

**AC 2009-1208: FIRST-YEAR EXPERIENCE IN MANAGING NSF S-STEM
GRANTS AT KANSAS STATE, SALINA**

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First Year Experience in managing NSF S-STEM Grant at K-State at Salina

Abstract

The ELITE (Enhancing Lives through Technology and Engineering) program is a targeted scholarship program to increase the number of traditionally underrepresented but academically talented students in Kansas earning associate and bachelor's degrees in engineering technology. The program received an S-STEM grant from National Science Foundation (NSF) in 2006. This paper provides an overview of first year grant management experience in establishing and implementing major project activities. Further, the paper discusses how these activities broadened and enhanced the educational, professional, and personal skills of students.

Introduction

Kansas State University's Engineering Technology (ET) programs are receiving far more employer requests for graduating students than students available to fill the need. This is not merely a local trend. The National Academy of Engineering and National Research Council (2005) confirms that domestic supply of qualified workers is not keeping up with the skill demands in fields that require strong backgrounds in science, technology, engineering and mathematics. To address the shortage, in 1999, the NSF approved a new program, Computer, Science, Engineering and Mathematics Scholarships (CSEMS) program, which has been changed into Scholarships in Science, Technology, Engineering and Mathematics (S-STEM) to expand the disciplinary eligibility.

In 2006, the ET department applied for S-STEM (Scholarships in Science, Technology, Engineering, and Mathematics) grant and has been named the recipient of a \$500,000 grant from the NSF for its ELITE Program. The ELITE scholarships grant program started fall 2007 and runs through 2011. This grant allows the Engineering Technology Department to award 15-25 scholarships annually (up to \$5,000 per scholarship) for the next four academic years for students majoring in construction engineering technology, computer systems technology, electronics and computer engineering technology and mechanical engineering technology. The ELITE scholarship grant will facilitate recruitment, retention, graduation, and placement of a diverse group of academically talented but financially needy students in engineering technology fields in the high technology industries in Kansas.

Since fall 2007, an average of 26 scholarships were awarded in the amount of \$1800/semester. Administering the grant in its first year has been rewarding and challenging and has included developing an applicant screening process, monitoring academic progress, and engaging applicants in activities. This paper will discuss the grant management experience and its impact in recruiting, retaining and graduating students in ET programs.

ELITE Program Goals and Activities on Which the Current Project Builds

The ELITE scholarship program builds upon prevailing departmental recruitment, retention, and job placement philosophies and strategies. The following narrative outlines action items of the ELITE scholarship proposal to satisfy each of the four goals.

- Goal 1: Improve educational opportunities for students.
- Articulate seamless transfer of community college credits
 - Link with targeted high schools offering PLTW programs
- Goal 2. Increase retention of students to degree achievement.
- Promote the ELITE Scholarship project, especially to underrepresented groups.
 - Identify and maintain a pool of eligible students to pursue careers in engineering technology.
- Goal 3. Improve student support programs at institutions of higher education.
- Assist scholarship recipients with academic advising, career planning, and student support services.
 - Facilitate mentoring and engage students in personal and professional development activities.
- Goal 4. Increase numbers of well educated and skilled employees in technical areas of national need.
- Assist students with preparation in career planning and placement through K-State at Salina Career and Employment Services office.
 - Engage and connect students with employers through professional associations, career fairs, and industry internships.

The ELITE Program builds on the following activities already in place in the College of Technology and Aviation at K-State at Salina:

- Articulation agreements that have been newly signed or are in process of being signed with all Community Colleges across the State of Kansas.
- Introductory collaboration with Kansas PLTW School programs to introduce these students to engineering technology opportunities at K-State at Salina.
- A strong set of student services and support programs available within the College.
- Close interaction with industry employers and internships are already being promoted through the College's own Career and Employment Services, thus enabling ease of placement of ELITE scholars into applicable internships.

Activities

Currently the scholarship program is in its third year. The main activities of year one were to initiate the ELITE Scholarship Program at K-State at Salina Engineering Technology Department, to establish the process for selecting ELITE scholars and to involve college faculty and staff to support the grant management. Year two focused on awarding scholarships, providing educational experience and student support, and assisting students with career planning and placement. ELITE Scholarship Program (ESP) activities are administered by the grant management committee. The PI, four Co-PIs, three other faculty and staff are involved in ESP activity planning, implementation and scholarship applicant selection. To maximize the recruitment effort, Office of Student Life sent a scholarship promotional packet which included a welcome letter, scholarship application, and a poster to 1500 prospective students, 308 school district counselors, and 17 community college deans, and admissions staff. ELITE scholarship information was also distributed at a local NAACP meeting, career fair meetings, professional chapter meetings, and local trade shows. Focus visits were arranged at local high schools to talk

about careers in engineering technology, engineering technology programs offered at K-State, and the ELITE scholarship opportunity.

Table 1 displays project data on applicants receiving ELITE scholarships. In the first round for fall 2007 a total of 27 scholarships were awarded in the amount of \$1800/semester. From the fall 2007 class, two students graduated and 4 did not return due to personal and health issues. In S08 twenty one ELITE scholars renewed their scholarship and five new scholarships were awarded. In S08 three students graduated with a bachelors and one with an associate degree. The student with the associate degree is pursuing a BS in technology management. All the graduates are employed by companies such as Exxon Mobil, Garmin, ICE, Fort Hays University, and GeoProbe.

Year/Semester	Total Number Enrolled	Total Number Applied for ELITE	Total Number Of Scholarship Recipients	Percent Underrepresented applied	Percent Underrepresented received
2007/Fall	173	41	27	25	37
2008/Spring	169	31	26	32	38

It is interesting to note that the number of female applicants and recipients increased from 7% to 16% in F08.

To improve ELITE scholar support and engage students the committee focused on ways to develop networking, connecting with fellow students from different disciplines and promoting engineering technology programs. The students were encouraged to wear ELITE purple shirts on casual Fridays, college events, and seminars. This was a very popular idea and caught everyone's attention about ELITE scholars and generated interest about scholarships and engineering technology programs. ELITE scholars participated in community parades with an ELITE scholarship banner. These events enhanced team building, leadership, public relations, and community involvement.

The ELITE Scholarship program sponsored participation of ELITE scholars in 12th Annual K-State leadership seminar on "Entrepreneurial Leadership: Seize the Opportunity!" which was held on April 3rd 2008. Students had mixed feelings before attending the workshop; however, became excited after listening to the best motivational speakers which included Jeffrey Timmons from Bobson College and Jeffrey Stamp from UND, Grand Forks, ND.

All students participated in low ropes GOAL program which enhanced team building, leadership, integrity and trust, group communications and problem solving skills. At the end of the program one can observe the impact of skills acquired by the students.

The ELITE scholars were encouraged to join professional organizations. This ultimately revived the Solar Boat club on campus. ELITE scholars are also active members of student governing association and professional clubs such as SME, SAE, ASME, ACM, and IEEE. Graduating

ELITE scholars were recognized during the graduation ceremony with an ELITE medal and an ELITE scholarship award certificate.

Challenges and Lessons Learned

Managing the grant has been rewarding and helpful in recruiting and retaining students of engineering technology programs. The committee was concerned that a low number of students would apply for the scholarship as the college was in the middle of five year tuition increase plan. Due to increased tuition the enrollment numbers started decreasing before the scholarship program started. The committee tried to attract minorities and found out that only 25% were minority from the total applicant pool. Even though the enrollment in the programs has not significantly increased, there has been a small increase in female students and transfer students from community colleges.

The scholarship committee decided to spread the average number of scholarships to 25, realizing the amount of \$1800 per semester was not sufficient for the recipients. Overall the scholarship money helped retain students and decrease the declining enrollment trend. Further more, the scholar involvement in professional organizations increased student club participation and activities.

The scholarship program enhanced the visibility of engineering technology programs and has served as a driving force in disseminating the understanding of engineering technology in the community, schools and industry.

The major challenge has been distributing scholarships among current, transfer, and new students; maintaining a certain number of scholarships for new students from year to year to maximize recruitment efforts and creating a supportive culture to enhance student engagement in community service.

Conclusion

The ELITE Program is attempting to increase both bachelor and associate level degree graduates in engineering technology. This grant is a five year grant (one year planning and four years offering scholarships) which has gotten off to a good start in the first year and did well in the second year. Overall, the scholarship program is an effective tool in helping recruit, retain, and promote engineering technology programs.

Bibliography

1. NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM) from the World Wide Web: <http://www.nsf.gov/pubs/2006/nsf06527/nsf06527.htm>