SUSTAIN-SLO: A New Learn by Doing

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Abstract—This paper details a learning initiative at Cal Poly that was launched in January 2012 and will continue for 5 years. We are working with a group of 42 freshmen (100 targeted for next year) that are taking linked courses for two quarters. Students enroll in 12 units (out of 16 units total) of special sections of existing general education courses for both Winter and Spring quarters. The courses are linked through a common time block, common faculty, common meeting location, and projects within the community. Students who are interested in the initiative cite three main reasons for their participation: 1) the alternative method of learning (project based and self-directed), 2) working on meaningful community based projects that could prepare them for future internships, and 3) the sense of community with faculty, other students and the community members. Since 2009, we have been designing the initiative, building capacity in the faculty, the university and the community to undertake this experiment. The initiative is for freshman students university-wide. Within the current cohort we have 25 different majors from all six colleges at our polytechnic institution. We are particularly interested in studying ourselves (the faculty) as co-learners in the process. We have been challenged in many ways to change and learn. These learning processes are what we demand of students and thus feel a kinship with them. Assessment methodology and preliminary results are included in the paper.

Innovative learning; research methods; faculty development

I. INTRODUCTION

A group of faculty began meeting together in the Fall of 2009 to reflect on the serious questions being asked about the future of higher education [1]. These meetings embodied probably 5000 man-hours prior to launching the learning initiative called SUSTAIN-SLO in January of 2012.

The vision of SUSTAIN-SLO is for a sustainable learning environment that prepares students for the future which we believe will include a need for community engagement in sustainable ways, a learning model that includes open education resources to support self-directed learning, and a community of learners that include both students and faculty willing to experiment and explore for innovation. We also envision that the entire initiative would be both personally and professionally satisfying.

The idealized design included annual cohorts of 100 freshmen from across the university taking linked courses over two quarters with faculty who collaborate on an ongoing basis. It incorporated a shared space for learning, with community based projects as an integral part of engagement. We hoped to remove the boundaries between courses and to encourage a more collaborative learning environment. This paper describes the initiative, discusses the research methods and highlights some of the preliminary results.

II. SUSTAIN-SLO

The details of the design although straightforward, involved complex consultations with the deans, university scheduler, academic senate, advisors and the registrar. In addition, we had to recruit and advise students.

During this first year, 2012, we enrolled 42 students from 25 different majors. Although this was less than the original design of 100 students, we feel the first year will benefit from a smaller group, as there are still many aspects of the initiative that we need to develop. During each quarter the students take three courses from a list of six courses. In addition students take one course outside SUSTAIN, usually a math course or a major course. The students also work with community members on projects spanning the six month period.

III. RESEARCH METHODS

Our questions about the effectiveness of the experience are examined from the perspectives of both students and faculty. We use first, second and third person perspectives [2,3,4] for the research. We refer to first person research as the process of seeing ourselves as full participants in the research and thus developing sensitivity to our own actions. This is sometimes referred to as “Action Research” [2]. Second person research involves learning as a group. We have been developing our

This work is supported in part by grants from the National Science Foundation (EEC 1025265 and DUE 1044430). The opinions expressed represent those of the researchers and not necessarily the National Science Foundation.
capacity to experiment with interventions in a group process to learn and develop. Third person research is the typical process of administering survey tools or performing interviews where the researcher is separate from the research process.

In addition, we are paying attention to the fiscal sustainability of the experiment. We initially did financial calculations that indicated the learning initiative has the potential to be more cost effective than the current education system. We will be evaluating this on an ongoing basis.

IV. Student’s Experience

The students who are participating in SUSTAIN are in some ways remarkable and in others ways representative of a typical Cal Poly student. They self-selected into the initiative so they have an orientation toward sustainability, but their average high school GPA is 3.72 (Cal Poly's 2011 average is 3.84). There are more women than men in the initiative (57% women), while Cal Poly overall has more men than women (45% women). They are roughly as ethnically diverse as Cal Poly as a whole. And their representation by major roughly approximates the university.

We have always held that we could not put students at risk for degree completion or harm them in any way. As we are analyzing the data on the first quarter, we see that students are thriving in SUSTAIN. A few examples are highlighted below.

In a sample of weekly reflections, students report a more mature appreciation of their learning: “I feel more successful in my SUSTAIN classes when I put in effort into truly understanding and applying a topic rather than cramming my brain with tons of different information.” “SUSTAIN has provided me a diverse set of problems which require me to think critically, look at the big picture, and collaborate with peers and related persons.”

Students have agency in their own educational process. They have self-organized around multiple activities both in response to course workload and to improve group functioning. They have independently set up study sessions in the library four days a week. They have set up a Facebook page to communicate information. Students are also organizing the recruitment for next year. They are participating in Cal Poly’s Open House and are discussing strategies for Fall advertising.

From a third person research perspective data also indicates success. SUSTAIN students who were enrolled in traditional courses during Fall quarter, complete an average 13.3 units. During Winter quarter these same students completed an average of 16.1 units. For comparison purposes during Fall 2011 all Cal Poly students were enrolled in 14.3 units. When comparing the GPA for these students we saw a marked improvement. The average GPA for Fall was 2.887 and for Winter was 3.035. In addition, we had three students join the cohort for Spring quarter (45 students total) as they heard about the initiative through their SUSTAIN friends.

V. Faculty as Co-learners

The faculty participating in SUSTAIN are from STEM and non-STEM fields. Some have been collaborating since the Fall of 2009 while other have recently joined the group. There are lecturers and full professors. There are faculty with reputations for outstanding teaching and there are those of us with normal teaching ability. The thing we all have in common is a dedication to the students and the desire to experiment and learn. As first person researchers we all embrace conflict as a method of illuminating our own mental models. As second person researchers we collaborate in the classroom and around the community projects. As third person researchers we participate in surveys on motivation and leadership preferences.

Some insights that we have developed together to date include:

- It has proven more difficult to integrate across courses, as we are attached to content coverage.
- Project based learning in this context is difficult as projects very much reside outside the courses.
- The time spent building capacity for collaboration was essential for us as co-learners and designers.
- The care of the learning community (faculty, students and community) for each other is striking.

VI. Community Partners

There are currently nine community partners working with ten student groups on projects within the community. Many community partners have been engaged with us and have contributed to the design from the beginning. This robust community engagement was a change process in itself. The shift from a transactional model of community service (where students put man hours toward an organization) to a relationship-building model (where students spend time building a joint understanding of project goals) is a shift for some organizations and the university. SUSTAIN’s goal was to build relationships that would be multi-year. Table 1 shows a sample of these projects.
TABLE I. SAMPLE OF COMMUNITY PROJECTS

<table>
<thead>
<tr>
<th>Organization</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak Creek Commons (Co-housing community)</td>
<td>Design and install rain-water catchment system</td>
</tr>
<tr>
<td>Aids Support Network</td>
<td>Signage and landscape design for the memorial grove</td>
</tr>
<tr>
<td>United Way</td>
<td>Installation of a “Born Learning” trail on Cal Poly’s campus</td>
</tr>
<tr>
<td>Independent Living Resource Center</td>
<td>Develop link between Cal Poly and IRLC for adaptive technology projects</td>
</tr>
<tr>
<td>Food Bank of Santa Barbara County</td>
<td>Process development for Gleaning of backyard fruit for donation to the food bank</td>
</tr>
</tbody>
</table>

VII. CONCLUSIONS

Although we feel that SUSTAIN-SLO is an example of an innovative learning environment, we also know there is still much work to do to achieve our vision of a fully integrated, community based, sustainable education. What we have learned is that the creative activity of building a community of learners has benefits far beyond academic learning of content. It is life-giving for faculty and students alike.

REFERENCES