



SUSTAIN SLO: Reenergizing Learning

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Abstract

This paper addresses the challenge of representing the transformational learning that occurs when students participate in high impact practices such as project-based, multi-disciplinary activities, or first year experiences. This paper illustrates the context and components of one such multi-disciplinary, first year experience called SUSTAIN SLO, at Cal Poly San Luis Obispo, and describes the use of qualitative narrative analysis done to gain insight into learning outcomes beyond typical institutional measures like retention and grades. To research these less quantifiable outcomes, 22 students were interviewed one year after their experience in SUSTAIN SLO. A team of one faculty member, a recent graduate, and four undergraduate students used qualitative analysis techniques to see how the student narratives spoke to these two questions: 1) How is SUSTAIN different than the traditional course experience? and 2) How did SUSTAIN affect you?

In their interviews, students reported that SUSTAIN SLO was different than traditional experiences as it included 1) open assignments and structure, 2) a new look at education and learning, 3) different relationship with faculty and peers, 4) a recognition of the importance of space to be yourself, and 5) significant collaboration and team building. As for the impact of these differences, students reported 1) increased capacity for personal reflection, 2) a new sense of ownership in education, 3) a discovery of internal motivation and the joy of learning, and 4) deepened friendships that led to an increased capacity for collaboration and risk taking and an increased sense of support and resilience. The students also described negative aspects of their experiences, including 1) struggling to learn with the open assignments and structure, 2) difficulty forming lasting relationships in the emerging community, and 3) trouble integrating back into “normal” classes after their experience with SUSTAIN SLO. The paper explores these themes in more detail and concludes with a reflection by the undergraduate researchers on their experience in performing the research.

Introduction

There are many examples of innovative learning experiences that include projects, multi-disciplinary groups, or new pedagogies like a flipped classroom, which allow students to be active and involved in their learning. And there is much evidence that these techniques produce gains in students' learning¹, engagement², and sense of meaning³. In addition, these activities are also immensely fulfilling for the educators involved. This paper is an example of both a significant learning experience and an assessment method that can provide additional insight into gains for students beyond quantifiable institutional measures.

The paper begins by explaining the learning initiative in some detail to provide a clear context for the later discussion of students' learning outcomes. Then a discussion of the theory and literature of both the learning experience and the analysis method, including the research questions, is presented. Next the methods used are explained and the results of the research, including both traditional institutional outcomes and the qualitative responses to the two research questions, are described. Lastly, the paper includes a discussion and conclusion, and a brief reflection of the research experience itself from the perspective of the undergraduates from a variety of majors who were involved in the process.

SUSTAIN SLO Learning Initiative

SUSTAIN SLO is a partnership between faculty from Tongji University in China, Stanford University, and California Polytechnic State University in San Luis Obispo (Cal Poly, SLO), which began in 2008. SUSTAIN (Sino-US Strategic Alliance for Innovation) was formed as an international institute committed to innovating for sustainable design in rural Chinese communities. As soon as the partnership began to identify sustainability indicators for the work together, the U.S. team realized that it didn't have a legitimate voice in the partnership since the U.S. is itself out of sustainable balance. SUSTAIN SLO was established in 2009 to mirror the Chinese partners' collaboration between university, local government, business, non-profits and citizens. One portion of the work is a freshman learning initiative that was launched in 2012 at Cal Poly, SLO, after several years of planning and capacity building by the collaborators. The faculty involved are dedicated to creating a local, sustainable learning experience that is holistic and situated in a deeply reflective community of students, faculty, and community members. The structure includes 40 to 60 freshman students each year who take general education classes together over two quarters with faculty who are collaborating on content and assignments. The students self-select into the initiative. The students also work on teams of 3 to 6 people on community-based projects in partnership with community members and organizations over the six month period. The community projects are not graded and are not associated with any particular class. For a complete list of community partners see sustainslo.org.

There are several distinctive aspects of the initiative. The first is that faculty consider themselves "co-learners," which creates an environment of co-discovery and safety. The second is that the participants are asking questions within the community through dialogues that are existential in nature. This questioning is something students are unaccustomed to within the prescriptive nature of the current education system. The simple question of "Why are we here?" with continued inquiry into recognition of beliefs and values is something new for many. In addition, questions about liberty (freedom to be who we are and make choices in our lives) and equity (the impact of our choices on family, friends, communities, and the planet) are posed. Of course these conversations are not simple and often continue on for a lifetime. As co-learners, faculty must confront these questions and ponder their lives alongside the students.

The learning initiative, SUSTAIN SLO, is really not a complex structure, but it has proven to be disruptive and difficult to manifest for the university and faculty⁴. The faculty teaching the courses are responsible for the learning outcomes as defined by the university for the General Education courses. Lack of deadlines, freedom in assignments, and unstructured class time are all referred to by students, but there is no particular pedagogy used. Faculty are free to run their classes as desired. However, the faculty meet weekly to collaborate on course content and to learn from each other, often engaging in discussions that focus on intrinsic motivation and grading. These meetings serve to create a cohort of faculty who are learning alongside students.

There are generally two working principles: 1) honor the whole, and 2) the quality of the relationships (shared commitments) defines the quality of the work done together. Throughout this paper when referring to SUSTAIN, interviewees and researchers mean the local learning initiative SUSTAIN SLO.

Background

The basis for the development of SUSTAIN SLO is grounded in several theories on change and education. The work on systems theory by Senge⁵, Hall⁶, and Meadows⁷ influenced the design. The aim is to intervene compassionately into systems at the level of mental models or assumptions. Some of the working methods are documented in Burton, et al⁸. In addition, it is believed that learning and engagement require intrinsic motivation as described extensively in Deci and Ryan's⁹ Self-Determination Theory and within the literature on humanistic psychology pioneered by Carl Rogers^{10, 11}. These methods result in a loving nurturing environment where individuals are accepted for who they are¹⁰ and are encouraged to make autonomous choices about their own involvement that include deep meaning¹². One important aspect of the work is that everyone chooses activities, including participation in SUSTAIN, on their own accord. Students are not forced into SUSTAIN, nor are they forced to participate in any aspect of the initiative. Of course there are consequences for participation or non-participation, but these are freely chosen. Inquiry into habits or assumed necessities are presented so that all can recognize the mental models they take as given. Through this process, students and faculty are liberated to freely and responsibly choose activities in the world that result in paradigm shifts for the planet. The participants are not comfortable with business as usual unless this is consciously chosen. The faculty hold these beliefs and at the same time hold to the possibility that they are wrong, attempting to remain open to all points of view. Several publications contain further background^{4,8} on these interventions.

The process of narrative analysis has been used for many years in social sciences to analyze any artifact that includes qualitative text. This text can be written narratives or, in our case, interview transcripts. There are many techniques from which to choose¹³. Please refer to the methods section for a complete explanation of the steps used. Dedoose® is an online tool used to help manage and create codes and excerpts. Because much of the analysis required interpretations,

consensus was used to determine final coding^{14,15,16}. Even though this method normalizes opinions across several individuals, it is important in all qualitative work to remember that the conclusions are just one set out of a many possible conclusions. This diversity is what makes qualitative research so rich and interesting. It is also important to recognize that this analysis is a story of our (students') experiences and may not be generalizable to other populations, although we do feel others can learn for our successes and mistakes.

Given both the aims of the SUSTAIN SLO initiative and the usefulness of qualitative research, we embarked on this research project. Although institutional measures of students' success are tracked (retention and GPA) we knew through antidotal examples that students were impacted in ways that didn't show up in these traditional measures. It was not completely clear how the structure was different than the normal classroom experience for the students. In addition, we wondered if the learning initiative had any lasting influence on students. Thus the two research questions emerged:

How is SUSTAIN different than traditional classes?

How did SUSTAIN affect students?

Evaluation Methods

The initiative was evaluated by looking at both institutional measures of students' success and a qualitative analysis of student interview transcripts. These two methodologies are explained below.

Instructional measures of student success methods

The university is focused on measures of "students' success," which is translated into graduation and retention rates. To compare the institutional "success" of students who did participate in SUSTAIN with students who did not participate in the experience, a matching cohort was selected to create a comparison group. Students for the matching cohort were randomly chosen from the university population as a whole with the same gender, major and year (see Table 1). Data was collected through institutional databases and compared to the SUSTAIN cohort, the matching cohort, and the university as a whole. The GPA data was analyzed using a t-test to look for significant differences between the SUSTAIN cohort and the matching cohort. The retention data cannot be statistically analyzed because there are less than 5 occurrences in several situations.

Interview methods

Below is a step-by-step description of the methods used in this study. It is our hope that this procedure will serve as a kind of guide for others wishing to develop their own qualitative narrative research project.

1. In Spring 2013, 22 students who participated in the first SUSTAIN cohort in January through June 2012 were interviewed. A call went out to the entire cohort of students (43) via email and 22 agreed to be interviewed. The interviews were semi-structured and facilitated in a one-on-one casual setting with the exception of two students who were interviewed as a pair. The interviews were facilitated by Ginger Hendrix, who taught English with SUSTAIN in 2012. She seeded the interviews with open-ended questions with the intent of understanding what was happening in the students’ lives a year after their experience in SUSTAIN and how SUSTAIN might have affected them.
2. The narratives collected from the interviews were transcribed and uploaded into Dedoose® (www.dedoose.com), a web application for qualitative analysis that allows multiple users to access and manipulate a shared data set.
3. All six of the researchers and authors of this paper (4 undergraduate students, 1 recent graduate, and 1 faculty) individually read through all 21 of the narratives to get a holistic sense of the content.
4. A coding scheme was created in Dedoose® that allowed us to select excerpts from each interview narrative and identify the excerpt as relating to one or multiple of the 31 codes. These codes corresponded to each of the two questions and are listed in Figure 1.
5. The coding was a two-step process. Each researcher coded the transcript individually then two researchers met together and came to consensus on the coding.
6. Once all of the narratives were summarized, the 6 to 7 codes that occurred most often or were referred to by a large number of individuals were chosen.

<p>Research question: How is SUSTAIN different than traditional classes?</p> <p>Projects</p> <ul style="list-style-type: none"> Leadership Accountability/responsibility Collaborating/team building <p>2-qr structure</p> <ul style="list-style-type: none"> Relationship quality Integrating <p>Freedom/openness</p> <ul style="list-style-type: none"> Open Assignments/Class structure Space to be yourself Relationship with faculty <p>Questioning assumptions</p> <ul style="list-style-type: none"> Motivation Teachers/hierarchy Grades/evaluation Education & learning <p>What negative comments did students have about SUSTAIN?</p> <ul style="list-style-type: none"> Open assignments/structure Community Integration 	<p>How did SUSTAIN affect students?</p> <ul style="list-style-type: none"> Self-understanding Personal reflection and capacity Permission to be yourself Discovering internal motivation/joy of learning Self-confidence Failure as learning Ownership in education Taking risks Leadership Community Friendship Honest communication Breakdown of authoritative structures Collaboration Cliques Accountability/responsibility Holistic view Group process Support/resilience
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Results

Institutional Measures for the Learning Initiative

As of Fall 2014, there are three SUSTAIN cohorts of students, each group beginning in a different year. There is a 2015 cohort, but the data on this group is not available at the time of writing this paper. The demographics of these groups are listed in Table 1. STEM is defined as students in the College of Engineering and College of Science and Math (except Liberal Studies students) plus Agricultural Engineering (College of Agriculture) and Architectural Engineering (College of Architecture) students.

Table 1: Demographics of the SUSTAIN

	Number	First Time Freshman	Percent Female	Percent in STEM majors	Number of different majors	Years completed after Spring 2014
2012	43	Fall 2011	58%	56%	28	3
2013	43	Fall 2012	60%	33%	26	2
2014	63	Fall 2013	65%	32%	32	1
Total	149	-	62%	39%	49	-
University*	4871	Fall 2013	47%	43%	65	1

* Fall 2013 Cal Poly, SLO, Freshmen cohort

The SUSTAIN cohorts are roughly similar to the makeup of the university as a whole except there are proportionally more female students involved in the initiative than are at the university (62% versus 47%).

Table 2: Retention

	SUSTAIN Cohort	Matching Cohort	Difference
2012 (3 yr retention)	91%	93%	-2%
2013 (2 yr retention)	81%	86%	-5%
2014 (1 yr retention) *	94%	92%	2%
Total	89%	91%	-1%

* Cal Poly, SLO, 1-year retention for Fall 2012 cohort is 92.5% (www.ipa.calpoly.edu)

The SUSTAIN students are succeeding at or above the same rate as a comparison group when looking at both retention and GPA (Table 2 and 3). The matching cohort was selected to create a quasi-control group of students who have the same demographics as listed in Table 1.

Table 3: GPA

	SUSTAIN Cohort	Matching Cohort	Difference
2012	3.01	2.98	0.03
2013	3.11	2.86	0.25**
2014	3.19	2.91	0.28**
Total	3.11	2.92	0.20**

** Statistically different $p < 0.01$

The SUSTAIN students are retained at the same rate and seem to have higher GPA than the matching cohort of students.

Narrative Summaries

Demographic information regarding the 22 students interviewed is summarized in Table 4. In the experts that follow, all quotes are referred to by a pseudonym.

Table 4: Demographics of people interviewed

	SUSTAIN Cohorts	Interview Group
Percent Female	62%	68%
Percent STEM Majors	39%	50%
Percent Under-represented Minorities	18.5%*	18%
Total	149	22

* Data for SUSTAIN Cohorts not available. This number is for the university as a whole

A summary of each of the 21 narratives is included in the appendix. Overall, the students expressed appreciation for the network of good friends and caring teachers and mentors that they found in SUSTAIN. They also found freedom to ask questions, fail, and apply what they were learning to their lives. They learned about their personal learning styles, self-motivation, critical thinking, and how to collaborate. Some students still feel connected with SUSTAIN and mentor the new cohort and help out with projects. Others found that SUSTAIN was not a good fit for them and had trouble connecting with people and learning in the less structured environment. The students generally had difficulty transitioning back to “normal” classes after their 6 months in SUSTAIN.

Coding Analysis

The table below (Table 5) includes information about the codes for each research question that were commented on the most often and by the largest number of people, plus the codes for the excerpts that referred to negative aspects of SUSTAIN.

Table 5: Excerpts and codes with research questions

Research Question	Code/Theme	# Excerpts	# Students who commented
How was SUSTAIN different than traditional classes?	Open assignments/structure	59	17
	Questioning assumptions about education/learning	52	20
	Relationship with faculty	48	15
	Relationship quality	46	16
	Space to be yourself	30	17
	Collaboration and team building	24	14
How did SUSTAIN affect students?	Personal reflection	73	20
	Ownership of education	72	19
	Discovering internal motivation/joy of learning	70	19
	Friendship	48	16
	Support and resilience	47	18
	Collaboration	33	14
	Risk taking	30	15
What negative comments did students have about SUSTAIN?	Open assignments/structure	20	11
	Community	12	6
	Integration	12	5

Excerpts regarding research questions

This section summarizes the comments for the codes for each research question and also includes example excerpts for each code.

How was SUSTAIN different than traditional classes?

In this research question we were looking for specific indications of how the experience in the SUSTAIN learning initiative was distinct for the students. We wondered what they did and felt that might not have been possible in a traditional siloed class structure.

Open Assignments/Structure

Students generally found that the structure of their classes in SUSTAIN allowed freedom to decide how to learn the course material and find ways to make it meaningful in their lives. Some examples of this open structure included: class time centered around student questions and discussion instead of faculty lecturing, research papers and projects with self-selected topics, group assignments, and a flexible approach to grading tailored to students' individual interests, skills, and needs.

- “The first day, all of our teachers were open to that fact ... that they had no idea what our potential was and just gave us a fresh slate. I think that that ... made me feel confident to just go out and try things, and answer a question in class that I didn't necessarily know if I knew the answer. ... They weren't going to shoot me down. [They weren't going to say] ‘are you serious—you don't know the answer to a basic physics question—are you dumb?’” - Colette Donovan
- “In Music we're not having such centralized project formatting...we're free to explore what might be the best case for our individual needs. There's more room for us to tinker around with the information that we're getting in classes.” – Theas Painyn
- “teachers usually [say]... ‘10 weeks, we have to learn this and then we're done’—but [the teachers] ... told us to ask a question. There's so many questions in this world to ask ... if it wasn't for [this] class I don't think I would've found that strength to... make a change in the world... I got to experience an entirely different kind of freedom in the class than I've ever experienced.” – Yolanda James
- “I felt [the SUSTAIN professors] pushed for [us to] keep asking and [implied] ‘I won't hate you for not having understood what we just talked about.’ And so that comfortableness was something that I think helped me learn more, and feel like it was okay to just kind of discuss and even go off topic in a class. I learned so much more just talking about something.” - Lillian Bowser

Assumptions about Education/Learning

The educational model that SUSTAIN embraces greatly influenced the student experience in the program. Students reported being held accountable but not forced to engage by the integrated project based class structure and the personal student and professor relationships. Most felt excitement, inspiration, safety, and curiosity to explore problems and answer broad questions and felt they were being tested on the material in “the real world” rather than on a Scantron®.

Students expressed difficulty in transitioning to this new model and letting go of the safety of the traditional model as well as difficulty going back to that traditional model after SUSTAIN. A few students reported that the openness of the teaching style proved difficult to learn in and was not effective for every subject. Some also felt the openness of class did not allow them freedom to not participate.

- “You don’t have to do anything in SUSTAIN. All the classes were very discussion based and we would know if someone didn’t do the reading; you see that they’re sitting there not talking. So you are held accountable for that but in a good way. I think that it ... encouraged me to ... put in the extra effort.” - Mary Flemming
- “There’s no technically wrong answers in SUSTAIN.” - Theas Painyn
- “I think it's having a different perspective in school. Having not just the students in the class, but the teachers themselves say, ‘let's take a second and look at what we're actually doing here.’ Let's look at this in a different way, or let's do this differently. Seeing that like there's a different way to do it.” - Matt Wolfer
- “Letting myself not learn in the structure that we grew up in. Letting myself think in a different way, and that was really hard. I don't think I completely let go of it ever. I [asked] ‘where's my textbook. Where the syllabus?’ ... It was really hard to transition back and [continue to think] it's so much better on the other side. I know what the other side is like, why can't everybody be like that” - Tiffany Hennek

Relationship with Faculty

Many students found very meaningful relationships with faculty members in SUSTAIN. Not only did students connect with their professors on a personal friendship level, they also felt that their teachers really cared about them as students. Many of these students had not had similar relationships with faculty the previous quarter and used this good experience with faculty to gain initiative to make personal relationships with teachers outside of SUSTAIN, noting that these relationships made them stronger students.

- “Professors... specifically with SUSTAIN ... care about us. ...It’s like we have a community to go back to.” - Yolanda James
- “[We] gain these resources and ...for example, [in a different project] we were stuck and [one of the SUSTAIN professors] came last time to our meeting to help us with the design plan. It helped me knowing what to do... to reach out to [the SUSTAIN professor].” - Anders Thorup
- “It’s interesting because ... we weren’t really held accountable for things, they didn’t, [say] ‘you have to be here and do this’, everything was pretty like—lenient. But because of that, and because we were able to develop these personal relationships with these professors, I felt more compelled to do what I was supposed to be doing because I didn’t want to disappoint people. I don’t know if that’s just like I’m crazy and have lots of guilt issues with people that I feel connected to?...I was going through something and then my teachers were very understanding about it because they knew me.” - Roberta Macklin

Relationship Quality

The majority of students interviewed developed lasting, meaningful relationships during their time in SUSTAIN. The collaborative nature of the classes and community projects encouraged students to work with each other, faculty, and people from partner organizations as friends and problem solvers.

- “I joined SUSTAIN and I made all these new friends and [met] all these new people who do know how to intrinsically motivate themselves and do care about learning...” - Delaney Shaw
- “SUSTAIN... people kind of cared more, [they] wanted to have a fulfilling experience while learning things, and not just trying to pass a class.” - Olivia Turner
- “I definitely think the camaraderie with SUSTAIN was really big. Because I feel like these are friendships you're going to have for the rest of your life.....All of us [on our project team] were on the shy side....But I think that really helped because we were able to see everyone’s different perspectives and we were all equally a part of the project...I think eventually we all worked really well together.” - Ordorica
- “I think the main part about SUSTAIN that really got me was [my community partner organization]. Because they were so nice and open and felt like a family. So that really like pulled me in. I think that's one of the great things about SUSTAIN.” - Kay

Space to Be Yourself

This group of interviewed students say that in their SUSTAIN community and class projects they were given space to explore their interests. They say SUSTAIN provided them with enough space to develop decisions and thoughts on a matter. They were given time to think and answer a question instead of the typical classroom model of being forced to memorize and regurgitate answers. The classes were open to discussion instead of having a space where people dismissed or rejected an idea. A student said this freedom created conflict but at the same time provided a space to learn how to resolve conflicts. Some students say they were uncomfortable with this freedom to create their own projects, while others came from high schools that were structured with freedom like in SUSTAIN.

- “At Cal Poly, you know, you succeed when you memorize and repeat, for the most part, and the classes that they have us take as a freshman, they’re just, you know, Scantron® tests. And then you get to SUSTAIN and everyone’s like ‘just--just slow down—just think about it. What are you interested in?’ Well, we’ve been so busy doing APs, playing sports, filling up our resumes with things, we don’t know what we’re interested in. We don’t know what we’re passionate about. We don’t know what we like to do. Because no one’s ever given us the time to just think about something.” - Colette Donovan
- “Everyone should try to be as open and honest as possible and SUSTAIN does that. We were probably the most honest with each other towards the end. We were like, you know

what? This is how I feel and if you don't like it, like, I'm sorry. You just have to throw that out on the table. Like, other places don't have that. And I think that's special. That we could foster that right off the bat. But now I see this in ROTC where I don't share, like you can't, there's like a stigma where you can't really share, it's the military, you just don't." - Tiffany Hennek

Collaboration and Team Building

Generally students found value in working together to create something larger than themselves and seeing themselves as part of a community. Some of the students had a hard time adjusting to the collaborative process within the community projects and classes because they were used to prioritizing a particular outcome over the process. But “weekly check-ins” and “check-outs” and periodic project reviews let them reflect on the dynamics of working as part of a team. “Check-in” and “check-out” is a structure built into the week where an hour on Monday and an hour on Friday is spent with the community as a whole. The time is either spent in dialogue or on project work. Eventually some of the students self-organized peer tutoring and study sessions.

- “In SUSTAIN we all had similar passions to make the world a sustainable place...so that sense of community ... was really good – and that’s what I miss actually...With SUSTAIN it was like everyone was going through the struggle together. It was like we’re in this together... I feel like the sense of community was really helpful especially...check in and check out was really helpful....Periodically we had ... presentations about community projects, and when people shared that they actually had troubles within their community projects it was really helpful because we also have these troubles. In the regular traditional classroom you only see the end product of a group project and that’s it—but you never see like the progress of the struggles.” - Yolanda James
- “In other classes [when] we do group projects there’s always one person who’s like the dominant person that always does the work. And I feel like in our group it was really important for us to be like ok, we’re going to equally participate in this like we’re all going to get something out of this. And I think that’s a whole different mentality that we kind of had to work through.” – Ordorica
- “We had to do a group project for physics...so we all worked on the project together and that happened every single time...I learned more because I helped others and they helped me.” – Barbara Kennedy

How did SUSTAIN affect students?

These excerpts refer to the ways the students feel their time in the SUSTAIN community influenced their experience in higher education or their life as a whole.

Personal Reflection

Students mentioned that SUSTAIN helped them develop their capacity for personal reflection and to understand their own point of view, particularly in regards to their motivations for learning (e.g., grade-based, intrinsic) and their model of leadership within a group dynamic.

- “We were able to see everyone’s different perspectives and we were all equally a part of the project.” - Ordorica
- “Even if I don’t have this amazing thing to show for it, like an ‘A’ on a paper, I really learned how to value the process and learn from the process, and make that the deliverable... SUSTAIN was... people that kinda cared more, wanted to have a fulfilling experience while learning things, and not just trying to pass a class.” - Colette Donovan

Ownership of Education

Most students found that SUSTAIN instilled in them a sense of personal ownership of their education that they had not experienced in the traditional classroom at Cal Poly or previous institutions. While some felt the lack of structure and direction in this model was difficult to adjust to, and some never adjusted, most eventually expressed increased personal fulfillment and passion for what they were learning. Students felt more in control and supported in the classroom and experienced an overall increase in comprehension and real world application. They felt they learned to honor their personal interest in learning a subject and self-driven inquiry.

- “I think that I'm becoming more serious about my school work, not that I wasn't before but I think more so I'm realizing that this is an opportunity you can take to learn and really capture all the information that people are telling you.” – Ordorica
- “[I] think about when you take a class, what are you getting out of the class not just what grade can I get in the class and what does the school benefit from you taking the class. What do you want to learn? What are you interested in? What's important to you? And really learning that.” - Matt Wolfer
- “I felt confident and supported to try new things, and really push myself and learn something, and I don’t feel like that in other classes.” - Colette Donovan
- “...you have to go to school, through high school. You’re forced to, [but] for me it is so I can have an impact on my community and have a positive influence on my life and the people around me, and owning that, and know that what I’m doing in my classes is important and that I need to get the most benefit out of them. I to want use that information in projects and in real life, and not just sleep through lectures but be engaged and be a fully committed student.” - Ginelle Day
- “With SUSTAIN, it made me explore the aspects of my life that... I didn’t know existed, so SUSTAIN also inspired me to change my major to Kinesiology. So I started the change of major process last year and... at this point in my life my parents have always made the decision for me and now it’s my decision.” - Yolanda James

Discovering Internal Motivation/Joy of Learning

A lack of deadlines and external motivators led many students in SUSTAIN to learn to motivate themselves based on personal interest. This internal motivation caused students to actively participate and become excited about learning, something they found extremely rewarding. The students generally adapted their personal study and learning styles to suit themselves which led to better studying and improved grades as well as an increased level of personal satisfaction and satisfaction with college. Many students began seeking out opportunities outside the classroom. Additionally, a significant number of students changed majors or discovered a new area of interest.

- “It’s so exciting because I like it” - Elena Gaeta
- “And then second quarter I think I started seeing things a little differently and became more self driven. And started, I don't know, figuring out how to learn for me.” – Sophia Dahl
- “I really now care more about my grades. I realize that I can motivate myself to get good grades doing homework that’s not suggested problems. Really reading, taking notes, and really caring about how much I’m learning and really liking what I'm learning.” – Delaney Shaw
- “I was kind of disappointed to learn about myself that I didn't have the motivation that I thought that I did. But it turns out that I have more motivation in other areas.” – Jane Brewer

Friendship

Many students in SUSTAIN made very meaningful friendships that held true even after the formalized experience ended. Some students who had struggled to connect with a solid group of friends outside of SUSTAIN easily made friends within the learning community, partially because collaboration was encouraged.

- “I was happy to be here. I finally settled in. I had friends. I was doing stuff.” - Tiffany Hennek
- “I definitely developed more through SUSTAIN, and I definitely think the camaraderie with SUSTAIN was really big.” - Ordorica
- “I had a fantastic time meeting some friends I will probably have for a very long time... I miss the people. I miss the faculty and everything.” - Jane Brewer
- “I’m actually friends with people from SUSTAIN this year too. Which is kind of cool because I stayed connected with it. I stayed and tried to help out.” - Sophia Dahl

Support and Resilience

The open communication between students and faculty in SUSTAIN created a sense of mutual support. The weekly check-ins enabled students to feel like they were struggling together instead of individually, creating a feeling of camaraderie with each other and fostering a motivational and connected environment. The interviewed students commonly mentioned that the support and attention from professors made them feel part of a personal community. For some of the students their experience in SUSTAIN refueled their motivation to be in school.

- “SUSTAIN was great because I created this network of people who I could take classes with and professors who cared about us and knew my name and everything and that was like exactly what I needed.” - Mary Flemming
- “I don't think I would have made it this far if I wasn't in SUSTAIN....I don't think I would have had the backing of professors that I feel like I have...I would say a support system that I still have even though I'm not in SUSTAIN anymore.” - Delaney Shaw
- “With every SUSTAIN professor that you talk to and you meet and it's like ‘oh—how are you? you know—how are you doing? How are your classes? How are you this quarter?’ And I feel like it's like that with all the SUSTAIN students as well. Whenever we talk or like just say hello, we're always just so happy to see each other. It's always like that.” - Elena Gaeta

Collaboration

The project-based nature of SUSTAIN gave students the applied context to learn to appreciate the power of working together to achieve a common goal and to acquire the skills needed to collaborate. They reported feeling more confident and self-aware in a group scenarios after participating in SUSTAIN.

- “I think for me [in regard to] SUSTAIN, working on the project really taught me about working in groups. That is what I really valued from it. Because before that I never had to coordinate with people. And having people rely on you makes you recognize yourself as part of a larger group....I learned a lot... things like shared ownership [and] being able to coordinate people.” – Nicholas Pratt
- “...Just working with others and seeing their strengths and my strengths and just like the working together was the biggest things I learned from SUSTAIN... fall quarter [after SUSTAIN] I noticed I actually studied more with people.” – Barbara Kennedy
- “It's a lot easier for me to do group projects and form camaraderie with other students.” – Sam Summers
- “One of my favorite quotes ever is ‘relationship is the medium for unprecedented result,’ and I think that is one of the biggest things that SUSTAIN is and provides and kind of embodies more than anything...[is] forming relationships with people and using that as the springboard for anything you want.” – Ginelle Day

Risk Taking

The social fabric of SUSTAIN empowered students to take risks, deviate from conventional norms, and enter into uncertain situations because they knew they would be supported by a community if they failed. And they found that they learned a lot from failing, that failure is actually a necessary part of learning, so they continued to take risks and fail as they continued on after SUSTAIN. Examples of mentioned risk-taking include: asking for help, sharing their actual opinions during class, initiating conversations with new people, talking with professors, working through uncomfortable social situations instead of avoiding them, exploring topics they knew nothing about, jumping into self-directing assignments when specific guidelines weren't provided by a teacher, skipping classes that they didn't find interesting or not doing work that they didn't find meaningful, applying for leadership positions, starting new clubs, studying abroad, changing majors, and setting ambitious goals for the future.

- “I learned how to kind of get out of my social bubble. My own little bubble. My world bubble. And just kind of be okay with uncomfortable situations and not knowing what's going on.” - Jane Brewer
- “You know [classmates] well enough to be friends, and so [that changes] a lot because you have people to talk to about the class, people to get help from, or just like someone to ask what the homework is and it also helps, I think, with class discussion-- if everyone is friends, then, you will say whatever you actually think” - Mary Flemming
- “You know how to plan better, how to manage yourself better, manage your time, manage your course work. You get an idea of what's feasible and what's not.” - Nicholas Pratt
- “I didn't go to class that much [after SUSTAIN]. That might have something to do with my academic probation. Specifically... my two technical classes I didn't go to the lectures. I only went when there were tests. But I was, I think, very diligent in keeping up with the book. I did all of the homework, you know, so, and it was working for me. Ummm...but yeah, I think maybe being exposed to SUSTAIN maybe made that easier for me to do, more comfortable.” - Michael Brown

What negative comments did students have about SUSTAIN?

There were some students who felt that SUSTAIN initiative was not helpful for them. We are happy to share their negative experiences and to remember there is always freedom in SUSTAIN to participate or not.

Open Assignments/Structure

Some students noted that the general lack of structure in SUSTAIN made them uncomfortable and doubt the value of their participation. For a few individuals this eventually wore them out. In some classes, especially one section of physics, the students felt that they needed more support

and direction to learn the material. They spent a lot of time trying to learn outside of class and ended up confused and frustrated. Others found it difficult to find internal motivation to engage with their classes.

- “Because it was the first year doing this program, SUSTAIN kind of started off slowly. No one really knew what was going on. We had that week where we just met and kind of just did games and such and everyone just kind of started to get that feeling like, is this program actually going to be worth it for us?” – Sam Summers
- “One thing I am certain of is that my enthusiasm for SUSTAIN did die out. I feel like it did for a lot of us. By the time that spring quarter rolled around, we were drained. After all that talk about how we wanted to learn and how we were going to approach it, we were worn out. We were tired of being asked the same question. We were frustrated that no matter how many times we talked about how to learn, we weren't any closer to the solution... Perhaps I was also a little disappointed that SUSTAIN was not what I pictured it to be. I had this belief that I would be going out into the community and throwing myself into projects; not sitting in classrooms and plastering sticky notes onto walls. Although I did enjoy the conversations and topics that were brought up, it wasn't what I had hoped for.” – Kay
- “I liked the concept more than I liked the actual way it was put into practice. I liked the idea of having just the broad questions and you come up with the answers yourself and you do a lot of self-teaching. It's an interesting concept but in certain areas it didn't seem like I was actually learning enough to have it be like a meaningful experience. Like I was trying to teach myself stuff that I didn't understand. The ... questions or dialogues or whatever weren't really helping. I was actually lost a lot in some of my classes...I clearly needed more instruction than I was getting in the SUSTAIN model of learning.” - Roberta Macklin
- “I had a nightmare actually that I was in physics again, it was so bad.” - Delaney Shaw

Community

Some people in SUSTAIN did not feel included in the student community and did not form lasting relationships, especially if they weren't outgoing in the beginning of the experience. They found it difficult to submerge themselves into what seemed like already close friendships between other students, and instead felt isolated from their peers. However, they tended to still be able to connect with faculty and community partners.

- “It wasn't really as much of a...everybody-included community feeling, so I guess I'm part of like a fringe group on the outside ... it seemed pretty cliquey.” – Roberta Macklin
- “I definitely don't talk to a lot of people from SUSTAIN... I probably wish I would have been a little bit more outgoing in the beginning. I think people became really close friends really early. And I think it took me a little bit.” – Ordorica

- “I think because I was so quiet I didn’t form as many relationships. That would’ve made [SUSTAIN] an even more powerful experience, because ... relationships were really the foundation and the most important part of it.” – Ginelle Day
- “I knew people and we still occasionally say hi and everything but it's not like I made very lasting relationships ... It's probably because I didn't put myself out there and try to build relationships within SUSTAIN.” – Kay

Integration

Some students expressed difficulty adjusting back to “normal” classes the year after they participated in SUSTAIN because they missed the freedom and community support.

- “It’s a big shift from SUSTAIN to regular classes....fall quarter [after SUSTAIN] was kind of weird because I was looking at the door, waiting to see all the faces that I knew, just to sit down and be sitting together, and then I guess I just slowly started to adapt back to the regular Cal Poly schedule.” – Elena Gaeta
- “Fall quarter [after SUSTAIN] was like the hardest quarter because that intrinsic motivation had somehow disappeared over the summer... I wish we had a SUSTAIN recap ... so we could all remember why we did SUSTAIN and how to push us through this year ‘cause fall quarter was so difficult to me.” – Yolanda James
- “And going back to regular classes this year... I don't like this. So it was really hard for me to transition out of SUSTAIN again. Yeah it was really hard to transition back.” - Tiffany Hennek

Discussion and Conclusions

The SUSTAIN learning initiative is an attempt to ask what is possible in higher education. This research project helped to illuminate both the structural differences and the effect the initiative had on students. The outcomes from an institutional point of view were adequate, but through this research we found significant other outcomes. These outcomes are diverse and are explained in detail above, but for the most part we were able to look beyond the content-based, cognitive learning that takes place in a classroom and see the resulting community support. This community of students, faculty and community partners created a rich network of learners who strived to ask difficult questions in a complex world. For some students the SUSTAIN experience was too unstructured, for others it didn’t go far enough, but for many students, the lessons learned will be with them for a lifetime.

The call for data driven research gives the educational community a kind of “gold” standard for evaluating various educational interventions. Although this is laudable, there are dimensions that are overlooked when we focus on the typical measure of “students success.” When trying innovations, we should have a baseline for the success metrics that include retention and passing courses, but we must be cognizant of other possible outcomes we are overlooking. In this

learning initiative students are retained at the same rate as the university and they are, in some instances, more successful in their courses. Retention itself is an imperfect measure. Because the faculty in this initiative know most of the students, we also know why they were not retained. In some instances, the students who left the university did so after careful consideration of their goals in life. The decisions to leave for these students seemed like a success to us. They found activities or universities that were a better fit for their lives. In regards to GPA, student report a changed relationship with grades and the evaluation. Because of this students were no longer focused on the grade achieved, but the learning that occurred. This might be one explanation for the higher mean GPA of SUSTIAN students even years after participating in the initiative.

From the student's perspective the SUSTAIN experience was different in that many of the structures of education were questioned or changed. This might have been the first time students really saw that the educational process is a choice. This realization of ownership opened up a whole new way of learning. In addition, the co-learner relationship with faculty and the openness around assignments, helped to point students to their own capacity to shape their life and the world. The cohort model of learning showed students the value of community. Students reported a plethora of benefits in the area of self-actualization and intrinsic motivation.

As with any innovation, there are unintended effects and students reported some of these negative consequences. Particularly interesting is the difficulty students had in transitioning back to the traditional classroom. Many SUSTAIN students created their own network of support after SUSTAIN, and some students came back as TA's to mentor freshman students.

Although this year, 2015, is the last year of the SUSTAIN initiative, the results of the innovations guide us in the development of future work. We would like to maintain a community based, co-learning environment with sufficient diversity so that we continue to inquire as to the most nurturing and loving way to be together in higher education.

In the spirit of SUSTAIN the research team used this project to live our principles of collaboration. We tried to honor the whole and to remember that the quality of the relationships influence the quality of the work we can do together. We worked together diligently, and sometimes laughing to accomplish the task of writing this paper. Below are the reflections from undergraduate researchers and recent graduate about what they learned from participating in this research:

- “I learned about my classmates more than when I knew them personally. I learned that assigning ourselves certain dates is important to keep on top of research deadlines. And I learned how to reassess the situation in a group in a loving way instead of having a punishment for not completing a task on time.” - 4th year English major
- “I learned how to qualitatively analyze data and be able to draw meaning and see patterns from stories instead of just numbers. And I learned how to organize a

collaborative research paper and the importance of keeping a holistic perspective when working with detail.” - recent graduate in environmental engineering

- “In the process of doing this research, I learned that it is important to remember that our results are significant, even if they are not the results we expected to get. I realized that just because I got a lot out of SUSTAIN, other people did not necessary. I was surprised to find that some students had a negative experience in SUSTAIN, and due to my own biases, wanted to leave that collected data out of the the results. I learned the importance of interpreting all of the data, rather than focusing just on the data that I wanted to find.” – 4th year Environmental Management major
- “Through this research I have been able to deconstruct how my education, inside and outside the classroom, has been shaped by my participation in SUSTAIN. I have learned to separate my own emotions and beliefs from those of my peers. And most importantly, I have learned how to conduct qualitative research as an objective tool for understanding the subjective human experience.” – 4th year Anthropology major

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APPENDIX: Interview Summaries

Below are summaries of each interview narrative with pseudonyms. Since the process of analyzing the narratives created a very fragmented look at the information, we wanted to include each individual's main points from their interview to make sure we did not lose something in the analysis process.

Jane Brewer

SUSTAIN was difficult for Jane because of the time commitment required for the integrated classes and project work. She met a lot of great people and enjoyed the in-depth analysis and conversations in most of her classes, although physics was an overwhelming, time-consuming struggle. She learned that she likes a lot of structure and got to practice patience and getting out of her social bubble. She also learned that it's very hard for her to find motivation to do things she isn't interested in, but that she *is* very motivated to learn things that she can apply to her life. She is enjoying the projects for her major classes and getting her pilot's license.

Nicholas Pratt

Nicholas still feels very connected to SUSTAIN and still takes classes within the community, helps the new project teams, and asks the faculty and staff for advice on moral dilemmas. He appreciated the diversity of people in the SUSTAIN community and the opportunity to work in groups and learn through failing. He thinks that failure is necessary for leadership to emerge and that discomfort leads to growth. He mentioned that the project teams seemed to be more product over process oriented, so teams who produced a deliverable product were judged by their peers to be more "successful" than teams who might not have achieved their end goal but learned a lot in the process.

Sophia Dahl

Sophia was having a tough time transitioning to college when she joined SUSTAIN and felt that she was just "spitting out the facts" in non-SUSTAIN classes. At first she found SUSTAIN socially awkward and frustrating, but she eventually formed strong bonds with her peers in her community partner farm group that helped her feel supported and find her internal motivation.

Mary Flemming

Mary found community and fulfillment in SUSTAIN which made her finally feel at home at Cal Poly. She found that personal relationships with the students and professors broke down a politeness barrier in the classroom which led to deeper learning and an environment where everyone was challenged to maximize the experience. She has been able to carry that personal learning environment and ownership in education forward into her other classes. Using skills learned through her SUSTAIN experience she has followed her passions and pursued German history through language, and literature classes which has culminated in a study abroad experience in Berlin.

Anders Thorup

Anders is not afraid to be a self-starter or to process his thoughts in front of people and communicate openly and authentically, which he attributes to spending so much time with the same group of people in SUSTAIN and the mentorship of SUSTAIN faculty. He is grateful that SUSTAIN laid a good foundation for learning how to balance projects and academics and mesh them together to be mutually beneficial. He is very involved with a bio engineering club on campus that he tries to organize around intrinsic motivation. He really values the network of students and faculty he met in SUSTAIN and feels he can rely on them as resources and collaborators for his club projects.

Elena Gaeta

Elena liked SUSTAIN quite a lot and even continued to participate during her second year staying active in a community project and taking classes. She changed majors and found a passion in a career in wildlife biology through her community project. When asked about SUSTAIN, she finds it hard to explain, but really liked the experience.

Roberta Macklin

The second quarter of SUSTAIN was an emotionally draining time for Roberta for personal reasons. She was glad to be part of SUSTAIN, a community where people knew who she was before she was changed by this hardship. Roberta retook an economics class that she originally took in SUSTAIN and had the same professor for both classes. But the non-SUSTAIN section was structured more like a traditional lecture, and she found it easier to learn in that more structured environment because she lacked intrinsic interest in the topic. Roberta appreciated the community project aspect of SUSTAIN because she felt she obtained skills that were applicable to “real world” situations.

Theas Painyn

Theas wants to be in control of his learning environment. He found that SUSTAIN matched his learning style better than traditional lectures because it emphasized integrated and applied learning, social interaction between students, and individual exploration. He summarized the two models as interactive (SUSTAIN) and a one-way flow of information (traditional lecture). He felt that in SUSTAIN he learned in a way that was relatable to other aspects of his life besides school. And the classes he took with SUSTAIN tied into his community project. He noticed a drop in his GPA after he left SUSTAIN, which he attributes to his difficulty in processing a one-way flow of information from professor to student. Since there is no longer space in his classes for student interaction, he goes to professors’ office hours.

Bobby Goldstein

Bobby was hesitant about joining SUSTAIN at first, but he loved it and found it really helpful. He enjoyed the community project as applied learning and a chance to explore new things and

build his resume. He met awesome people, got to know professors, and got comfortable going to office hours. He had already formed a social group in the fall before SUSTAIN and was comfortable learning and working in groups, but in SUSTAIN he really got to know himself, try new things, understand his thinking process, and develop his time management and study skills. He liked having more time to self-teach instead of being in lecture.

Matt Wolfer

Matt thought that SUSTAIN taught him the importance of actually learning concepts, rather than focusing on the right answer to receive a good grade. He liked the SUSTAIN method of teaching because it illustrated that there are other ways to do traditional things. Being exposed to different points of views was very eye-opening for him.

Tiffany Hennek

Tiffany described SUSTAIN as the “best experience I’ve ever had”. Before SUSTAIN she didn’t feel connected to Cal Poly but through SUSTAIN she became involved on campus. The initiative helped her find motivation and passion in just learning without the incentive of grades, something she found difficult but inspiring. Now Tiffany has changed majors, become involved in ROTC, studies with friends, and LOVES BEES (which she discovered doing research for an open assignment in one of her SUSTAIN classes).

Yolanda James

Yolanda felt that the freedom, encouraging faculty, and community commitment to manifest change in the world that she found in SUSTAIN helped her understand more about herself and clarify her direction in school. She was inspired by an open assignment in her English class to investigate the lack of diversity on campus. After SUSTAIN, she changed her major and also spent a quarter at a different university to explore her options. She had a really difficult time transitioning back to “normal” classes the fall quarter after SUSTAIN and felt that she had lost her internal motivation and wished there was some sort of bridge between SUSTAIN and normal classes to help students maintain their momentum.

Ginelle Day

When she joined SUSTAIN Ginelle was struggling with choosing her major and trying to balance her original choice - engineering - with her passion for sociology. She felt more like an observer than a fully engaged participant during her time in SUSTAIN and believes her quietness limited the relationships she formed. Overall, Ginelle felt like she connected with professors more than students, but she really resonated with SUSTAIN’s idea that “relationship is the medium for unprecedented results.”

Barbara Kennedy

Barbara appreciated that SUSTAIN connected her with a very supportive learning community. Since SUSTAIN, Barbara has noticed an improvement in her test scores. She also collaborates

more often with students and uses resources other than the teacher and the textbook. Her community project in SUSTAIN helped her make good friends whom she still collaborates with.

Ordorica

Ordorica found that SUSTAIN was a very positive experience overall. Through the program she gained confidence in herself and developed the ability to put words to what she is thinking. Now she wants to get the most out of her education and is actively involved in clubs and leadership positions on campus. She is talking to professors from her department about her career goals.

Lillian Bowser

Lillian joined SUSTAIN because she was interested in a different type of learning. She appreciated the comfortable, conversational dynamic in her physics class in SUSTAIN and felt comfortable asking questions when she didn't understand. She didn't know that it was the first year of the initiative and kind of limited her participation in SUSTAIN because she was scared of creating something new. She thinks some of the students took advantage of the open, self-directed learning environment and optimized for time efficiency instead of really learning. She also thought SUSTAIN was a bit clique-ish and the more outspoken, driven students got more out of the experience than she did. She didn't have trouble transitioning back into "normal" classes and feels like SUSTAIN is in her past, although she is trying to ask questions more in her classes.

Michael Brown

Before participating in SUSTAIN, Michael was considering dropping out of college because he wasn't sure that it was a good investment and he was getting bored in the standard model classes. SUSTAIN provided a change of pace that made him want to be in school and graduate. It also helped him build up his resume, make lasting friendships, and honor his own learning style, even if his style doesn't match the pace of how a class is structured. Although now that he is out of SUSTAIN, he is having trouble paying attention in regular lectures. Before SUSTAIN he was really good at listening and absorbing everything. Michael is currently on academic probation, so he's still learning to adjust, but he's confident and he doesn't care about grades, which is why SUSTAIN appealed to him.

Delaney Shaw

SUSTAIN changed the path of education for Delaney. She was having a difficult time adjusting to college and SUSTAIN helped her develop more confidence and ownership of her education. She is now very active in school extracurriculars and is concentrating on learning through intrinsic motivation. She valued the relationships she made in SUSTAIN with both students and teachers.

Kay

Generally Kay's experience in SUSTAIN was not positive. She did not build strong relationship except with her community partners. She thought the conversations were repetitive and that teachers were too lenient in assignments. She found she needed something different than SUSTAIN.

Sam Summers

For Sam the SUSTAIN experience really took off when the students began self-organized study sessions. He found that this improved group project involvement, study skills, and his own leadership. He thought that additionally the community projects fostered group accountability and also improved his leadership ability. The personal development and leadership he gained from SUSTAIN has been recognized by his fraternity and he was nominated for several leadership positions in the group.

Colette Donovan and Olivia Turner

Olivia was afraid that she would not appreciate future classes because SUSTAIN classes were so fulfilling. She would rather discuss topics in a learning community than memorize what the teacher says. She thinks that memorization style encourages students to skate by without learning anything and encourages teachers to expect that students want to skate by without learning. Colette added that other teachers are not as understanding or empathetic as SUSTAIN teachers.