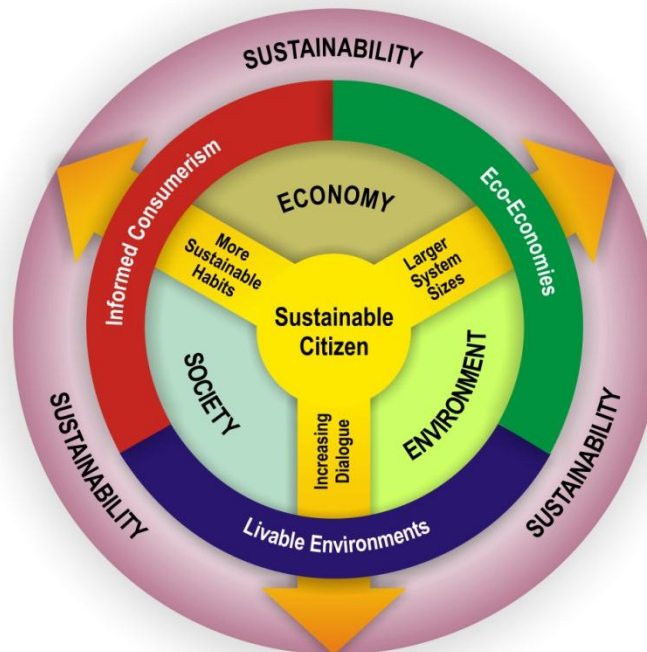
Figure 1: The Introduction to Sustainability service-learning course model depicting the citizen-centric emphasis, the skills of dialoguing and systems thinking and the various knowledge themes.

The first four weeks of the course focused on the development of the basic skills we believed were essential to becoming a more sustainable citizen. Literacy, applied math and finding information, democratic dialoguing and systems thinking are core attributes. To expand literacy, we explored several essays from *The Handbook of Sustainability Literacy: Skills for a Changing World* (Edited by Arran Stibbe, Green Books, 2010) and associated in- and out-of-class activities. Applied math training comes mainly in the form of dimensional analysis meant to instruct students to convert from abstract units of measure, like "carbon footprint" to more concrete terms, such as "dollars saved." Finding information involves the location of useful facts and figures from informational graphics or charts, which are so critical in our media-rich society.

Democratic dialoguing is facilitated through a variety of activities in a classroom with round tables instead of theater seating. Students were divided into table teams that remained for

the entire semester. Students were asked to share semi-personal results from a "Strengths Finder" online survey as a means to build respect and openness among the team. This activity, coupled with constant reassurance that all dialogues are not to leave the classroom, helped to instill trust as the degree of dialoguing difficulty and required sensitivity increases.

Systems thinking is promoted via the course text *Thinking is Systems: A Primer* by Donella Meadows (Meadows, 2008). Students were taught to think in terms of stocks, flows of natural resources and capital in ways that emphasized the complexity and connectedness of the natural and human systems. Students learned to embrace diversity and transparency as key attributes of healthy systems.

With these skills in place, course content related to society, economy and environment is explored but not through the traditional method of lectures by experts. Content was explored by dialogue and critical thinking among peers with guidance on the side by course facilitators. The course culminates in a rich learning experience facilitated by custom sustainability dilemmas curriculum that accompany *National Geographic* Magazine articles on "Population 7 Billion," (Kunzig, 2011) "The Acid Sea" (Kolbert, 2011) and "The Real Price of Gold" (Larmer, 2009).

Democracy as an "Organized" Service-Learning Partner

We think the Introduction to a Sustainability service-learning course is integral to developing a sense of what it means to be a "sustainable citizen" in a representative democracy. Taking a lesson from the sustainability framework, we have developed a very broad definition of the term "service," using it, within the context of the course, to describe engagement in representative democracy. Students are allowed to choose to attend a variety of public events or meetings, from city council meetings to protests in the park, and then asked to document this civic engagement through a series of reflections, placing the content of their encounter with public process within the context of sustainability. This definition of service developed and explored within the course allows us to consider "community," or even democracy itself, as our service partner.

In our civic engagement as service paradigm, however, we do advocate going to the traffic committee meeting "just" to learn. We advocate, as a first step toward civic engagement and an ethic of community service and involvement, allowing oneself to be a polite, invited guest in public life. Recent public discourse has suggested that young people are disengaging from public life and civic involvement. Studies have shown that many young people think that they cannot make a real difference, can't solve the problems in their communities and do not have a way of making a meaningful impact on politics or government. It is our belief that making any kind of difference, particularly within a sustainability framework, one must begin with listening, and more importantly, with engagement. To make a difference in the broader community requires acknowledgment of person as citizen of community.

Reinforcing Course Content through Community Dialoguing

In our course, students are asked to go to a meeting or protest or whatever other public-minded event seems ripe for engagement; to first engage within a framework of listening, and then of reflecting. It is the reflection that constitutes the written part of the project, allowing students to translate a personal response to what they have observed into a true learning experience. The written reflection is divided into three different parts, with each part asking the students to respond to what they have observed at a different level. In Part I, students are essentially asked to place themselves in the role of reporter or objective observer. They must give a factual, detailed description of where they went and what they saw. They are to include details, such as the date, time and location of the meeting, what was on the agenda and who spoke. Students are advised that they will be graded in this section based on both the level of appropriate details included and the degree of objectivity with which they describe their chosen bit of public process.

In Part II, students are asked to take off their objectivity hats and explore their own personal responses to what they have experienced. By attempting to separate their objective responses from their personal responses, it is hoped that students will increase their level of awareness regarding ways in which their own personal responses might ordinarily come between them and the actual reality of what they have observed. Students are asked to describe feelings that they may have had walking into their meetings, any judgments or assumptions that they may have made about the event that they brought into the room with them, and they are then encouraged to use these reflections as a way to analyze their own responses. They are asked to be particularly aware of discoveries they might make about themselves regarding attitudes toward other people they may encounter in community based work.

In this section, students are advised that grading will be based on not just their ability to describe what they think and feel, but their willingness to engage in self-analysis and work toward a demonstrated self-awareness. We want students not just to describe how they have felt or reacted, but also to evaluate these feelings and reactions and to speculate as to what they might learn from them.

In Part III of the reflection, students are asked to move from self-analysis to analysis of the actual meeting or event. In this section, students are no longer asked to provide a narrative description or subjective response. Instead, they are asked to make connections between their community-based experiences and classroom concerns, specifically the questions of sustainability, dialogue, systems thinking and citizenship that we explore throughout the semester.

As an additional framework for exploration of service-learning, we ask students to carry out a SWOT analysis. The SWOT method (Morrison, 2006) is a technique originally developed by Albert Humphrey at Stanford University and frequently used in the business world as part of the corporate strategic planning process. It provides a roadmap for evaluating the strengths, weaknesses/limitations, opportunities and threats related to a project or venture. The analysis must begin with stating a desirable objective or outcome. The identified strengths and weaknesses are considered to be internal factors, inherent to the system being considered, whereas the identified opportunities and threats are considered to be external elements, outside possibilities for improving performance or that may cause trouble in the system. These external factors, as is befitting of this kind of analysis within our larger framework of sustainability and systems thinking, can include anything from trouble in the local community, such as a plant

shutdown or budget cuts in the school district leading to teacher layoffs, to much broader forces. That plant closing in the community may be local, but what larger forces (technological change, global markets) may have led to that change?

Community Dialogues

Students who have participated in our service as engagement with democracy project have had a variety of interesting experiences and revelations. They have gone to meetings or other events that have taken them out of their comfort zones and have allowed them an opportunity to take the beat of the system, and in so doing, to understand their own places in that system a little bit better. It is in this first attempt at engagement with the system that, according to Meadows, there is the opportunity to see the workings of the system as they really are, rather than as you have assumed them to be or as others have described them to be. It is the time to do away with misconceptions, and this is just what students have reported as happening as part of their experiences.

City Council and Student Government

One student attended a speech given by a candidate for city council and expressed great surprise that the candidate was wearing jeans and sporting a ponytail, and that the speech was given at a small, dark indie music venue. He had expected a large, bland meeting room filled with men in suits. Instead, he found someone he described as "open and honest" with an apparently real desire to strengthen the community.

Another student, who attended a city council meeting, described a variety of initial expectations, including that he would be bored. And although some of the meeting was reportedly boring, the student also expressed what seems to be a major revelation. Although he assumed that the meeting room would be filled with affluent individuals wanting merely to propagate their own agendas, out of touch with the real needs of the community, he ended up encountering something quite different. These council members were more "in touch" than he expected; in contrast, there was a disturbing lack of citizen involvement at the meeting. The student therefore concluded that it is not the city council that is out of touch with the community, but the community that is out of touch with its leaders.

Another important step in system engagement described by Meadows is to identify what is important, not just what is quantifiable. One of our sustainability students did an excellent job of trying to negotiate this quality/quantity disconnect in a meeting she attended for a student organization with the mission of increasing awareness of sustainability issues on campus. Within the previous few weeks, the university had terminated its long-term contract with a local recycling company and established a new agreement with a non-local business that would also result in a campus-wide switch from a multi-stream to a single-stream recycling system. Although there were likely numerous quantifiable reasons for the university's change in contract, she emphasized the less quantifiable feeling of loss about the change. She commented that the "relationship" the group had with the previous contractor was probably not taken into account when decisions were made, and that there was a lot of emotion involved in this change for students who had had long-term involvement with recycling efforts on campus. The student's willingness to explore the unquantifiable in this case made her an astute observer of system dynamics, willing to acknowledge that it is not only costs or convenience that leads to the success of a program, but also relationships between stakeholders.

The "Occupy" Movement

One of the more interesting student responses came in a reflection regarding attendance at a general assembly meeting for the local "Occupy" movement, part of a broader protest movement against economic and social inequality. This particular meeting was held to discuss a renewable 30-day city permit that would allow protestors to continue the 24-hour occupation of a local park. One of the preconceived notions that the student had going into the meeting was that it would be unorganized and unproductive, when in fact he found group members were dedicated to making the movement function in an organized fashion. This dedication was particularly apparent in the amount of time spent laying out the ground rules for communication, and the adherence to these ground rules as the meeting proceeded. As the student described, the rules for communication were based on a series of hand signals. A finger in the air would place you in the "stack," the group of people waiting to speak. Agreement with a speaker could be expressed by placing "spirit fingers" in the air and disagreement by a peace sign, while a feeling that a speaker was wavering off track was indicated by forming a triangle in the air with your hands—a "point of purpose" sign. All of these gestures were to be used to ensure the principle of "equal voice." According to the student, everyone who wanted to speak was allowed to, and every opinion was taken seriously. The group included not just members of the Occupy movement, but also two city officials, and the student reported that even though there was no apparent leadership structure for the meeting or for the group, and that a small minority of people present felt the need to "question everything," everyone was indeed allowed a voice and dialogue with the city officials, which potentially could have become quite strained, proceeded with respect.

Student Three Part Reflection and SWOT Analysis for an "Occupy" Meeting

To more fully illustrate the depth of learning provided to students through service-learning through community dialoguing, we share a SWOT analysis and Three Part Reflection assignment completed by a student from the Introduction to Sustainability service-learning course.

Reflection Part I: At 7:00 pm on Wednesday, October 19, I attended the General Assembly meeting for Occupy Iowa City, held in College Green Park. It was dark outside and cold. The meeting was held beside the gazebo, which was wrapped with a tarp to keep out wind. Lawn chairs were set out; some people sat while others stood. About thirty people were present. The meeting was videotaped, and the agenda was written on a white board.

Two people facilitated the meeting. Before starting, the facilitators explained the rules of the meeting that had been previously established. The majority of these rules dealt with communication because the meeting was held outside in the dark, and to avoid people speaking all at once, a system of hand gestures was adopted (for instance, if a person's tone was too harsh, audience members could hold up peace signs; if the audience thought someone was digressing, a triangle could be formed with the hands; a hooked index finger signified a request for clarification; "jazz hands" showed agreement; and so forth). Because there was no audio amplification, the meeting used a "mic check" system: if a person spoke softly, another attendee with a louder voice would amplify their words phrase-by-phrase. Explanation of the rules took approximately five minutes.

Proposal updates were first on the agenda, though there were none. Next came committee updates. The Education Board talked about an upcoming event with David Osterberg, who will give a lecture about getting financial information regarding the top one percent of Americans. The Culture Committee described upcoming events including an acoustic guitar performance at the park and a dance party, a Halloween party, and a public reading of scary stories to kids. The Security Committee had no updates. The spokesman for the Food and Water Committee said that water is a necessity, and he reminded people to avoid eating sugar, as that reduces body temperature. The Action Committee talked about handing out buttons and stickers at the upcoming Homecoming parade. They wanted to create a Welcome banner for Occupy Iowa City, and talked about making the park a welcoming atmosphere for the High School band, which will visit the park before and after the parade. The Outreach Committee discussed the happenings of other Occupy movements in other cities, and talked about the Occupy convention that will happen on July 4, 2012.

Next was the General Assembly Proposal. After speaking once, an attendee must wait to speak again until all others who wish to speak have done so. The purpose of this proposal was to keep people from dominating the floor. Everyone approved of this measure, except for one individual who "blocked" it, forcing everyone to reconsider and re-discuss the proposal and find a solution that worked for everyone. This took about twenty minutes, and by the end, the opposer said he would try it out for a few days to see if it worked or not.

Then came the discussion of the Parks and Recreation permit. Two representatives from the Parks and Recreation Department came to the meeting. They said they approved of the way the occupiers were treating the park, and that there was no reason at the moment to ask them to leave. Meeting attendees asked questions about fire pits, about building temporary structures/shelters for the wintertime, about what actions would be restricted, about liability issues, and about what would happen if a permit was not signed. I stayed at the meeting for a little over an hour.

Reflection Part II: I am strongly in favor of the Occupy Wall Street movement, and even marched and protested on October 15, so I was very eager to attend this meeting. My political ideologies are very much in line with many of the people occupying College Green, though I had never been to one of their meetings—which I learned, later, are held every single night.

I was a little put off, though, by some aspects of the meeting. I appreciate the objective of fairness in their meetings—i.e. giving everyone a chance to speak—but it seemed too forced, and not very organic, like a normal discussion where thoughts and opinions move in and out fluidly. People had to essentially wait in line to speak, and it was an incredibly long process. It was clear that keeping the meeting organized and on track was a tremendous effort. So much time was spent just on deciding the logistical rules of the meeting, and in the end, nothing was really accomplished.

The gentlemen from Parks and Recreation who spoke at the meeting were very respectful and considerate, and multiple times said they were in favor of what Occupy

Iowa City was trying to do. The speaker said it was not his duty to judge the demonstrators based on their political ideologies—only on how they treated the park property (which apparently he was completely fine with). However, some meeting attendees seemed very defensive and apparently tried to provoke conflict between the demonstrators and Parks and Recreation over trivial issues. It was a kind of "stand up against The Man" mentality—"Us against the Authority." That seemed really pathetic to me.

Reflection Part III: Based on my reactions to this meeting, I realize that there will *always* be people out there that I disagree with, who hunger for conflict, even if they share the same political ideologies as me. I'm not exactly sure how I can deal with that inevitable situation, other than remaining patient and trying to keep discussions focused on the real issue at hand. In terms of the organization of the meeting, I also realize that I prefer meetings that are not so structured and rigid.

The meeting strongly relates the Democratic Dialoguing. The fact that people could hold up peace signs to remind others to keep the tone of the conversation friendly and welcoming is an excellent example of how these people try to make their dialogues fair and open to everyone involved. Also, because the opportunity to speak was so highly stressed, democratic dialoguing was actually one of the main points of the entire meeting.

People in this movement are against the notion of "Too Big To Fail." They're against corporations and businesses getting so large that their failure would be detrimental to the entire economy. The movement is against corporate greed, against corporations that care only for their monetary gain, and nothing for society. These people protest the power that lobbyists have over the government. They protest the economic inequality between the top one percent of Americans and everyone else.

This directly relates to sustainability in terms of economic and social pillars. In class, we talked about Milton Friedman's notion that it is actually detrimental for a corporation to consider social responsibilities over fiscal responsibilities. The protesters are against this idea. In the world today, nations are in debt, and big corporations have tremendous political power. Fiscal irresponsibility and greed have proven detrimental to society, with so many people out of work and so many foreclosures.

The protesters are calling for a change in the system that promotes social and economic sustainability, where corporations do not hold the kind of power that they do today, and where big banks will be regulated so that they don't have to be bailed out by the government.

Strengths: The meeting attendees were clearly unified and committed in a single and powerful cause of bringing about a change in the nation (as exemplified by their continued occupation of College Green Park even with temperatures in the low thirties). There was an enormous effort to make sure everyone's voice was heard (literally), and that everyone had a chance to speak. Because of the conditions of the meeting (dark and no audio amplification), the meeting used a system of hand signs/gestures to aid the communication (taken from methods already established by anarchist and feminist

movements). Facilitators also helped the flow of the meeting. Occupy Iowa City started roughly twenty days ago and still appears to be strong and organized. There was cooperation between the Occupy Iowa City members and the Parks and Recreation Department. The occupiers of the park have been reportedly very responsible and peaceful and have taken good care of the park.

Weaknesses: With its effort to make sure the meeting is not dominated by a handful of participants is important, the system under which the General Assembly currently operates seems to impede on the progress and fluidity of the meeting. In place is a complex system of talking rules, which essentially makes people "wait in line" for their turn to talk. This means that sometimes the meeting was stalled in order for six or seven people to voice their opinions. It also led to several digressions. This evening, a proposal was made to limit people from talking more than once until everyone in the meeting had already been given the chance to speak. Only one attendee vehemently opposed the suggestion, and a long debate ensued with no strong conclusion. The primary purpose of the meeting was to discuss a park permit, but that was delayed for a long time due to this disagreement about the proposal.

Opportunities: The Occupy Wall Street/Iowa City movement has the opportunity to become much more politicized than it already is with more rallies, conventions, fundraising and community events in the future. During Homecoming this Friday, Occupy Iowa City will be handing out buttons and stickers to promote the movement and inform the public. They also have the opportunity to stay in the park longer.

Threats: The sustainability of the movement is under threat. It potentially could "fizzle out," and people could lose interest in the cause, they could lose hope, or they might become frustrated by ineffective procedures or differing opinions/political ideologies. Communication seems to be an issue, so in order for the meetings to accomplish anything, this needs to improve. The threat of being kicked out of the park was also of concern during the meeting, but the representative of the Parks and Recreation Department said this was unlikely. There is threat of opposition from the community or political leaders wanting to shut down the occupation.

In Part I of this reflection, the student reported the date, time and location of the public event and provided descriptive detail pertaining to the physical environment, key participants and event content. In Part II, the student quickly reveals her personal position with respect to the Occupy Wall Street movement and goes on to describe in what ways the particular event met expectations or fell short. The student concluded this section with a very personal statement lamenting the possibility that he\she might not find agreement, or even be able to have a constructive dialogue, with certain people encountered at protest gatherings despite his/her strong desire for such.

In Part III of the reflection, the student adeptly relates the experience to specific course content elements and provides a good level of analysis relating to her behavior and the behaviors of other protestors in relation to course content. In the SWOT analysis, the student discusses many of the same points covered in the three-part reflection. But, as is the case with the majority of students, processing the same service-learning experience within a complementary analysis framework often reveals new student learning. In this instance, the

student highlighted threats of "movement fizzle" and occupier disbandment by city authorities as additional insight into her learning that was not discussed in the three-part reflection.

Course and Community Outcomes

Embedded within the Introduction to Sustainability service-learning course is a series of assessment and evaluation surveys that solicit student input at various times throughout the semester for the purpose of course improvement. Since the data is treated systematically and can contribute to generalizable information and relies upon information from living individuals, the public dissemination of specific results is subject to internal review board approval. Here, we share what we found to be key assessment and evaluation elements, in the absence of any response data, as a means for others to improve outcomes for similarly structured courses.

Assessment and Evaluation of Course Outcomes

At the beginning of the Introduction to Sustainability service-learning course, students were asked if they viewed themselves as "beginning", "developing", or "strong" sustainable citizens with this subjective determination being left to the individual. Most students considered themselves to be developing sustainable citizens. We found it interesting that although the Introduction to Sustainability service-learning course is open to all majors, and given our presumption that many enrollees are "sustainability inclined," no student self-identified as a "strong" sustainable citizen. It could be that predisposed students are pursuing personal sustainability behaviors, but that they don't believe they do enough as a "citizen" to be drawn to the sustainable-citizen descriptor. It could also be students presume they have to be taught what it means to be a sustainable citizen, and the course is the primary setting for training in this area of perceived need.

We also asked how strong the role students believe dialogue plays in sustainability. Although a few said that dialogue plays "little" role, a strong majority said that it plays a "strong" or at least "somewhat strong" role. Additionally, when asked what traits are most valuable to having a productive conversation, the most frequently selected responses included an ability to listen, collaboration, prior knowledge, researching information and an ability to compromise. Interestingly, even before there has been a formal introduction to the concepts of democratic dialogue, which emphasizes problem-solving through "mutual understanding and concessions rather than through the unilateral imposition of one side's views and interests," students rate listening, collaboration, and compromise as of much greater importance than debating skills or the ability to persuade.

Course Outcomes for Attitude, Skill and Behavioral Instruction

An independent evaluator conducted a survey of students who participated in the Fall 2011 offering of Introduction to Sustainability service-learning. The evaluator collaborated with the course facilitators to develop the survey that assessed changes in students' attitudes and behaviors as a result of the course. The survey also gauged students' opinions of course themes and activities. The students took the survey during class time allotted at the end of the semester. All responses were anonymous and collected online via Qualtrics, a secure web-based survey program.

Students were asked to indicate the strength of their agreement or disagreement with statements about themselves, learning about sustainability, activities related to sustainability that they were involved in at their university and ways in which sustainability may be part of their

chosen careers. To determine to what extent, if any, the class impacted participants' responses, they were asked to rate their perceptions of their abilities and attitudes, both before and after the course. A retrospective post-test design was used to gauge participants' responses at the end of the semester. The survey presented 28 statements regarding the participants' perception of their abilities and attitudes, and participants rated their perceptions on a scale ranging from strongly disagree to strongly agree.

Means for all statements, both before and after, were calculated. We report the statements here (Table 1) and provide some comments on the utility of the responses for administrative evaluation and subsequent improvement of course outcomes.

Table 1: Students were asked to indicate the strength of their agreement or disagreement with these statements to assess shifts in perceived skills and attitudes.

Statements
I recognize that human population, carrying capacity and the fate of resources held-in-common are key elements to understanding sustainability.
I participate in service-learning projects at my university.
In my career, I will know how to make decisions that facilitate sustainability.
Companies that are sustainable are more likely to be profitable over the long term.
I am confident that I have the knowledge and skills to facilitate a sustainable workplace.
I can influence people around me toward a sustainability mindset.
I am able to identify sustainability opportunities and threats in my community and the planet.
I know how to find reliable information to analyze key concepts of sustainability.
I can take part in a democratic dialogue with people whose views or values are different than mine.
I encourage the people around me to use energy wisely.
Collaborative decision-making is important in promoting sustainability.
I have the required literary skills to articulate my views about sustainability.
I have the necessary applied math skills to aid my understanding of sustainability.
It is possible to pursue entrepreneurial opportunities while adhering to sustainability principles.
Economic development, social development and environmental protection are all necessary for sustainable development.
I plan to choose a workplace that values sustainability.
In the United States, people living in poverty are more affected by environmental problems than people living in more affluent conditions.
My own actions have an impact on the environment.
I recycle as much as possible.
Poverty alleviation is important for sustainability.
The balance of nature is very delicate and easily disrupted.
I work well in collaboration with others.
I vote in campus elections.
I volunteer in my community.
My residence hall community is a good example of sustainability in action.
I am innovative.
I volunteer on campus.
I vote in municipal elections.

The student responses to the statements in Table 1 enabled us to improve our delivery of course content in the areas of applied math and information gathering. We improved student instruction toward distinguishing "volunteering" from "service-learning," and we recognized that our "citizen-centric" course model was performing as intended. Some statements were determined to be seasonal in nature (e.g. voting inclinations) and were, therefore, less useful than anticipated.

Course Outcomes for Interest in Sustainability and Service-Learning

Students were asked to rate their level of agreement with six statements related to their interest in sustainability and service-learning after participating in the course. The scale ranged from *strongly disagree* to *strongly agree*. The questions are reported in Table 2.

Table 2: Students were asked to rate their level of agreement with these statements to assess changes in student interest in sustainability and service-learning after participating in the course.

Statements
Made me feel more connected to my university.
Increased my interest in sustainable living.
Increased my interest in living in a sustainable living learning community in the future.
Increased my interest in service-learning at my university.
Increased my interest in service-learning in my community.
Increased my interest in promoting sustainable practices at my university.

The responses to this series of statements were useful as they helped to distinguish how students viewed sustainability and service-learning from the personal, campus and community perspectives. Additionally, the responses enabled us to better discern how the "sustainable citizen" course focus was, or was not, being made actionable by students in increasingly larger system sizes (i.e. personal, campus, then community systems) as a key, desirable course outcome.

Course Outcomes for Interest and Usefulness of Topics

Students were asked to think about the weekly topics as listed in the syllabus for the Introduction to Sustainability service-learning course and reflect upon how interesting and useful those topics were to them. Students were also asked to rate the usefulness of each weekly topic on a scale ranging from not at all useful to me to very useful to me. If students had no opinion they could select no opinion (Table 3).

Table 3: Students were asked to rate how interesting and useful the course topics were to them. The topics are listed in chronological order as presented during the semester.

Introduction and Terminology	Mid-term Exams
Democratic Dialogues	Eco-economies
Systems Thinking	Informed Consumerism
Applied Math and Finding Information	Livable Environments
Economy	National Geographic Modules
Society	Final Project Work
Environment	

One outcome we desire is that the first week of the course be "interesting" due to the introductory and multi-disciplinary nature of the subject matter, but also because the course is an elective for all majors. Our goal to place hundreds of students on the path to sustainable citizenship will not be met if we fail to retain those students at risk of dropping the course if first impressions do not meet their expectations. The level of first-week student interest was below our expectation, which has triggered a series of adjustments.

It was also evident that our emphasis on skill development (e.g. dialoguing, systems thinking and applied math) in the first four weeks dampened interest levels somewhat compared to those expressed toward eco-economies, informed consumerism, livable environments and the National Geographic content modules. But, this also provided evidence that enthusiasm levels grew as the course unfolded which is a desired outcome. Student survey responses indicated a waning interest during the final preparation of their creative projects which was expected due to the rigor involved and given that many late semester assignments and projects are simultaneously due across all courses in which students are enrolled.

Community Contributions to the Course and Reciprocity Indicators

The Introduction to Sustainability service-learning students attended public meetings organized by student, city and county governments; student and community service groups; advocacy groups; local businesses and individual residents. Students participated in more than 60 unique meetings, events, activities and lectures totaling an estimated 400 hours of community-provided contact time.

A note of gratitude was sent to several of the local organizations and individuals responsible for creating these public forums. An alumnus of our university and former leader of a prominent student group that provided 35 contact hours of service-learning engagement for the course said the following in response to our words of thanks:

> *"That is great news. Thanks for including me on the message. It is very encouraging and reaffirms my confidence in [the student group's] growing excellence.*
>
> *Congratulations, [student group], and specifically [current leaders]. I recently visited [the university] and was a happy participant in [the student group's] camaraderie. [A former professor] discussed with me once the importance of leaders, like you all, simply inviting younger students to activities and events, functioning as a gateway for involvement and community, and it looks like a lot of this is coming true. You all certainly have the capacity for it!*
>
> *[Professor], in regard to the Certificate in Sustainability, I connect with your emphases on "basic skills of literacy, applied math, and finding information." I regularly use your "pursuit of sustainability" language and, now, will consider how those basic skill areas can play a part in our Sustainability Leadership Certificate, currently in development.*
>
> *We are developing a tiered framework for our Sustainability Leadership Certificate, which offers achievement levels based on behaviors—defined by our Green Certification Program—leadership and education. Leadership and education may be combined, but the idea is that we offer higher levels of achievement for each year that the student participates. Next time I'm in [your university town], it would be nice to meet and learn more about your work.*
>
> *I appreciate your vision and communication, so please keep me informed when great things or new ideas come around."*

Public Dissemination

As final course products, the Introduction to Sustainability service-learning students prepared two "creative works." One "essay or opinion" and one "multimedia" project were required and students picked a topic within the realm of "sustainable citizenship" to create a

written piece to reflect their understanding of this topic. The students also were asked to share how the exploration of these sustainability topics "transformed" them and/or made them more or less inclined to modify personal behaviors in the context of sustainability. They were asked if the course convinced them to change their actions at the community or national scale and why or why not. To foster creativity and to mimic life in the public realm, the "problem statements" or "guidelines" that were provided were intentionally open ended.

The "multimedia" instructions for the final project also were open ended. Students were instructed that they could produce a PowerPoint presentation, a poem, a sculpture, a poster or some other interesting work. Again, the work had to reflect student understanding of sustainability and the desire to "expand the movement" of sustainability by extending dialogue to skeptics or other unsuspecting fellow citizens. Everything created for the final assignment was displayed publicly via a website, gallery or other means. These projects had to be capable of display beyond the lifetime of the course in an electronic format regardless of the media used for the actual project.

With the public viewing of final projects from this community partnership, the final component of the service-learning continuum of *engagement, reflection, reciprocity and public dissemination* was effectively implemented in the Introduction to Sustainability service-learning course.

Conclusions

The *construct* and *content* of the Introduction to Sustainability service-learning course performed as intended in the context of the main course goal of students becoming more knowledgeable and sustainable citizens capable of dialoguing about wicked problems. The course design allowed for the seamless inclusion of a major social movement, Occupy Wall Street, as a relevant and timely service-learning opportunity. The course effectively identified dialoguing as a campus and community need and allowed students to productively contribute to community dialogues regardless of their experience level with the community prior to the course.

Three-part reflections and SWOT analyses were an effective means to assess enhanced understanding of course content as facilitated through service. The course can be improved by:

- Making the kick-off class sessions more interesting
- A more creative exploration of course content related to applied math, finding information and systems thinking;
- Inclusion of more National Geographic content modules;
- More even distribution of course project preparation and public dissemination over the span of the semester.

Notes

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