

Work-In-Progress - Learning Resource Center: Building Community to Increase Student Success

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Abstract – Success interventions allow students to supplement their in-class experiences with rich interactions outside the classroom. Students that utilize these kinds of resources reap optimal benefits. An analysis of retention to graduation data found that over half of the engineering majors at Baylor University never experienced living-learning programming. The six-year graduation rate of the students living in the living-learning program was much higher than those who did not experience that kind of living environment. This underserved population was targeted with a new retention initiative, the Engineering and Computer Science (ECS) Learning Resource Center (LRC). The intent of this center was to provide academic support and a sense of community and connection to the population of students living outside the living-learning program. A team of ECS faculty and staff joined with three graduate students in the Higher Education and Student Affairs program to staff the LRC and to design programming. *The Power of Two Mentoring Program* was formed with 5 peer mentors and 30 mentees, and student workers were hired to provide tutoring. We were very encouraged by the results of this year's pilot program, and Computer Science has committed to enroll all first-year computer science students in *The Power of Two* in the 2016-2017 academic year. We continue to pursue additional funding to expand support services at the ECS LRC.

Index Terms – Retention, peer mentors, community

BACKGROUND & RATIONALE

In fall 2015, the School of Engineering and Computer Science (ECS) opened the doors of the Learning Resource Center (LRC), a space designed to support the academic experience of students living both on and off campus. The vision for this space came from a team of ECS faculty and staff who collaborated over enhancing ECS student success and increasing graduation rates. Since 2004, ECS has partnered with Campus Living & Learning to host a discipline specific living-learning program designed to engage, connect, and retain students within engineering and computer science.

Data on students who began as engineering majors between 2004-2008 was analyzed based on housing choice. The overall six-year graduation rate for students living in the living-learning program at any point in their academic

career was 64.0%. The six-year graduation rate for students who never lived in the ECS living-learning program was 44.3%. Digging into the data a bit more paints an increasingly bleak picture for those students not engaged in the living-learning program. In the sample analyzed, 37.7% of the engineering majors lived in the ECS living-learning program, and 62.3% did not. For female engineering students, 51.2% were living-learning program students with a 62.1% six-year graduation rate, and 48.8% were non-living-learning program students with a 38.1% six-year graduation rate. For minority students, 25.1% were living-learning program students with a 65.3% six-year graduation rate, and 74.9% were non-living-learning program students with a 29.5% six-year graduation rate. Data on students who began as computer science majors between 2004-2008 was analyzed; however, housing choice was not included in this analysis. The six-year graduation rate for this major averaged at 39.1%.

This data analysis, in addition to anecdotal evidence, supported the need for increased resources for those students living outside of the living-learning program. The need to build connections and community and to increase retention among non-living-learning program students drove the creation of a pilot program, the Learning Resource Center, designed to target students living outside the ECS living-learning program. This space is nestled in the heart of many of the first-year residence halls, a considerable distance from ECS's academic building and living-learning program. The LRC provides students with collaborative and individual study space as well as a computer lab connected to the ECS network. In addition, undergraduate student tutors were hired to help other students with a variety of particularly challenging courses within the ECS majors.

In addition to opening the physical space, *The Power of Two Mentoring Program* (TPOT) was piloted to build community and connect students who live outside the ECS living-learning program. A gift from the Halliburton Foundation funded the hiring of five peer mentors to connect with fifty first-year ECS students. Building intentional relationships through this program was mutually beneficial for both the mentor and mentee. The mentees gained a sense of community within the school, and the mentors were able to enhance their interpersonal and leadership skills [1-2]. In addition to individual meetings, larger programs to connect all *The Power of Two* mentors and mentees were created to expand the students' network.

These programs have been intentionally designed to enhance the academic experience of the mentees by connecting them with ECS faculty and frequently used resources on campus.

Designing these intentional spaces and experiences would not be possible without the knowledge and expertise of master's students from the Higher Education and Student Affairs (HESA) program. Three graduate students worked diligently to shape the ECS LRC programs as a practicum for their program. With their depth of knowledge of college student development and their experience walking alongside students through college life, these graduate students provided an invaluable infrastructure that supported and ensured the success of the Learning Resource Center and *The Power of Two* Mentoring Program.

IMPLEMENTATION

I. Learning Resource Center Physical Space

The LRC first opened on September 3, 2015 for an Open House event. ECS faculty, staff, and students were invited to visit the space, explore the amenities, and enjoy some refreshments while visiting this new resource on campus. Students were informed of the Open House via email, signage in the academic building, as well as through academic courses. Students enrolled in new student experience courses were required by their professors to attend the LRC Open House or to visit the LRC a minimum one time during the fall semester.

Following its initial opening, the LRC officially opened its doors for use on September 8, 2015. The LRC was open from 6 pm to 10 pm, Sunday through Thursday. At this time, students were able to access study areas, a computer lab, and a test bank of past exams provided by ECS faculty. For safety and operational reasons, the HESA graduate students and five ECS student workers staffed the LRC during the course of the week. After assessing usage during the fall semester, the decision was made to extend the hours of the LRC until 11 pm on all nights due to the late night use of the space.

During the fall semester, 655 visits were logged at the LRC. This resulted in a mean of 50 students visiting the LRC per week, taking into consideration university holidays. During the spring semester, 593 students signed into the LRC. This resulted in a mean of 37 students visiting the LRC per week, again taking into consideration university holidays. In total, 1248 students signed into the LRC over the course of the nine months it has been open for use. This resulted in an average of 43 students signing into the LRC per week that it was open during the academic year.

II. Tutoring Program at the LRC

During the LRC's inaugural semester, members of the Association for Computing Machinery (ACM) provided computer science tutoring on a volunteer basis. This was a highly utilized resource for computer science majors. We

soon realized tutoring was in high demand and was a major attraction for bringing students into the space. Baylor University's formalized Success Center tutoring program only offers tutoring during select hours throughout the day, which are not necessarily during the evening times when ECS students are studying. In collaboration with the Success Center, the HESA graduate student team recruited, hired, and trained tutors to serve during the spring semester. Formalized tutoring in the LRC space began February 23, 2016, and through the end of the semester, conducted a total of 149 one-on-one tutoring sessions. The most in-demand courses for tutoring services included Introduction to Computer Science, Introduction to Engineering, Calculus, Physics, Linear Algebra and Statistics.

When students were asked about their overall tutoring experience at the Learning Resource Center, one student responded that the experience was "*very positive...I went ten times*", and "*I probably would have done MUCH worse in intro had I not had the [LRC] to go to*". Another student inquired about extending the hours and days that the Learning Resource Center is open and the times when tutors are available, citing having to wait in line to see a tutor.

III. The Power of Two Mentoring Program

Recruitment for the *The Power of Two* mentoring opportunity was advertised to current upper-division students in the fall. Students interested in serving as a mentor for this program were interviewed, selected, and trained to work with first-year students. Mentees were invited to apply through individualized emails encouraging participation and outlining the benefits of the TPOT mentoring program since the program was set to specifically target students living outside the ECS living-learning program. In addition to email, faculty who were teaching introductory classes were encouraged to push this opportunity out to their students. Through these efforts, five mentors and thirty mentees joined *The Power of Two* mentoring program in its inaugural semester.

During the semester break, each mentor assessed the engagement of his or her group of mentees. Because the program started with fewer mentees than the initial pilot goal, the HESA graduate students made another push to recruit mentees to the program in the spring semester. An interest meeting was held to talk through the program in addition to targeted advertising during Chapel, a requirement for incoming Baylor students. In addition, Residence Hall Directors who had ECS students living in their building received emails to help encourage those students to participate in the program. As a result of these new recruitment tactics, one additional first-year student signed up to participate in TPOT.

Mentors were charged to meet with their mentees twice a month. These interactions could be one-on-one or group meetings. In addition, programming was created to encourage community building and to help expand the new students' network. Over the course of the year, students in

the program participated in study nights at the LRC, faculty dinners, and tutoring sessions.

Toward the end of the spring semester, participation dwindled. Only sixteen mentees and four mentors were actively participating in the program. Despite the lack of participation as the year progressed, those who stuck with the program reported positive experiences as a result of their involvement. In an end-of-year assessment, one mentee reflected on the involvement of their mentor over the course of the academic year. “[My mentor] gave me advice on how I could student and what was useful for him. I really felt comfortable with a mentor like him.” Another student commented, “[My mentor] checked in on how I was doing frequently, and always took the time to answer my questions.” When asked if *The Power of Two* Mentoring Program met the mentee’s expectations, one student said “*Being new to the engineering field, it was a great way to form connections and just get to know other people in the field. Having the opportunity to ask questions and build a friendship was great.*”

OUR PLAN

The inaugural year of the Learning Resource Center and *The Power of Two* Mentoring Program was a success in many ways and served a purpose in the life of ECS students specifically residing outside the living-learning program. Throughout the process of shaping these experiences, there were many lessons learned about what students’ value. After the pilot year experience and a close analysis of the data and feedback, there are some enhancements that can be made in the future that will increase student exposure and use of these resources.

Raising awareness of the location and the resources at the Learning Resource Center is critical to its continuing success for ECS students. Because the LRC is tucked away on a corner of campus away from the Rogers ECS building, intentional time needs to be taken to walk students to the space. More education can be provided to our incoming students during the new student experience process to ensure that they know about the resources and the location of the center. Research indicates that informing students and parents at orientation to make them aware of the attributes and habits of successfully retained students can be helpful in setting work and rigor expectations before the first year [3]. During Orientation and Line Camp, an extended orientation experience for new students, sessions could be held in the space so that students have an initial recognition of the location while talking about strategies to be successful in the major. Continued advertising in the ECS building will help educate upper division students.

Discipline specific tutoring was a huge draw for students, so that is an aspect that should be continued in the future. Even with a rough start to the tutoring program at the LRC, there was success – students were looking for tutoring outside the university tutoring center business hours. Because the LRC is open after hours, it is the only place students can come late at night for help with

homework or other assignments. Looking toward the future, an adjustment in hours and a continued increase in tutoring services could be warranted in order to meet the needs of ECS students. The literature suggests that for incoming students, first-semester GPA is a strong predictor of the likelihood of retention and ultimate graduation from engineering [4], so pushing the tutoring program with the incoming student population is critical.

Although *The Power of Two* mentoring program did not meet its initial goal of five mentors and fifty mentees, there were many positive connections and relationships made between students as referenced in the qualitative feedback. Because of the success of this year’s program, the Department of Computer Science has committed to changing the new student experience requirement for incoming computer science majors to a peer mentoring model. Each incoming computer science student will be given an upper-division student mentor, a Peer Leader, and a faculty mentor. Each Peer Leader will have approximately ten incoming students that they will meet with twice a month throughout the entire first year. In those meetings, the Peer Leaders will cover an intentional new student experience curriculum that will touch on transition issues, study skills, and their future in computer science. Each month, students will gather and meet with their faculty mentor, which will help encourage faculty interaction and building relationships with other students in the program. On the engineering side, *The Power of Two* mentoring program will continue to be something that is voluntary and highly encouraged to the students living outside the living-learning program. Because TPOT will not be a requirement for engineering students, more time needs to be spent thinking about how to incentivize and motivate incoming student participation.

The ultimate goal for the Learning Resource Center is to build a program that is sustainable and helps increase the retention of students outside the living-learning program in the School of Engineering and Computer Science. In the future, we hope to provide scholarships to incoming engineering and computer science students with preference given to students in underrepresented populations or with unmet financial need. Research supports that the availability of financial resources is an important “environmental pull factor” affecting students’ choices of a STEM major [5]. The scholarship would require that students participate in the programs at the Learning Resource Center, which would drive use and accountability to the program. After an unsuccessful first try at NSF funding, we are gathering data from the pilot year and utilizing the NSF reviewers’ feedback to build a stronger proposal to reapply in the fall. Once end-of-year data for the 2015-2016 academic year is posted at the end of May, additional data analysis will be performed to study the effects of LRC usage and the TPOT program on first-year retention.

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