Development of a one-on-one mentoring model for undergraduate students at a Minority Serving Institution

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Abstract

This paper describes the one-on-one mentoring model that was developed and implemented in a program for an ongoing cohort of 28 undergraduate engineering students at New Mexico State University. The presentation also discusses how the proposed mentoring model contributed to the successful trajectories of the cohort participants in their engineering programs. A distinctive aspect of the one-on-one mentoring model is that it does not include an undergraduate research experience. Faculty members were not initially familiar with mentoring that was not based on an undergraduate research experience. Students were encouraged to pursue research, but it was not required in the mentoring program. New materials were developed for the faculty to increase understanding of this model. Outcomes include: high satisfaction of students with the mentoring experience and one hundred percent retention or graduation of the students.

Introduction

Beginning in 2016 at New Mexico State University (NMSU), a one-on-one mentoring program was introduced as part of a National Science Foundation (NSF)-funded S-STEM grant designed to support academically talented engineering students who demonstrated financial need for up to eight semesters. The full program included individualized self-assessment and monitoring academic success workshops, metacognition and self-efficacy training, and self-study skills in addition to the faculty mentoring.

The goal of the faculty mentoring program was to be one component of creating a supportive climate for the cohort students. Specifically, the faculty mentoring was to allow each student to develop a meaningful relationship with at least one faculty member in the College of Engineering. The mentoring in this program was derived from a model of one-on-one mentoring for junior faculty members at NMSU. There was no expectation or requirement of undergraduate research with the faculty mentor, or research project outcomes from the mentor pairing. This was a new model for faculty in the College of Engineering. The faculty who volunteered as mentors had significant experience mentoring students in undergraduate research experiences.
Beginning in Spring 2017, cohort students were asked about their goals for a relationship with a mentor. Based on that information, faculty members from the College of Engineering were asked to be mentors and were given information about the time commitment (at least an hour per month during an academic semester), the nature of the program, and the expectations for mentors and students. Faculty were asked to commit to one semester, with the potential to continue for the rest of the academic year. Faculty were not compensated for their participation in the program.

Research studies have shown that spontaneous mentoring is not as effective and does not include comprehensive or regular communication as the more formal mentoring\(^1\). Thus, student-faculty pairs were asked to complete a Mentor/Mentee agreement annually. Pairs were strongly encouraged to check back with their agreements to see progress towards achieving their goals. Each semester, a check-in survey was sent to students and faculty to assess satisfaction and ask for number of mentoring meetings, positive aspects of the mentoring, and any issues that might have arisen.

**Results and Discussion**

In 2018 and 2019, an external evaluator conducted a qualitative assessment using a modified version of the focused, in-depth interviewing method\(^2\) in which participants reflect on their educational experiences and life histories in light of their career preparation and ultimately into their engineering studies. In this qualitative method, open interviews provide research participants an opportunity to narrate and construct meaning of their life history. The interview questions were open response allowing participants to guide the information sharing and tell the context and concepts in their own linguistic and cognitive framework. From a total of 24 interviews, 11 themes emerged, including faculty support, and most comments about faculty mentorship were positive.

Check-in survey results for mentee satisfaction in 2017-2018 and 2018-2019 had 100% and 95% very satisfied or satisfied responses. In Fall 2017, 100% of mentors were 100% very satisfied or satisfied. In Spring 2018 one mentor was not satisfied. When survey results were analyzed, it was noted that faculty desired more training and discussion about this mentoring process. In Fall 2019, two mentor meetings were offered, one a more formal mentor orientation and one a round table discussion. Faculty express a sense of satisfaction in helping students as their incentive for participation. For the few pairs that have not been as successful, it has usually been because the pairs fail to meet as planned. Earlier intervention by program staff using a short check-in right at the beginning of each semester allowed concerns to surface earlier in Fall 2019.

**Summary and Conclusions**

In summary, this paper has described a one-on-one, non-research based, faculty mentoring model for undergraduate engineering students that has been very successful at NMSU. Students have reported a high degree of satisfaction. A qualitative study found that a theme described by the students impacting their persistence is faculty mentorship. As the program has progressed, more structure for the mentors has been developed, including expanded mentor orientation and mentor roundtables. This material is based upon work supported by the National Science Foundation under Grant No. 1564931.
References


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