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A Community of World Class Engineering Students

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Abstract - This paper is a work in progress report on an Engineering Living Learning Community (LLC) at Boise State University. Though the LLC under consideration is for the time period of Fall 2014 to Fall 2016, this report is limited to student as well as instructor anecdotal and self-reported experiences, observations, and evaluations made during Fall 2014 and Spring 2015. The mission of the Residential College program at BSU is to integrate student academic and personal life in a residential setting, so as to develop interdisciplinary knowledge, foster deep learning, and maximize student success. In support of this goal, students completed various activities, which were designed to meet the learning objectives of the LLC. Two of the notable products created by students were a written report entitled (1) Design your process for becoming a “world class” engineering student in Fall 2014, and (2) Open-ended projects in Spring 2014. Results from anonymous student evaluation surveys (Fall 2014 and Spring 2015) are discussed. Future directions for this LLC include starting a program wherein former LLC participants (current sophomores) could apply to return to the community as peer mentors and identifying ways to expand the program.

Index Terms – First Year College Experience, Living Learning Community, Residential College, Faculty in Residence.

Introduction

A Living and Learning Community (LLC) can take many different forms but it is typically understood to be a predetermined cohort of first-year undergraduate students, who may share common classroom experiences, residence hall co-curricular activities, and faculty involvement outside the classroom [1]. Faculty may be involved in the LLC through a faculty-in-residence program, in which a faculty member lives in the residence hall, holds office hours in an office or common area of the residence hall, hosts study groups or review sessions before examinations, and attends co-curricular activities with the students. Most LLCs have the goal of improving student educational experience by integrating in-class academic instruction with out of class co-curricular activity based learning.

A preliminary review of literature revealed several advantages to students participating in a LLC. Male students found a LLC to be a “safe haven” (p.168) from the expectations of a rigid gender role as well as providing them with the opportunity of enjoying social involvement with faculty and fellow students [2]. It helps students to connect to the university, their major, and peers [3]. However, mixed responses were reported regarding the intellectual gains made from participation in a single study area living-learning community, where some students reported positive academic gains, while others reported isolation from other students. Active and intentional faculty involvement in residence hall learning communities, have been reported to have a direct relation to student learning and living satisfaction [4].

With this context in view, this paper presents a report on an Engineering LLC at Boise State University (BSU). Though the LLC under consideration is for the time period of Fall 2014 to Fall 2016, this report is limited to experiences, observations, and evaluations made during Fall 2014 and Spring 2015. Since, this report is not based on an Institutional Review Board (IRB) approved study, it reports general anecdotal observations and summarized, anonymous student course evaluation data only.

Living Learning Community at Boise State University

Residential Colleges at BSU operate under the broader scope of the LLCs. The mission of the Residential College program at BSU is to integrate student academic and personal life in a residential setting, so as to develop interdisciplinary knowledge, foster deep learning, and maximize student success. Faculty members living in the residence halls are known as Faculty in Residence (FIR) and their primary goal is to support academic and social integration among the residential community members. The FIR can design instructional content and intended learning outcomes based on the disciplinary perspective of the Residential College.

What makes the Residential College program at BSU distinctive is the low faculty to student ratio and the academic course credit, which connects the curricular with the co-curricular. It is expected that students at a Residential College will develop a sense of belonging in the residential hall and to the larger university community, as well as

experience curricular and co-curricular interactions with other students, faculty, and staff. Students are exposed to learning opportunities that support their becoming responsible members of a broader global community, at the same time as they demonstrate knowledge and skills related to their academic majors.

Though the Residential College program at BSU was established in 2004, residential space was created within a residence hall for the first engineering FIR in 2007. The FIR are expected to teach the Residential College course associated with their community as well as build relationships with residents, aimed towards promoting both community building and academic learning.

In Fall 2014, 28 students were admitted to the Engineering LLC for one academic year (one student was required to leave due to personal reasons in Spring 2015). The intended learning outcomes for the engineering LLC are to increase learner self-assurance, confidence in public communication, academic achievement, self-assessment skills, digital fluency, and a sense of belonging to the community and to the university as a whole.

Student Projects in Fall 2014 and Spring 2015

Two of the notable products created by students at this LLC were (1) Design your process for becoming a “world class” engineering student in Fall 2014, and (2) Open-ended projects in Spring 2015. The former project tasked students to develop a personal career and life plan (as presented through a 10-12 page written report) that would indicate the steps for succeeding as an engineer of distinction. The report would also indicate their current status towards achieving that goal, identify the gaps, and how they plan to overcome the barriers to success. Students along with the FIR presented a poster based on their report, at the Great Ideas Symposium hosted by the BSU Center for Teaching and Learning in Spring 2015. Speaking about the experience of completing this project, a student commented: “I think the final project, even though it is a bit long for a one credit class, has been rather beneficial for me and my learning. It has really got me thinking and planning about what I want for my future and why I want it.” The Open-ended projects included design and building a robotic arm, frisbee launcher, trebuchet, modification of a quadcopter, infrared sensory device and a pandora streamer. Students worked in six teams.

Students also completed various activities, which were designed to meet the learning objectives of the LLC as envisioned by the FIR. Student self-confidence was enhanced through service and hand-on building projects. Public communication skills were improved via group social activities and class discussions. A sense of community and belongingness was built, when students participated in social activities like game and movie nights, camping and rafting trips. Guest-speaker (like the Dean and faculty from the College of Engineering) events and attendance at the BSU Top Ten Scholars Award (highest

academic honor granted to a BSU undergraduate student) ceremony, provided students with professional and academic role models. Students were loaned iPads (from the BSU Instructional Design and Educational Assessment shop) for use during their participation in the LLC, in order to facilitate the development of their digital fluency. Students used the iPad in class to interact with the lecture content, as well as completed assignments and homework.



Figure 1. Poster presented by the students in the Engineering Residential College at the Great Ideas for Teaching and Learning Symposium at Boise State University, January, 2015.

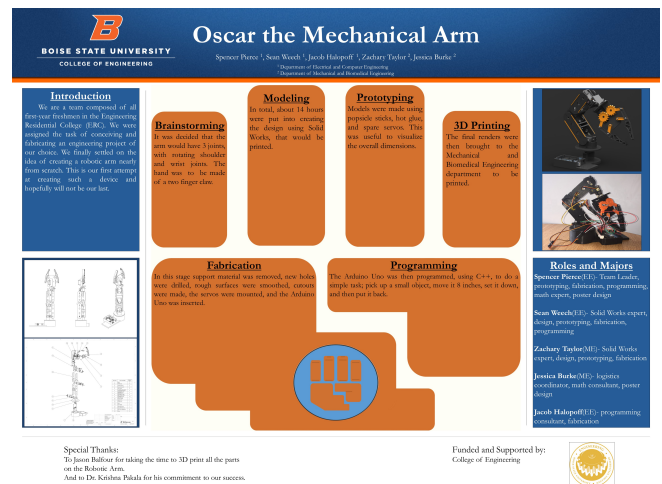


Figure 2. Poster presented by one of the six students teams in the Engineering Residential College at the Senior Design Showcase, April, 2015.

What do the students think? - Student Evaluations

In order to evaluate the living and learning experiences at the LLC, participating students were asked to complete an anonymous survey at the end of Fall 2014 and Spring 2015. In both semesters, the quantitative portion of the survey reported that a majority of the students found the instructor was prepared for class, provided timely feedback, fostered learning in the course and clearly explained the learning objectives and assessment methods associated with the course.

Students also reported that the faculty member was engaged with the students, created an environment that promoted learning, used fair course grading and evaluation methods, and made the student feel like an important member of the community. Involvement in the course and community also provided students an opportunity to engage in a community, learn new things, appreciate diversity, connect with opportunities associated with the community's theme, and experience an overall increase in self-confidence. Students reported to taking initiative in getting involved in their community, completing assignments in thoughtful ways, attending out of class community activities, accessing community resources, and being engaged in the experience. The Program Assistants supporting the LLC, served as good role models, were engaged, communicated effectively, spent quality time with the students, and provided leadership within the community.

Student responses to the qualitative questions of the survey showed that participation in the LLC taught students how to cooperate and communicate with their peers. They built connections with others and worked in teams, which helped them both academically and socially. A student mentioned, "I think being in an environment that promotes learning and community involvement has been the most valuable. It has helped me focus my attention on what's important, like my classes, while keeping me involved with other students." Living in a community of student engineers, helped some students to transition smoothly into college life. Students identified that some of the most valuable gains from participating in an LLC were the sense of community with fellow engineering students, learning college success strategies, working in groups, and communicating with people with different personalities. A student remarked, "I've learned that being an engineer is a lot of work, but it's easier if you can work as a team. Engineering students have a lot to work on and get done, but with a group around you, it makes it seem easier and definitely more fun." Students commented on how participating in the LLC helped them integrate into freshman college experience "The Engineering ERC allows students to jump start on College, by learning how to be successful and make connections with faculty. I can say that I might not have the same opportunities if I just lived on campus." While most students reported no barriers to learning, a few mentioned lack of time and motivation to complete assignments and activities.

Instructor experience

The FIR for the Engineering LLC believes that retention in engineering degrees could be enhanced when students experience a sense of community while at college. Some of the FIR's objectives included facilitating students to develop their oratory skills, increase self-confidence and belief of persistence in engineering, increase digital fluency, diversity appreciation, team work, and to motivate students to excel beyond passing grades. At the end of Spring 2015, the FIR noted that while he was highly motivated by the observed and self-reported student successes at the LLC, he would take measures to improve upon areas of concern expressed by the students, in order to make their experience more fruitful.

Future directions

As a future development, plans are being made to start a program wherein former LLC participants (current sophomores) could apply to return to the community as peer mentors. As plans for expansion proceed further, more ways and means for finding financial and institutional support need to be identified.

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