BOARD # 459: Supporting NSF S-STEM Scholars: Longitudinal Data on Student Services and Cohort Activities; conference participation; community outreach

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Supporting NSF S-STEM Scholars: Longitudinal Data on Team Advising

Abstract

The NSF S-STEM scholarship at Western New England University (Award Number 2030731) provides financial aid to academically talented Mechanical Engineering students. Two cohorts of 9 students each were recruited, one cohort per year, in 2021 and 2022. In addition to the scholarship, evidence based educational programs are incorporated to enhance their academic experience and promote long term success. These programs include student services and cohort activities. The comprehensive advising system, featuring faculty advisors, university advisors, and peer advisors is part of the student services. This work presents a detailed analysis of longitudinal data collected over three years through quantitative formative assessments conducted each fall and spring semester, as well as through focus group studies on the advising system. When combined with the other services, it offers insights into how the advising contribute to key outcomes, such as retention and academic success, which are central to the objectives of the project.

Introduction

The team advising system is considered one of the advising strategies that affect students in important ways. The faculty advisor, university advisor and peer advisor need to work together serve the students beyond teaching, and provide them with timely and accurate information[1]. The advisors can meet with students individually and in groups depending on the service and information that they intend to deliver [2]. The faculty advisor's main responsibility is to provide academic guidance by following up closely with the students' academic performance, monitoring research progress, and offering assistance as needed. The university advisor will work closely with other offices on campus, such as the Career Development Center, Counseling Services, Academic Success Center, First-Year Office, Math Center, and Writing Center to provide accurate information about policies and procedures, and support the students with all resources available. Peer advisors met with the students to set up long term and short-term life and academic goals. They were trained by the University Advising Center and the project management team from this project for around 100 hours, and they are familiar with 1) the support services that the university advising and academic success center offer at Western New England University (WNEU), 2) course registration and basic scheduling knowledge and 3) academic standards. Additionally, the students are provided with support by the Kevin S. and Sandra E. Delbridge career center throughout their career planning and preparation process, including resume building, mock interviews, and career fairs etc. Targeted career services can improve the students'ability to be employed by improving communication skills, increasing self-esteem, and building stronger motivation for success[3, 4]. Another student serviced offered to the scholars is professional conference participation guided by the faculty advisor. Professional conferences provide the

opportunity for the students to expand their professional network, get inspired by the leading experts in the field, and present their own innovative work when available [5].
This paper focuses on the team advising program available for the NSF S-STEM scholars at WNEU The students' awareness of the advisors, and their utilization of the advising system are surveyed and presented, to gain insights of this particular student service. The career services and conference participation will be presented in future work due to space limitation.

The Team Advising awareness

Western New England University offers a comprehensive team advising program for all first-year students, including three key advisors. For NSF scholars, the same faculty advisor supports them throughout their four years, focusing on major-specific guidance, while a university advisor provides access to campus-wide resources, and a peer advisor, an advanced Mechanical Engineering (ME) student, offers major-specific insights. Together, they monitor students' academic progress.
To evaluate the program, advisors were surveyed each semester on advising frequency, methods (e.g., meetings, emails), and discussion topics. This paper analyzes survey feedback from advisors and student perceptions of the support services' quality and usefulness to provide a comprehensive assessment.

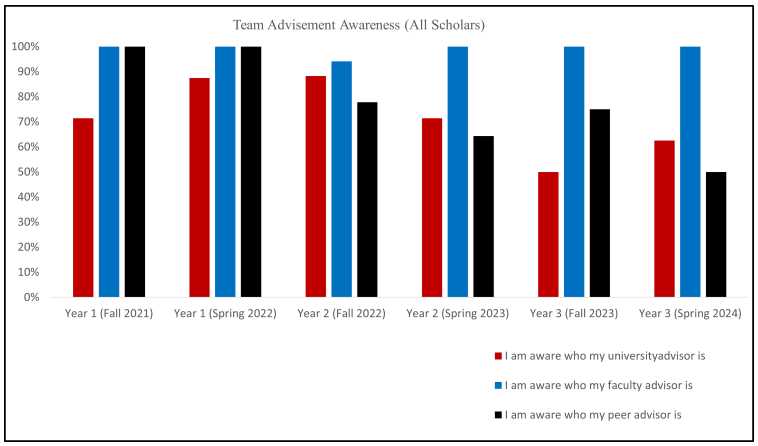

Figure 1: The students' awareness of their advisors (the university advisor, the peer advisor, and the faculty advisor). Each set of bars represent data collected one semester. Six semesters of data, from fall 2021 to spring 2024 are presented from left to right.

The students were first asked if they were aware of who their advisors are, shown in Fig 1. Since the second cohort of students were recruited in fall 2022. The first two sets of bar are for cohort I only, and the rest of the data includes all the scholars (from both cohort 1 and 2). The response rate varies from 78% (fall 2021) to 100% (Fall 2023 & Spring 2024). The data shows that in the first year at the time of completing the surveys, their awareness of the different advisors varies, and it changed over the years. In the first year, the majority of the scholars (cohort I only) were aware of who all three of their advisors were (71% in fall 2021, and 78% in spring 2022). Nearly all students know who their faculty advisor has been throughout the three years.
To better show the longitudinal change of the data for both cohorts, in particular for the university advisor and faculty advisor, the data is plotted separately in Fig.2 It shows that for the two

cohorts, 100% of the students knows who their peer advisor is the first year, then the awareness decreases throughout the semesters. In comparison, the scholars were less familiar with their university advisor.

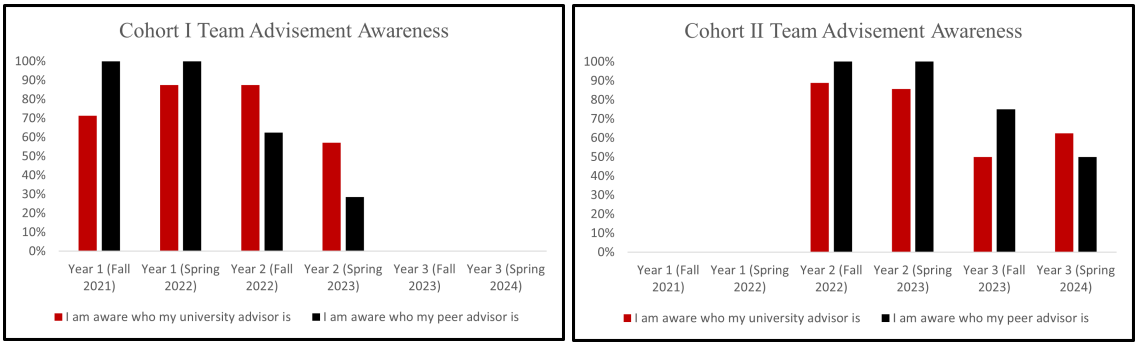

Figure 2: The two cohorts' awareness of their university and peer advisors over the years.

The Advising Meeting Frequencies

The students were also asked approximately how many times they met with their advisors. Fig. 3 shows the meeting frequency with the faculty advisor. All students have met with their faculty advisor each semester expect fall 2023, when the faculty advisor was on parental leave. During that semester, the majority of the students indicated that they did have communication with their faculty advisor and some indicated that they met 1 2 times, either in person or on Zoom that semester, indicating the faculty advisor maintained advising duties. Note that the faculty advisor was teaching ENGR 103 (Introduction to Engineering, one of the required first semester, first year courses for the scholars), and was present for each of these classes. When asked about their meeting frequency, The faculty advisor defined the formal individual meetings as "scheduled as planned in advance", and informal meetings as the ones that she had with the students "after class and during office hours to answer questions that they [the scholars] may have including major choice, academic performance, internship opportunities, etc.". In the first semester, six of the 7 scholars reported meeting their faculty advisor outside of class between 1- 4 times. The first cohort students met with the faculty advisor more frequently than the second cohort according to the student's data. When asked to provide writing feedback regarding what they like the most of the members of their advising team, some students said "Dr. XXX is very quick with communication, and extremely helpful with any situation you bring to her.", "My faculty advisor is a very knowledgeable and helpful individual", "I like that my faculty advisor is my ENGR- 103 teacher because even though I haven't met with her outside of class a lot, I have still built a connection with her through the class."

Unlike the faculty advisor who meets the students in class regularly the first semester, the university advisor and the peer advisor do not have regular access to see the students in person. They reach out via emails or text messaging. The peed advisor indicated that they sent monthly emails each semester with relevant information about "academic resources, important dates/deadlines, and campus events." The meeting frequency with their peer advisor are shown in Fig.4. The scholars met with the peer advisor more frequently for the first year. When asked to provide writing feedback regarding what they like the most of the members of their advising team, some students said "My peer advisor is a role model of who I want to be down the road in

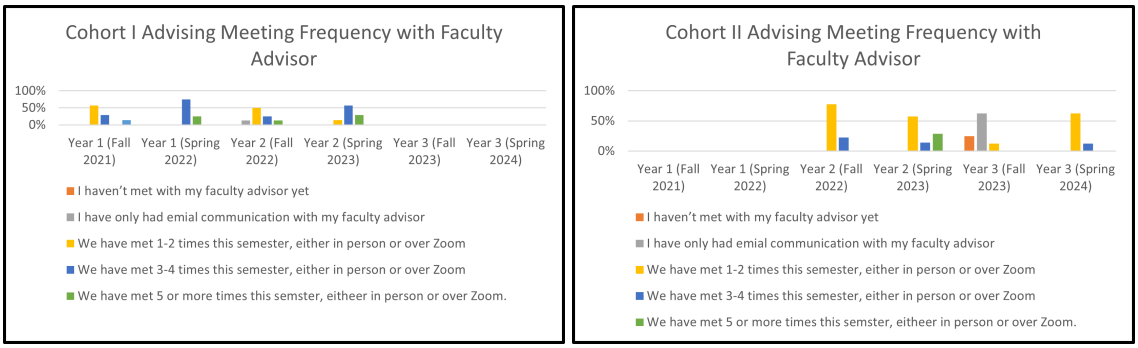

Figure 3: Meeting Frequency with faculty advisor over the years.

my college career", "I like my faculty and peer advisors for how nice they are and explain things easily.", "I like that my PA is now a friend more than an advisor.", "I like that my peer advisor is also an engineering student so she can give me information and answer my questions about the program."

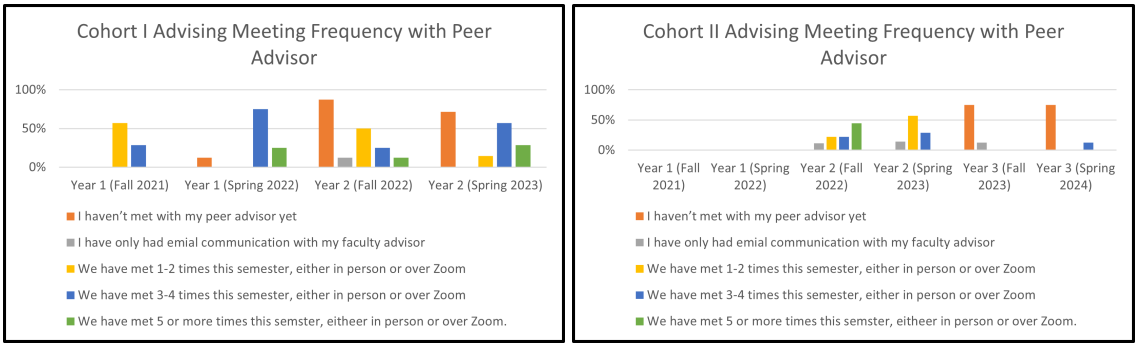

Figure 4: Meeting Frequency with peer advisor over the years.

In general the students met with their university advisor less frequently than the faculty and peer advisors shown in Fig.5. One of the university advisors indicated that, in addition to the data presented in the table, "each student received a weekly email from me throughout the semester for a total of 15 this semester with important information/next steps/reminders/campus happening, at the end of my email signature included a Calendly link to self-book with me either in person or on Zoom.

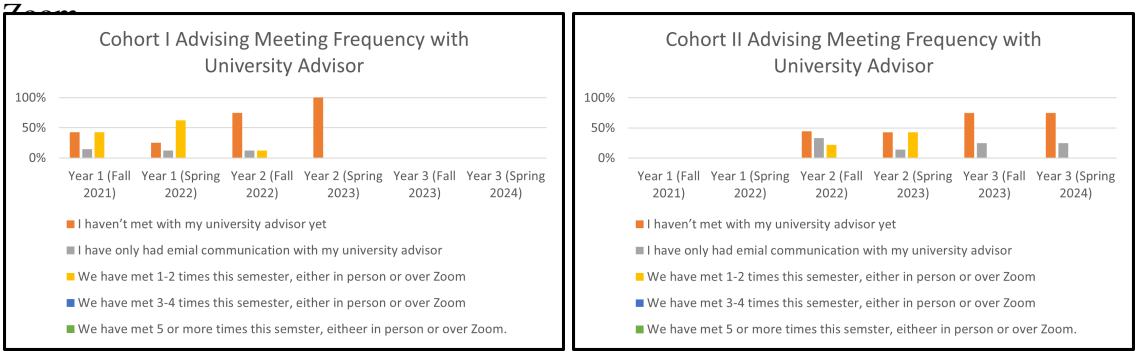

Figure 5: Meeting Frequency with university advisor over the years.

Discussion and Future Work

1. High Overall Satisfaction Rate: Overall, the students feedback on the advising team are positive, when asked what they like the most about the team advisement, the students wrote "It is

extremely nerve-easing that I have a group of people that I can always rely on incase [sic] I run into difficulties as I try to navigate this new lifestyle." , "I like that they are available for any questions or concerns I have.", "like that my faculty advisor has high expectations for me but my university advisor lets me know all of my options and reminds me to take it easy on myself." , "They are always there for me and can answer any question I may have.", "All seemed very accustomed to helping students in my shoes and having a faculty and peer advisor both in the field of engineering helped them guide me through my courses better than if they were from a different major." The feedback shows that the students have acknowledged that they benefited from the team advising system.

2. Advising Awareness: The survey data shows that it is vital to educate the students about the system. The team advising system is designed to support students in achieving success, making it essential to clearly define each advisor's roles and responsibilities. It is equally important for students to be aware of these roles to ensure they know where to seek help when needed. Since the scholars were all aware of their faculty advisor, perhaps the university advisor can be introduced to the scholars by the faculty advisor to promote accessibility and awareness.

3. Efficient Advising:It is important to avoid overburdening students with unnecessary meetings or unsolicited advice when things are going well. Team advising data focuses on the first two years after enrollment, during which students work with peer and university advisors. Afterward, students are expected to develop self-efficacy and autonomy, though they retain access to a faculty advisor (the same for all NSF scholars) for any questions. One university advisor noted most interactions occur when students struggle academically, highlighting that seeking advice only when needed is acceptable. Some students engage with advisors more frequently than others, reflecting varied use of advising services.

Acknowledgment

This material is based upon work supported by the National Science Foundation under Grant Number 2030731.

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