

Board 266: Engaging Transfer Students in a College of Engineering

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Abstract

The LINK scholarship program at the University of South Alabama is funded by an NSF S-STEM grant, awarding scholarships to low-income students transferring from community colleges in the Gulf Coast region to complete degrees in chemical, civil, computer, electrical, or mechanical engineering. The program provides financial support and academic mentoring to foster student success and optimize time to degree completion after transfer. Part of that effort includes providing pre-transfer advice through interactions with faculty and advisors at the regional community colleges. A further objective is to promote transfer student integration into the college, as this is expected to enhance academic achievement and professional development. This engagement is encouraged through faculty mentorship with frequent meetings, a cohort-building academic success seminar, and expected participation in engineering-focused student organizations.

Our project includes a mixed-methods study to improve our understanding of what support mechanisms effectively integrate transfer students in our college, and how students perceive that integration to enhance their academic and professional development. Early data analysis is presented here. Student surveys indicate that they believe that peers in their classes and their assigned faculty advisors have the greatest impact on their integration and academic success. For professional development, the transfer students find that internships the most importance, followed by participation in student organizations.

Program overview

The LINK scholarship program at the University of South Alabama, sponsored by the NSF S-STEM program, awards scholarships to students transferring from community colleges in the Gulf Coast region to complete degrees in chemical, civil, computer, electrical, or mechanical engineering. While the primary objective of the program is to provide financial and academic support to low-income students, additional goals include shortening the time between transfer and graduation, promoting transfer student integration to enhance academic and professional success, and strengthening relationships between our college of engineering and the community colleges in our region. Strategies to accomplish these objectives include a first-semester seminar, structured mandatory advising, peer leaders, social activities, and articulation meetings with community college educators who serve STEM students.

Scholars are assigned faculty mentors in their degree programs and are required to meet with them at least three times per semester. At the beginning of each semester, the scholars create a plan for their semester that includes extracurricular involvement and share it with their mentor, along with discussing long-term goals. At midsemester, the student and mentor meet to plan courses for the next semester and check in on academic progress. At the end, they meet to reflect on the semester, make adjustments for the next semester, update the student's resume and discuss career plans. Through this process, we ensure that the scholar is engaged in the college, finds the resources needed, and progresses academically and professionally.

In addition to the faculty mentors, students are assigned a peer to whom they can direct questions regarding their transition to the university. In the student success seminar that is required in the first semester, there are assignments related to university offices and college policies. Students are also required to explore student organizations in the college and identify one to join. Perhaps most importantly, the weekly seminar meeting provides an opportunity for cohort building and for just-in-time addressing of any obstacles that arise, ranging from navigating academic challenges to adjusting to a new institutional culture. Through this multipronged approach, our program has established a student-focused atmosphere to promote persistence to completion of an engineering degree post-transfer.

Another element of our work is to increase accessibility of knowledge about our programs pre-transfer. Strengthening the relationships with faculty and advisors at regional community colleges has been an important factor in streamlining the pathway for transfer students into our curricula. In all of our academic programs, there are second-year engineering courses that are pre-requisites to the upper-level courses. These courses are not usually offered at the community colleges but are offered in our college in the summer. Our connections with the faculty at the community colleges have disseminated this knowledge so that some students are now transferring in the summer to take those courses. Doing so enables them to start the third-year courses in the fall. We also work to ensure that scholars who transfer before completion of the associate's degree reverse-transfer their credits to complete the degree, which is key for the community college metrics.

Data collection

Our project includes a mixed-methods study to improve our understanding of what support mechanisms effectively integrate transfer students into our college, and how students perceive that integration to enhance their academic and professional development. Because the total number of students in the LINK S-STEM scholarship program itself is only about 30, we distributed our survey by email to all 185 transfer students currently enrolled in our college. Of those, 52 completed our survey.

Results and discussion

Students were asked to rate the importance of each in a list of individuals or groups of people to both their integration into the College of Engineering and to their academic success. The question was posed on a Likert scale ranging from very unimportant to very important (numerically 0 to 4). The results are shown in Figure 1.

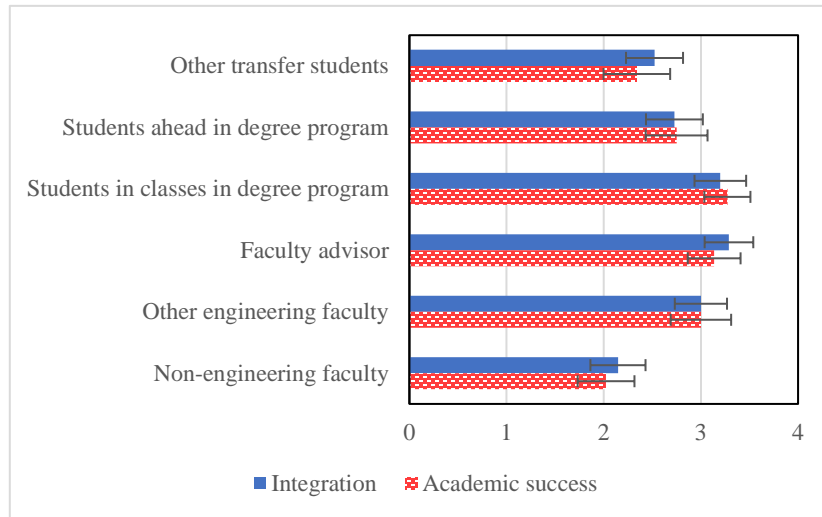


Figure 1. Transfer students' perceptions of the importance of various groups or individuals in supporting their integration in a college of engineering and their academic success. 0=very unimportant, 1=unimportant, 2=neutral, 3=important, 4=very important. Error bars represent 95% confidence intervals based on Student's t-test.

Students rated their faculty advisors and classmates to have the greatest influence on both integration and academic success. While the scholars in the S-STEM program are actively engaged several times per semester by their advisors, it should be noted that all other engineering students also have a mandatory meeting with their advisors once per semester before registration. The high rating of the faculty advisors is consistent with prior findings on the role of faculty mentorship in transfer student success [1]. Other faculty in the College of Engineering are also rated as important on the factors studied. Because these are transfer students, their lower rating of faculty outside of engineering is not surprising, since most of their courses are in engineering. Given that building cohorts of transfer students and engaging students ahead of them in their curricula as near-peer mentors students to ease their transition is such a common practice [2],[3], it is notable that those two student groups rated lower than classmates. This suggests that efforts toward facilitating early one-on-one engagement with students in the same courses as the new transfer students might be a more effective mechanism to promote success.

Students were asked three questions evaluating their identity and sense of belonging. The questions presented with sliding scales with questions posed as follows:

- Thinking about seeing yourself more as a transfer student [low end of scale] or more as a student in the College of Engineering [high end of scale], where on this scale would you put yourself?
- Thinking about your sense of belonging at the university, where on this scale would you put yourself?
- To what extent do you think your feeling of belonging in the College of Engineering impacts your academic success?

The results of those items are shown in Figure 2. Comparing the sense of belonging at the university to the identity as a transfer student versus an engineering student, the wider range of the middle quartiles of the identity data suggests that retaining the transfer student identity to some degree does not necessarily inhibit a sense of belonging after a student transfers to a university. It is notable that the overall range on the belonging scale is broader on the low end, indicating that several students in the data set do not feel that sense of belonging. The final bar indicates that our students do sense a relationship between their integration and belonging to their success in the classroom, as has been found in other studies [4],[5]. This is likely related to the apparent correlation in the responses shown in Figure 1. Considered together, the results in Figures 1 and 2 underscore the importance of faculty advisors in identifying students who need more support in fitting into the university environment.

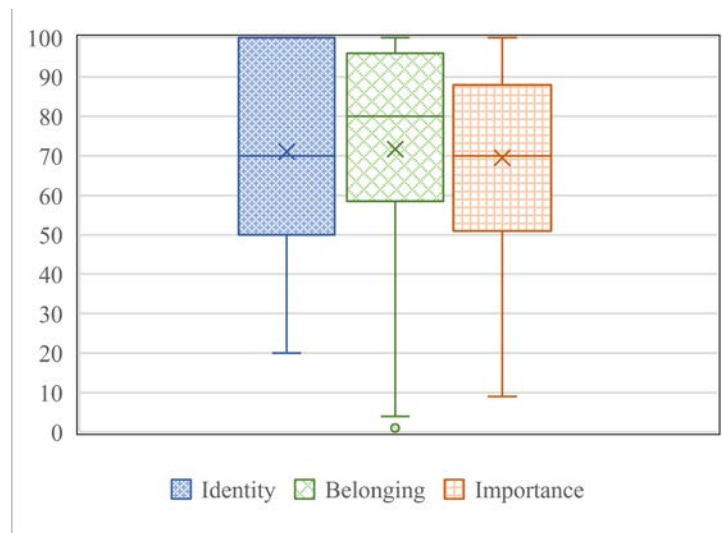


Figure 2. Transfer students' ratings regarding their identity as an engineering student versus a transfer student, sense of belonging at the university, and importance of belonging to academic success. The box represents the middle 50% and the bars the range of responses. Lines are medians and crosses are averages.

In addition to inquiring on student perceptions regarding the effects of relationships on integration and academic success of transfer students, we surveyed students on activities that take place in our college of engineering. Results are shown in Figure 3. As not all students participated in all activities, the responses were limited.

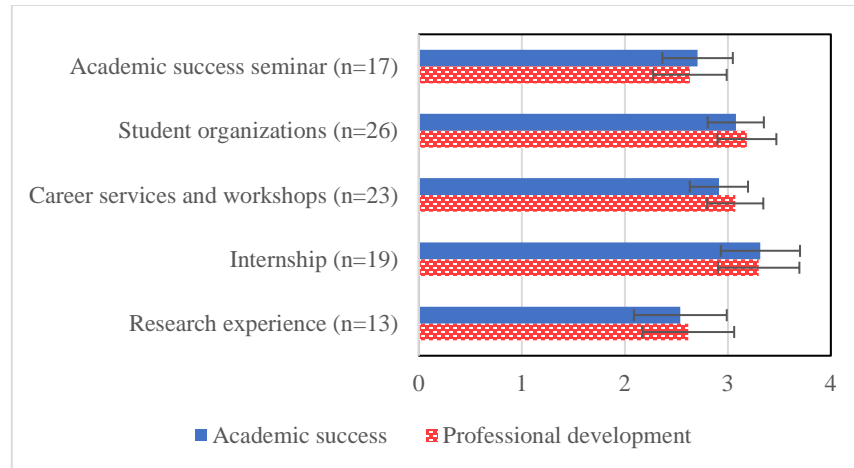


Figure 3. Transfer students' perceptions of the importance of various activities on their academic success and professional development. 0=very unimportant, 1=unimportant, 2=neutral, 3=important, 4=very important. Error bars represent 95% confidence intervals based on Student's t-test.

For students participating in these activities, the most impactful experience appears to be industrial internships and involvement in student organizations. The student organizations support both social integration and career development activities, and transfer students are strongly advised to engage in at least one in their first semester [6]. The importance of this involvement shown by these students' ratings is consistent with other reports that engineering transfer students are best engaged and integrated by activities that are engineering-focused [5]. The difference between internships and research experiences is interesting in that both are considered high-impact experiential learning. The difference may be that transfer students from community colleges are often more focused on careers in industry than on entering advanced degree programs. This is supported by their high ranking of their interactions with the career services office and its workshops.

Conclusions and future directions

Transfer students perceive a relationship between their academic success in engineering and their engagement and belonging in the college to which they have transferred. Further, their connections with faculty advisors and students in their classrooms are important to that engagement and to their success. More conventional mechanisms to promote transfer student success, including building transfer student cohorts, transfer student seminar courses, and near-peer mentoring by students more advanced in their curricula, do provide some support. However, our data indicate that efforts to help engage transfer students early with their classmates and provide regular faculty advisor interaction may even be more effective. Future efforts will include a deeper analysis of our survey results for patterns related to other criteria including student demographics, work hours, residential distance from campus, and degree programs.

References

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