Nature/Society: Situating student learning outcomes in a first-year Sustainability Studies course

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Introduction

Many colleges and universities are responding to global social and environmental crises by offering sustainability-oriented curricula. According to the Association for the Advancement of Sustainability in Higher Education (AASHE), over 460 higher education institutions have established over 1400 academic programs in sustainability (AASHE, 2013). At the same time, enrollment challenges have led colleges and universities to establish a variety of first-year programs aimed at increasing student enrollment and retention, specifically by providing expanded social and academic support services for incoming students. Such strategies include enhanced orientation programs and tutoring services, credit and non-credit bearing academic skills courses, and learning communities under different manifestations. Themed living learning communities (LLC) represent one manifestation of such initiatives, with LLC organized around sustainability having been established at more than a handful of colleges and universities nationwide. Proponents of living and learning communities point to social and educational benefits beyond enrollment and retention, such as better academic performance, student engagement (civic, intellectual, and social), and critical thinking owning to experiential learning and co-curricular (and extra-curricular) learning opportunities. Also expected are more reliable and effective student transitions into higher education owing to the peer support network and role models built around shared interests and positive identities (Tinto, 2000; Zhao and Kuh, 2004; Inkelas, et al, 2006; Brower and Inkelas, 2010). This paper offers an initial learning outcomes (LO) assessment of the course, Nature/Society, a core seminar established for a LLC at Rensselaer Polytechnic Institute (RPI).

Nature/Society operates as a first-year seminar and is designed to foster critical thinking about human/environment interactions through humanistic and social scientific inquiry. The course was designed at the same time a sustainability-oriented living and learning community was established on campus in 2008. Traditionally, Nature/Society has also been open to a small number of students interested in environmental issues who have expressed an interest in registering for the course. The course was designed by the Director of the First Year Studies Program in an effort to incorporate the engaged learning strategies developed within the broader program into the institution’s first LLC. Assignments incorporated ethnographic fieldwork at various field sites ranging from field trips exploring current and historic human interactions with the landscape, and via campus and community sustainability organizations that students visited and participated in in the form of service learning activities. The stated learning objectives of the course were as follows:

1) A demonstrated ability to apply the underlying skills of humanistic and social scientific inquiry to a concrete project pursued individually or in teams.

2) A critical understanding of the complex relationships that exist between nature and society… We expect every student to demonstrate a rudimentary ability to move beyond “opinions” towards informed judgment that is based in facts, sound reasoning, and active reflection.
3) Demonstrated progress in the basic technical proficiencies of higher education, including reading, writing, oral and visual presentation, independent study, teamwork, and seminar-style conversation.

4) Clear evidence of thoughtful reflections about your own learning process as related to your transition to college.

In terms of course content, in the year in which assessment data was collected, the course began with a focus on environmental ethics and historic studies of human relationships to the land; ecological economics and the social and evolutionary basis of human behavior; a series of topical studies including climate change, hydrofracking, and exponential growth; and ended with a unit on foodways and consumer culture designed to coincide with the Thanksgiving and Christmas holidays. Guest lectures, provided by scientists, social scientists, and activists working on environmental issues were used to augment the range of topics to which students received initial exposure, while providing a window into scientific processes and the interactions between public and expert authority. Field trips and guest lectures that were coordinated with course content were designated “co-curricular” activities, while social events, including those with a sustainability focus (e.g. trips to the downtown Farmer’s Market) that were designed primarily to build community were designated “extra-curricular” activities. In other years, the course has been team taught with slightly different content, although the basic design of the course and its integration into the LLC were similar.

Our learning assessment is based on several survey instruments administered during the fall 2012 semester. Specifically, the paper draws on a) the results of a pre/post survey; b) instructor evaluation of student work; c) a separate, blind review of student work evaluated according to a quantitative metric and standardized evaluation rubric (based on a modified Bloom’s taxonomy). The pre/post survey instrument was used to assess student interest, attitudes, knowledge, and skills, and was administered at the start and end of the semester. The standardized rubric involved assessments of reading comprehension, critical understanding, and informed judgment. For the blind review, seven additional LO were assessed based on the Education for Sustainability (EfS) outcomes criteria proposed in 2006 by the Higher Education Associations Sustainability Consortium (HEASC), Association for the Advancement of Sustainability in Higher Education (AASHE), and American College Personnel Association (ACPA) (ACPA, 2006).

We analyze our data sets to measure student performance in achieving learning outcomes; examine the relationship between student demographics, attitudes, achievement, learning trajectories, and engagement; compare instructor and independent evaluation of LO; and identify points of divergence between the Nature/Society and EfS LO, with a qualitative discussion of the comparative strengths and weaknesses of each. Since Nature/Society satisfies one of the requirements of and serves as a potential recruitment vehicle into the university’s newly established, social-sciences based undergraduate Sustainability Studies major, we examine the significance of our findings with regard to the future development of this degree program, both at our institution and for its potential as a model for implementation elsewhere.
Methods and Data

This initial LO assessment is based on quantitative data analysis and qualitative interpretation of data collected from August 2012 through August 2013 relating to the Nature/Society course offered in the fall of 2012. The demographics of the Nature/Society student cohort are listed in Table 1 below.

Table 1. Nature/Society Demographics

<table>
<thead>
<tr>
<th>Number of students</th>
<th>32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>15 female 17 male</td>
</tr>
<tr>
<td>LLC Resident?</td>
<td>20 residents 12 non-residents</td>
</tr>
<tr>
<td>Majors</td>
<td>Coded “environmental”:</td>
</tr>
<tr>
<td></td>
<td>• 6 Environmental Engineering</td>
</tr>
<tr>
<td></td>
<td>• 2 Biology</td>
</tr>
<tr>
<td></td>
<td>Coded “non-environmental”:</td>
</tr>
<tr>
<td></td>
<td>• 6 Chemical Engineering</td>
</tr>
<tr>
<td></td>
<td>• 5 Undeclared Engineering</td>
</tr>
<tr>
<td></td>
<td>• 3 Aeronautical Engineering</td>
</tr>
<tr>
<td></td>
<td>• 3 Mechanical Engineering</td>
</tr>
<tr>
<td></td>
<td>• 2 Biomedical Engineering</td>
</tr>
<tr>
<td></td>
<td>• 2 Civil Engineering</td>
</tr>
<tr>
<td></td>
<td>• 1 Computer Science</td>
</tr>
<tr>
<td></td>
<td>• 1 Nuclear Engineering</td>
</tr>
<tr>
<td></td>
<td>• 1 Physics</td>
</tr>
<tr>
<td></td>
<td>Total: 26</td>
</tr>
</tbody>
</table>

The pre/post survey consisted of thirty-two questions representing six categories (See Appendix A for the pre/post survey questions):

1) environmental interests
2) substantive attitudes
3) substantive knowledge
4) substantive skills
5) experience
6) evaluation of co-curricular/extra-curricular programming (post only)

Scores were reported on a 5-point Likert scale, in which the measures of “4” and “2” correspond to agreement and disagreement. The pre survey sample size was slightly smaller than the post survey ($N_{pre}=27$, $N_{post}=30$), and LLC identification was only included in the post survey. Students were not asked to provide their names on the surveys, but demographic data were collected to allow cross comparison.
The instructor’s initial evaluation of student work was completed during the course delivery period, and the blind review of student work was conducted by this paper’s lead author following the completion of the course. Sub-sample assessment was used for comparative purposes using student “thought pieces” that were completed and turned in most (but not all) weeks throughout the semester. (11 thought pieces were nominally required during the 15-week course.) In selecting a comparative sample of student work that took into account inconsistencies in the total number and date of submission of the assignments, three data sets were established for Time 1, Time 2, and Time 3. Time 1 is represented by the first two appropriate thought pieces completed by each student (Time 1a and 1b). (Two data points were selected for each time interval in order to smooth out the variability in the data.) Time 2 is represented by the two papers closest to the median of that student’s total output (Time 2a and 2b). Time 3 is represented by the final two papers completed by each student (Time 3a and 3b). As per course LO 3 and 4, students had the option of writing about their “academic transition” for a portion of their thought pieces. Thought pieces pertaining to “academic transition” were deselected and the next closest thought piece to that temporal analysis point was selected instead. Students without a full set of thought pieces were removed from the sample, resulting in a sample size of 25 for the blind review of student work (N=25). The means of Time 1a and 1b, Time 2a and 2b, and Time 3a and 3b were then calculated and used as the score value of Time 1, Time 2, and Time 3, respectively.

Student work in the blind evaluation was assessed using the same standardized rubric and scale as the instructor. Scores were assigned based on a 12-point scale, in which 0=poor, 2= basic, 4=developing, 6=solid, 8=strong, 10= nuanced, 12= outstanding, as measured against course LO 2, namely that the work demonstrates a critical understanding of the complex relationships that exist between nature and society. In his evaluation, the instructor broke down this learning outcome into three components: reading comprehension [N/S LO2a], critical understanding [N/S LO2b], and informed judgment [N/S LO2c]. The blind evaluation used an aggregate figure [N/S LO2] for these three elements, which is compared against an average of the instructor’s three values at Times 1 and 3. This “critical understanding” learning outcome is the primary metric by which student performance was measured.

In addition to course learning outcome evaluation, seven additional ASHE Education for Sustainability (EfS) learning outcomes were assessed:

1) Each student will be able to define sustainability. [EfS LO1]
2) Each student will be able to explain how sustainability relates to their lives and their values, and how their actions impact issues of sustainability. [EfS LO2]
3) Each student will be able to utilize their knowledge of sustainability to change their daily habits and consumer mentality. [EfS LO3]
4) Each student will be able to explain how systems are interrelated. [EfS LO4]
5) Each student will learn change agent skills. [EfS LO5]
6) Each student will learn how to apply concepts of sustainability to their campus and community by engaging in the challenges and solutions of sustainability on their campus. [EfS LO6]
7) Each student will learn how to apply concepts of sustainability globally by engaging in the challenges and the solutions of sustainability in a world context [EfS LO7] (5).
These learning outcomes represent a significant attempt at expert consensus on EfS competencies and are selected to represent dominant thought styles in the field of Education for Sustainability. To the best of our knowledge, they represent the most broad and comprehensive attempt thus far to articulate a set of learning outcomes for this still relatively new field.

Descriptive statistics, T-tests, and ANOVA were used to characterize and analyze total student performance over time and the effects of demographic factors such as gender, participation in the LLC, and major on student performance. We used an alpha level of .05 for all statistical tests.

**Results and Discussion**

Solid evidence of an increase in student performance from Time 1 to Time 3 was found. Paired T-tests were performed on all N/S and EfS LO, with statistically significant gains in performance on all learning outcomes assessed. The largest gains were seen with EfS 1 (2.36), defining sustainability, and N/S 2 (1.88), critical understanding. The smallest gains were seen in EfS 6 (.86), application of sustainability concepts on campus and in the community, EfS 7 (.72), application of sustainability concepts in a world context. An average of all EfS LO improved by 1.36 points. (See Table 2 and Figure 1 below).
Table 2. Student Performance over time, with T-Test results, for N/S and EfS LO (N = 25)

<table>
<thead>
<tr>
<th>LO</th>
<th>Mean Time 1</th>
<th>Mean Time 3</th>
<th>Improvement</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/S 2 (critical)</td>
<td>3.34</td>
<td>5.22</td>
<td>1.88</td>
<td>t(24) = 8.25</td>
<td>p &gt; .001</td>
</tr>
<tr>
<td>EfS 1 (definition)</td>
<td>2.16</td>
<td>4.52</td>
<td>2.36</td>
<td>t(24) = 7.64</td>
<td>p &gt; .001</td>
</tr>
<tr>
<td>EfS 2 (lives / values / actions)</td>
<td>2.12</td>
<td>3.56</td>
<td>1.44</td>
<td>t(24) = 5.79</td>
<td>p &gt; .001</td>
</tr>
<tr>
<td>EfS 3 (habits)</td>
<td>1.76</td>
<td>3.20</td>
<td>1.44</td>
<td>t(24) = 8.39</td>
<td>p &gt; .001</td>
</tr>
<tr>
<td>EfS 4 (systems)</td>
<td>1.94</td>
<td>2.98</td>
<td>1.04</td>
<td>t(24) = 5.15</td>
<td>p &gt; .001</td>
</tr>
<tr>
<td>EfS 5 (agency)</td>
<td>1.64</td>
<td>3.28</td>
<td>1.64</td>
<td>t(24) = 9.67</td>
<td>p &gt; .001</td>
</tr>
<tr>
<td>EfS 6 (campus)</td>
<td>1.66</td>
<td>2.52</td>
<td>0.86</td>
<td>t(24) = 4.86</td>
<td>p &gt; .001</td>
</tr>
<tr>
<td>EfS 7 (world)</td>
<td>1.62</td>
<td>2.34</td>
<td>0.72</td>
<td>t(24) = 4.34</td>
<td>p &gt; .001</td>
</tr>
<tr>
<td>EfS AVG (1-7)</td>
<td>1.84</td>
<td>3.20</td>
<td>1.36</td>
<td>t(24) = 8.93</td>
<td>p &gt; .001</td>
</tr>
</tbody>
</table>
There were no statistically significant gender differences across LO, however LLC resident status and environmental vs. non-environmental major were significant variables for some learning outcomes. ANOVA testing revealed that LLC residents as a group scored significantly higher on N/S 2 (critical understanding), EfS 5 (agency), and EfS 3 (habits) at Time 1, while environmental majors scored higher than non-environmental majors on EfS 5 (agency), EfS 3 (habits), EfS 2 (lives/values/actions), EfS 1 (definition), as well as the EfS LO average at Time 1. On EfS 7 (world), environmental majors scored significantly higher at Time 3 and showed a statistically significant increase between Time 1 and Time 3. (See Table 3 below.) This pattern of results suggests that living-learning community residents, particularly those enrolled in “environmental” majors, represented an especially engaged sub-population of students at the outset of the course, as well as while the course progressed. They were more likely to score higher on the Education for Sustainability learning outcomes that dealt with personal agency and individual lifestyle, in addition to the more socially-attuned Nature/Society learning outcome evaluated.
Table 3. Significant ANOVA test results for N/S and EfS LO (N = 25)

<table>
<thead>
<tr>
<th>LO</th>
<th>Time</th>
<th>Variable</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/S 2 (critical)</td>
<td>T1</td>
<td>LLC resident</td>
<td>$F(1, 23) = 5.13$</td>
<td>$p = .03$</td>
</tr>
<tr>
<td>EfS 1 (definition)</td>
<td>T1</td>
<td>Environmental Major</td>
<td>$F(1, 23) = 7.33$</td>
<td>$p = .01$</td>
</tr>
<tr>
<td>EfS 2 (lives / values / actions)</td>
<td>T1</td>
<td>Environmental Major</td>
<td>$F(1, 23) = 10.96$</td>
<td>$p = .003$</td>
</tr>
<tr>
<td>EfS 3 (habits)</td>
<td>T1</td>
<td>LLC resident</td>
<td>$F(1, 23) = 6.73$</td>
<td>$p = .02$</td>
</tr>
<tr>
<td>EfS 3 (habits)</td>
<td>T1</td>
<td>Environmental Major</td>
<td>$F(1, 23) = 10.52$</td>
<td>$p = .004$</td>
</tr>
<tr>
<td>EfS 5 (agency)</td>
<td>T1</td>
<td>LLC resident</td>
<td>$F(1, 23) = 6.05$</td>
<td>$p = .02$</td>
</tr>
<tr>
<td>EfS 5 (agency)</td>
<td>T1</td>
<td>Environmental Major</td>
<td>$F(1, 23) = 9.66$</td>
<td>$p = .005$</td>
</tr>
<tr>
<td>EfS 7 (world)</td>
<td>T3</td>
<td>Environmental Major</td>
<td>$F(1, 23) = 4.84$</td>
<td>$p = .04$</td>
</tr>
<tr>
<td>EfS 7 (world)</td>
<td>Diff</td>
<td>T3, T1</td>
<td>$F(1, 23) = 5.33$</td>
<td>$p = .03$</td>
</tr>
<tr>
<td>EfS AVG (1-7)</td>
<td>T1</td>
<td>Environmental Major</td>
<td>$F(1, 23) = 8.27$</td>
<td>$p = .009$</td>
</tr>
</tbody>
</table>

These results are also consistent with pre/post survey findings that learning community residents were slightly more interested in and engaged with sustainability than non-residents. Though there were no statistically significant pre/post score comparisons based on T-Test results, ANOVA tests on all “post” survey categories for the variable, LLC resident, found four significant effects for questions dealing with commitment to sustainability, reducing consumption, the importance of the humanities and social sciences to future professional role, and connection to other students interested in sustainability. In each of these cases, LLC residents had significantly higher agreement scores than non-residents. (See Appendix A for pre/post test questions and statistically significant effects derived from ANOVA testing.)

In comparing the instructor’s initial assessment of critical understanding to the blind evaluation, instructor score improvement from Time 1 to Time 3 was .88 points, as compared to blind evaluation score improvement of 1.88 points, as reported above. In terms of score differences,
blind evaluation scores were an average of 3.61 points lower at Time 1 and 2.47 points lower at Time 2. This difference could be due to a variety of factors. At Time 1, the higher instructor average is likely attributable to a necessarily more sensitive understanding of the timing of the assignments in relation to the context of the course. The Time 3 difference could also be attributable to a similar set of factors, including a tacit understanding of the strengths of a particular student’s weekly response in context, which is absent from blind evaluation. This difference could also be a result of differing interpretations of the standards of evaluation in the course setting versus the blind analysis. Looking at the average score difference in conjunction with the lower improvement scores would support the view that instructor evaluation is significantly and appropriately affected by course context, as what constitutes a “solid” or “strong” score evolves as the course progresses. We attempted to “normalize” for average difference between instructor and blind evaluation scores by subtracting both instructor and blind evaluation scores by the average differences for Time 1 and Time 3. This resulted in an average improvement between Time 1 and Time 3 of 2.02 in the instructor assessment and 3.16 in the blind evaluation, which suggests a more robust level of improvement than the both the instructor and blind evaluation reveal.

As our title suggests, this learning outcomes assessment of Nature/Society is also significant in terms of “situating” these learning outcomes in relation to Sustainability Studies as an emerging educational domain. As Sustainability Studies continues to develop as a transdisciplinary academic field, its pedagogical style and scope will depend on the extent to which the aims of scholars and educators continue to align with the aims of Education for Sustainability or branch off in new and distinct ways. In this regard, the learning outcomes themselves are also subject to evaluation. While Nature/Society students improved on all outcomes, we believe that the Education for Sustainability learning outcomes offer some improvements to the current Nature/Society course design but fall short in a few key areas. On the one hand, relatively low absolute student performance on the EfS learning outcomes reveals that more attention could be directed to promoting, strategically integrating, and evaluating the service learning components of the course. Campus and community sustainability efforts may be able to play a more structured role in course design. On the other, the Nature/Society course’s “critical understanding” learning outcome seems to capture the complex sociopolitical nature of sustainability problems better than the somewhat (and perhaps unintentionally) individual-focused EfS learning outcomes. The course’s grounding in humanistic and social scientific modes of inquiry, particularly ethnomethodology, thus enhances this crucial domain of sustainability knowledge.

Conclusion

Based on our analysis, we can conclude that Nature/Society positively impacted student learning across all learning outcomes assessed. We can also conclude that participation in the LLC positively affected students’ learning, engagement, and transition. However, the analysis also reveals opportunities and challenges for improvements in the course design and implementation. One of these is how to close the small but significant gap between LLC residents and non-residents in terms of their gains in sustainability attitudes and general sustainability knowledge over the course period. The study also reveals lower student performance on the EfS learning outcomes relative to the Nature/Society “critical understanding” outcome. This is to be expected
to some extent, as the EfS LO were included in the blind assessment post-hoc for analytic purposes. However, some of the EfS learning outcomes (6 and 7, in particular, pertaining to concrete avenues for change on campus, in the community, and in the world) are unexpectedly underrepresented in the thought piece content, given that service learning and local ethnographic fieldwork are core components of the course. Student knowledge and action in these domains are likely discernable in other course assignments, however their relative absence in the thought pieces indicates that connecting knowledge to action and vice versa, however, remains an ongoing challenge. At the same time, the significant increase in student learning of “change agent skills” (EfS 5) is encouraging.

The aims of Nature/Society differ somewhat from the aims suggested by the Education for Sustainability learning outcomes. When comparing the EfS to the N/S learning outcomes, we find that the EfS outcomes are generally focused on individual values, individual locus of control, and individual agency, while N/S LO foreground the social context of sustainability. This analysis suggests that a humanistic and social sciences based first-year Sustainability Studies course is effective at increasing student knowledge of sustainability and generating student engagement across demographic factors.
References


Appendix A: 2012 LLC pre/post survey

*All statistically significant results between LLC and non-LLC participants appear in bold text with results of ANOVA test below.*

Scores are reported on a five-point Likert scale:

5=Strongly agree  
4=Agree  
3=Neutral  
2=Disagree  
1=Strongly disagree

Environmental Interests

a) I am very committed to sustainability.  
b) I was involved with environmental causes, clubs, or organizations while in high school  
c) I enjoy the outdoors  
d) I was exposed to a lot of environmental or nature education when I was young  
e) I consider one or more of my parents to be environmentalists

**Significant Result:**

**a) I am very committed to sustainability.**

<table>
<thead>
<tr>
<th>LLC Mean (N=20)</th>
<th>Non-LLC Mean (N=10)</th>
<th>F (1,28)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.55</td>
<td>3.40</td>
<td>8.27</td>
<td>.009</td>
</tr>
</tbody>
</table>

Substantive Attitudes

a) Technology is an essential part of future solutions for sustainability  
b) Innovation is the most important means of achieving sustainability  
c) As a society, we must reduce consumption in order to achieve sustainability.  
d) We need the humanities & social sciences to understand technology and its consequences  
e) Sustainability is a complex social problem

**Significant Result:**

**c) As a society, we must reduce consumption in order to achieve sustainability.**

<table>
<thead>
<tr>
<th>LLC Mean (N=20)</th>
<th>Non-LLC Mean (N=10)</th>
<th>F (1,28)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.45</td>
<td>3.80</td>
<td>5.42</td>
<td>.03</td>
</tr>
</tbody>
</table>

Substantive Knowledge

a) There are two sides to every issue  
b) The findings of scientists in universities and research institutes should be trusted  
c) Sustainability is a complex problem for which there are few definite answers
d) Politics is part of the problem, not solution

e) It will be difficult to achieve sustainability in a capitalist society

f) I believe the humanities and social sciences will be important to my future professional identity as a scientist, engineer, or architect.

**Significant Result:**

**f) I believe the humanities and social sciences will be important to my future professional identity as a scientist, engineer, or architect.**

<table>
<thead>
<tr>
<th>LLC Mean</th>
<th>Non-LLC Mean</th>
<th>F(1,26)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.17 (N=18)</td>
<td>3.00 (N=10)</td>
<td>7.46</td>
<td>.01</td>
</tr>
</tbody>
</table>

**Substantive Skills**

a) I believe I have some of the basic skills needed to analyze and interpret our culture

b) I believe I have some of the skills & experiences needed to separate rhetoric from reality on environmental issues

c) I believe I am a good writer

d) Working in teams may be difficult, but rewarding

e) I feel confident presenting materials in front of the class

**Experience (for Pre-Post Comparison purposes—please answer as you feel now)**

a) I feel very connected to the other students in [the LLC]

b) I feel connected to other students with an interest in sustainability.

c) I enjoy being a part of [the LLC]

d) I feel we’re functioning well as a community

e) I believe I will be going to graduate school

**Significant Result:**

**b) I feel connected to other students with an interest in sustainability.**

<table>
<thead>
<tr>
<th>LLC Mean</th>
<th>Non-LLC Mean</th>
<th>F(1,27)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.7 (N=20)</td>
<td>2.56 (N=9)</td>
<td>5.43</td>
<td>.03</td>
</tr>
</tbody>
</table>

**Evaluation of [LLC] Programming**

a) The Nature/Society field trips enhanced my understanding of or appreciation for sustainability.

b) The guest lectures provided me with an introduction to aspects of sustainability that supplemented what my instructor had to offer

c) The films that I saw enhanced my understanding of sustainability in ways that complemented and/or went beyond assigned texts

d) The service learning activities helped me to connect with sustainability related groups on campus
Questions e) and f) are for those in [the LLC]:

e) Our co-curricular activities (field trips, films, guest lectures) helped us develop a sense of being a part of [the LLC]
f) Our extra-curricular activities (film nites, gardening, etc..) helped us to build a stronger sense of community