

Evaluating the Success of Peer-led Student Interventions in a Freshman Year Experience Program

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Abstract

This paper is a Work in Progress and will discuss the process and assessment of a structured peer mentor intervention plan implemented in a Freshman Year Experience (FYE) program at New Mexico State University, a Hispanic serving institution. The FYE program was implemented in Fall 2014 as an attempt to increase retention. After the first year of implementation, retention rates from freshman to sophomore rose by 14.6%.

The FYE program has several different components, including a hands-on introductory course, peer mentoring and tutoring, exposure to the engineering disciplines on campus, and other success initiatives. In Fall 2015, the program manager implemented an intervention program based on six-week performance grades that were entered by all 100 and 200 level instructors at the University. Students enrolled in the introduction to engineering course were required by their instructor and peer mentor to attend the interventions, if needed, as a means to increase student success.

After the six week performance grades were posted all instructors of the introductory engineering course and peer mentors were responsible for meeting with the freshman who qualified for the intervention process. Students who received a C, D, or F grade were required to meet with their peer mentor during office hours. Students were required to attend (1) intervention session with their mentor based on the number of C or below grades reported. For example, if a student had four C or below grades, they were required to meet with their mentor once a week for the following four weeks.

Data was recorded by the mentor which included the number of sessions a mentee attended, and what activities occurred during the session. Interventions were evaluated based on the students' final grades in comparison to their six week performance grades. Effectiveness was determined by the number of sessions a student attended and their letter grade increase. Interventions are one component of the FYE program and they have shown very promising results for student success.

Background

Graduating students in STEM fields is not only a concern at New Mexico State University but across the nation. According to the Department of Education [1] STEM majors account for only 14% of all undergraduates, in addition, an alarming 56% of students who declare a STEM major in their freshman year do not graduate with a degree in a STEM field. The low percentage of retention of students in engineering programs throughout the United States is a growing concern for Universities and engineering programs nation-wide causing them to reevaluate their programs and implement strategies to offset low retention rates. These statistics raise concern and a demand for implementation of freshman year experience programs that focus on retention to encourage students to graduate in STEM fields. Due to these low retention rates, in the fall of 2014, the College of Engineering (COE) initiated a program for freshman to increase retention and graduation rates.

The evolution of the Freshman Year Experience (FYE) and peer mentoring program has progressed into the implementation of peer lead interventions for students who had a least one C or below after the six-week performance grades were posted from their 100 and 200 level course instructors from across the campus. The interventions were designed to increase student success, and overall increase their academic grade in a course.

Peer Mentors

One of the major components of the FYE program was the utilization of peer mentoring. Peer mentors provide the students enrolled in ENGR 100 with support both inside and outside the classroom. The peer mentors have been a crucial part of the FYE program since its implementation. Each semester we budgeted to hire one peer mentor for each 32 freshman enrolled in ENGR 100. The mentors were paid \$10.50 an hour, and could work up to 20 hours a week. The majority of the mentors recorded 15-18 hours per week throughout the semester. The peer mentors were required to attend the ENGR 100 course with their mentees, teach two weekly 75-minute workshops, and host office hours for mentees to receive assistance in coursework and general mentoring. Each mentor was required to attend a mandatory training session each semester which included mentoring techniques, information on mentoring young adults and the legalities regarding mentoring. The program manager for ENGR 100 observed that the process of becoming an effective mentor includes prior experiences with mentoring and the ability to lead. This understanding resulted in a change in the interviewing process to select effective mentors who have prior experience and have shown leadership qualities.

One of the key components of the peer mentor program is the weekly 75-minute workshop that is solely led by the mentors. This component of ENGR 100 was implemented in the spring of 2015 and has proved to be very valuable for both the mentors and mentees. Each workshop consists of the 16 mentees assigned to their peer mentor. The mentor teaches two workshops a week with 16 of their mentees in one section and the other 16 mentees in the second session. During the semester the 16 mentees work in groups of four. The mentees work on hands-on assignments that complement the instruction occurring in the traditional ENGR 100 course. During the workshop mentees have the opportunity to ask their peer mentor questions that they might not feel comfortable asking their instructor in class. In addition, mentors take the last 15 minutes or more of each workshop to go over class assignments, and work out problems as a group. The smaller group work interaction aids in the mentees gaining confidence with their academics and getting support in a more comfortable environment.

During the 75-minute workshop the mentors are required to present a set curriculum but are also asked to provide examples from their own experiences. For example, the mentors follow a PowerPoint provided by the program manager on time management but they must focus the end of the presentation on their personal experiences, and provide examples of time management strategies that worked well for them. The purpose of a peer mentor is to provide concrete examples of what is required to become a successful student.

In addition to teaching the workshop, peer mentors host office hours in a central location in the COE. It is common for students to re-visit their mentor on a regular basis for help with the adjustment to college life or the understanding of coursework. During office hours freshman can visit with their mentor or seek assistance from another mentor from a different section of ENGR 100 if they are available. The mentor program has proven to be an essential component of the FYE program. Many of the freshman have stated on evaluations that their mentors were helpful and easy to approach. Some of the freshmen have continued to seek out their mentor for support even after they have completed the ENGR 100 course.

Mentors are evaluated by their mentees twice a semester. At the seven week benchmark mentees fill out an evaluation on their mentor and the FYE program. Some of the comments returned include “my mentor did a great job at everything, I had no trouble this semester thanks to him” Fall 2016 student. Another mentee said “my mentor was cheerful and helped me, even with questions that I should have known the answer to. He always made himself available to me” Fall 2016 student.

In addition, the mentors are evaluated by the course instructor in ENGR 100 twice a semester. The instructors fill out a 10 question evaluation form on the overall performance of the mentor. Based on the assessment the program manager met with mentors individually to discuss their performance and suggest areas needing improvement. In addition, the evaluation at the end of the semester aids in the decision to re-hire a mentor for the following semester.

Literature Review

The focus on student retention in the COE has been a primary focus for the implementation of the FYE program. A well respected retention theorist is Vincent Tinto. Tinto’s theory [2] on retention has served as a foundation for our program on student retention and success. According to Tinto (1993) retention is explained as “if a student leaves college on terms that the student considers to be successful, the college should consider itself successful concerning that student. The focus is not on graduation rates, but on the attainment of educational goals and objectives” (p. 1).

As stated by Rode and Kubic, in Johnson [3] peer mentoring can serve as a supportive liaison between the classroom, students, and faculty. In addition, mentoring can also provide beneficial college experiences for both the mentor and mentee, (Johnson, 2009). Because our University is a Hispanic serving institution the program developers felt mentoring could play a strong role in retention of all students, including our minority students.

According to Liang and Grossman [4] mentors can aide youth from diverse backgrounds. In addition, minority students who have had a mentor show greater success in academics.

According to Chesler & Chesler [5] peer mentoring can provide a positive impact on engineers,

and can provide both technical and psychosocial support. As the research shows peer mentors can play a vital role in student success.

Chesler & Chesler (2002) also note the importance of establishing mentor to mentee relationships early in a student's academic career to increase student success. They also discuss the active role of listening and questioning to be a key aspect of effective mentoring. One of the focal points at mentor training is effective listening and communication skills. According to Chesler & Chesler (2002) peer mentoring can foster building a community and "de-emphasizes seniority and hierarchy (p. 52). One of key motivations to implementing a FYE program and a peer-mentoring program was to create a sense of community for our students.

When the FYE program was first implemented in Fall 2014 the COE had a primary goal of creating a sense of belonging for students and engaging students from their very first semester. According to Trowler [6] "student engagement is concerned with the interaction between the time, effort and other relevant resources invested by both students and their institutions intended to optimize the student experience, and enhance the learning outcomes and development of students and the performance, and reputation of the institution" (p. 3). As mentioned earlier there has been great success in increasing retention through engagement activities for engineering students.

Procedures for Interventions

Starting in Fall 2015 the FYE program implemented a structured intervention program based on students' six-week performance grades. The COE relied on the peer mentors to execute the structured intervention plan and in Fall 2016 data was collected on the overall success of the peer mentor academic interventions. Once the six-week performance grades were posted the mentors were provided with a list of the mentees who were considered "at-risk."

Students who had at least one C or below were required to attend an "intervention session" with their peer mentor. A student who had two C's or below grades were required to see their peer mentor once a week for two weeks, a student with three C's or below was required to see their mentor once a week for three weeks. Depending on the number of C or below grades a student had at the six-week performance grades determined the number of intervention sessions they were required to meet with their mentor.

The program manager conducted a training for the mentors to discuss their role in implementing an intervention for their mentees. Mentors first scheduled an appointment with the mentee. The purpose of this initial meeting was to discover the root cause of the low performing grade. The mentors were required to find the root problem by posing questions to their mentees. For example, the mentor would ask their mentee if they had been attending class regularly, how they did on their first exam, if they had been submitting homework, etc? Once the mentor and mentee determined the root of the problem they proceeded to developing a success plan with the student. The purpose of having the mentor ask the mentee questions was to hopefully have the mentee self-discover the root of the problem. If the mentee can realize what is effecting their performance then they can develop a more solid success plan.

Once the mentor and mentee came to a consensus on the root of the problem they could then transition to developing a success plan. The success plan was developed by the mentee with their mentor's guidance. The requirement to have the student at risk develop their own plan was to

ensure that the student would hold themselves accountable for following it since they created it. Mentors were also required to document the type of interaction they had with their mentee and make judgements about the progress of their mentees. Mentors provided academic tutoring, academic advice, college adjustment recommendations and much more during their intervention sessions.

In some cases, the mentee and mentor would work together to determine a course of action. For example, the mentor might recommend reducing the student's work hours, or the number of enrolled credits. If it was determined that the student could not succeed in the class that semester the student was advised to meet with their academic advisor about withdrawing from the course and selecting a mini-semester course if the credits were needed for scholarship eligibility. The peer to peer conversations helped the mentee determine what actions needed to occur to achieve success. It was often reported in the bi-weekly mentor reports that the conversations they had with their mentor helped the mentee determine what steps were necessary to improve their academic record. Below is an example of the Excel sheet that mentors were required to complete every other week.

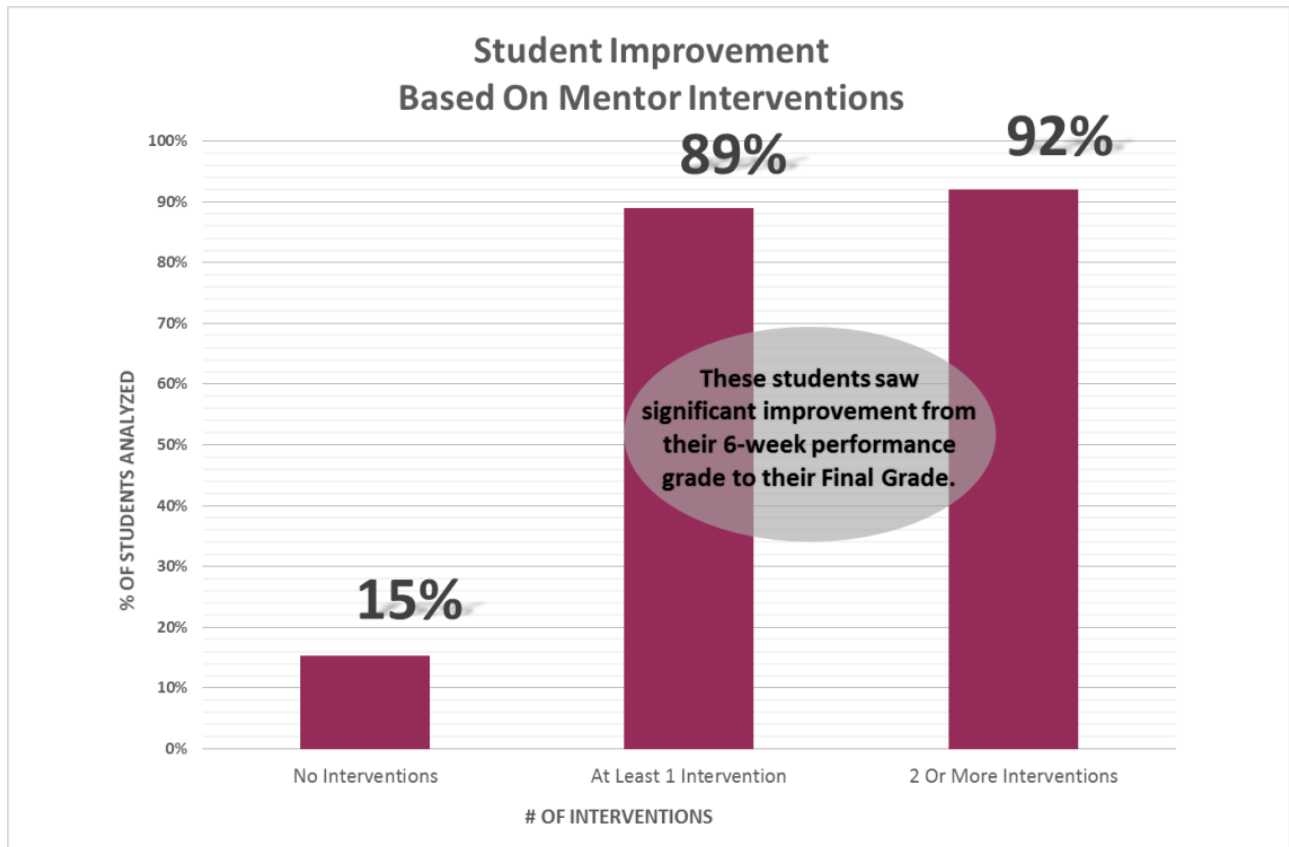
Results of the Interventions

The results from the interventions were very positive. There were a total of 49 students who were required to meet with their mentor for an intervention. Out of the 49 students, 36 of them met with their mentor outside of class time at least once, and 89% of those students saw a grade improvement from their six-week performance grade to their final grade. In addition, 67% of the students meet with their mentor two or more times and 92% of those students received a higher final grade. As the results show, the more frequently a mentee met with their mentor the more likely they were to improve their final grade.

In addition, the mentors were required to make notes about the student's overall performance and progress in their academics. Mentors discussed a wide range of topics with their mentees that included conversations about their academic career plan, suggestions regarding how to balance school and work, and methods on how to become a better student, etc. Mentors were able to provide their mentees with examples of what made them successful and the mentee used this advice to improve their grades.

One of the students who had a C at the 6-week performance grades discussed with his mentor during the first meeting that he did "poorly on his first exam, and underestimated the difficulty of the material" Fall 2016 student. The mentor discussed the importance of being over prepared in comparison to underprepared and guided the student into developing a calendar with study and exam times. The student increased their final course grade by one letter grade.

As represented in the graphic below only 15% of the students who should have received an intervention, but chose not to participate in the intervention process, improved their final grade. Therefore, a small percentage of students who should have seen their mentor were successful in improving their final grade but the large majority of these students either didn't see improvement in their final grade, or their final grade was below their 6-week performance grade.



Evaluation of Peer Mentoring

Peer mentors were evaluated twice a semester. At the mid-point of the semester the mentees were asked to fill out a ten question survey that focused solely on their peer mentor support. The information was transcribed so that mentees could not be identified and the feedback was shared with the peer mentors. The program manager then worked with the mentors to discuss ways to improve their workshop and overall peer mentoring.

In addition to the formal assessment that was conducted twice a semester the mentors and program manager also met on a weekly basis. During the meeting the program manager discussed upcoming workshop duties and intervention planning. The mentors also shared their successes and failures with one another and developed new methods for assisting their mentees.

At the end of the semester the mentees were asked to complete a survey about their peer mentor. The evaluations were used to make decisions about re-hiring and adjustments to the program. For example, there was feedback that in Spring 2016 there was a disconnect between the workshop and the ENGR 100 course so the program manager and lead instructor of ENGR 100 made necessary changes to make a stronger connection between workshop content and the regular course. The constant feedback is evaluated and implemented to improve the program.

Future Plans

The freshman year experience program is relatively new at New Mexico State University and the need for continuous change is always present. As the program progresses we have found new ways to engage students especially through the workshop that is taught by their peer mentors. Recently, we have added lessons on personal finances, resume building, and stress management but we continue to see a need for developing these soft academic skills. The mentor program provides students with a supportive role model in their freshman year.

As the program evolves there is a need to create a more sustainable way of tracking the data that is collected from the peer mentors. The data that is collected is both qualitative and quantitative. The quantitative collection of the final grades the students receive is easy to evaluate. However, the notes and interactions that are recorded from the mentor are time consuming to analyze. The data is recorded and assessed utilizing Excel, but the program is in need of a more comprehensive approach. The program manager is in the process of evaluating various software designed for peer mentoring programs to enhance the gathering of data.

In addition, the COE opened a new Learning Center space in the middle of Spring 2017 semester that hosts peer tutoring and peer mentoring. Starting in Fall 2017 the Learning Center will encompass peer mentoring, peer tutoring, industry workshops for students, and a central location for student organizations. In the first 2 weeks of opening the center more than 50 engineering students utilized the peer tutoring services.

Conclusion

The mentoring program has provided freshman with a positive peer learning experience. The required interventions that were led by peer mentors has proven to be successful for students who were considered at-risk at the six-week benchmark. The interventions not only aided in 89% of the students receiving a higher final grade, but more importantly provided the mentees with essential skills to be successful students. The conversations about study habits, time management, balancing school and work, increasing tutoring hours are just a few examples of skills that students will apply in their future classes. Our intervention program has proven to be a success for our freshman students and we are studying methods to continue to improve upon our freshman year retention rate.

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