Eight Factors for Creating an Active Student Professional Society and How It Enhances the Engineering Curriculum

Richard A. Reid, Ph.D., PE and Charles A. Tiltrum, PE, LS
Assistant Dean of Engineering/Associate Professor of Civil & Environmental Engineering, South Dakota State University, Brookings, SD

Abstract

In the past four years the South Dakota State University American Society of Civil Engineers (ASCE) Student Chapter has been recognized as one of the top student chapters in the nation. ASCE has four zones in the United States and the South Dakota State University student chapter has been awarded as the best in their zone three times and the nation’s top student chapter once. At South Dakota State University, eight factors have been identified as critical to creating this success: 1) outstanding student leaders, 2) younger member involvement, 3) support from the institution, 4) active program, 5) attending ASCE activities away from campus, 6) active practitioner advisor, 7) active advisor, and 8) adequate funds and fund raising activities. The outstanding work of this chapter has complimented the curriculum of the civil engineering department in the following ways: 1) exposure to the practice of engineering and the types of work and contributions they may make as an engineer, 2) creating contacts for summer and post-graduation employment, 3) providing avenues to learn about and exercise social responsibility, 4) exposure to the importance of life-long learning and licensure, 5) development of teamwork, communication, and leadership skills, and 6) service to profession. This paper will provide examples of how the eight factors for a successful chapter are implemented and how the student chapter supports departmental outcomes.

Introduction

Regardless of the engineering discipline, active student professional societies have often been used to compliment academic programs. Typically, these activities have often been viewed as opportunities to allow practitioners to interact with students and present real-world projects and experience to the students. However, successful student chapters provide much more to their students and departments. When the activities are viewed under the outcomes associated with current ABET accreditation criteria, the benefits of a successful student chapter can enhance the engineering curriculum. This paper will outline the most significant elements required for an active student professional society based on the experience of the South Dakota State University (SDSU) American Society of Civil Engineers (ASCE) Student Chapter. Additionally, the activities of this chapter will also be evaluated as to how they compliment the curriculum and ABET program outcomes.
Important Factors in an Outstanding Student Professional Society

I. Outstanding Student Leaders

Student organizations, as their title implies, belong to the students and must be student run. Success begins with committed student leaders who understand that becoming a student leader will require time, hard work and possibly financial sacrifice. The commitment may come from starting in positions of lower responsibility and working their way into more challenging positions each academic year. The time commitment will then come from fulfilling their responsibilities as student leaders. For instance, to have productive chapter meetings will require the student leaders to spend time outside the normal meeting schedule to adequately plan meetings and organize activities. A regularly scheduled weekly officers meeting provides an opportunity for the students to work out ideas and assign tasks. Their hard work will result in well organized meetings that remain interesting to the attendees. Student leaders also find themselves spending more of their own money to travel on behalf of the chapter. Regional and national conferences along with student competitions are not typically fully funded by the chapter or department. With many students spending more time being employed during the school year, students who have significant involvement in leading the chapter may find themselves reducing their work hours to fulfill their organizational responsibilities.

There are some common characteristics among our successful student leaders. This includes academic success, priority of their extracurricular activities, working with campus faculty and staff, sincere interest in service, and have the ability or capability to delegate. Our experience has shown our outstanding student leaders tend to be in the top 10% of their class academically and no less than the top 33% of their class. For these students, ASCE is their primary, but not their only, extracurricular activity. They often are officers in multiple organizations, but their most significant responsibilities are to ASCE. On campus, these leaders are comfortable working with faculty and administrative personnel. This allows them to keep open lines of communication to help generate external support to promote chapter activities as well as obtain financial support. Successful leaders have an interest in service. Service may be defined as surface to profession, community, and campus. When one observes the activities of a professional organization, it is evident that they are service organizations. Successful leaders clearly believe this and develop a program that reflects this attitude. Finally, as one might expect, successful student leaders do not try to do everything themselves. They are able to work with their fellow officers and students and allow them to take the lead on significant elements of the chapter activities. Conversely, some leaders who have been less successful have been those who develop ideas and have a desire to maintain control. These types of leaders often alienate their peers because they are not able to fully delegate tasks and tend to micromanage. Additionally, they often wish to take sole credit for all successes, which tends to be a source of discontent among those who actually did the work. In some cases, the ideas they initiated never reach completion because they allow themselves to become interested in some new idea.
Each year, the SDSU student ASCE chapter holds officer elections in mid-November. This has proven to help our new officers get off to a strong start. Although their term does not begin until January, they start attending the weekly ASCE officer’s meetings right after the elections. This provides them with one month of direct overlap with the outgoing officers to ensure program continuity. Having elections in the middle of the academic year keeps the program running smoothly. If elections are held at the end of the academic year, the new officers don’t take over until after summer and the potential for loss of continuity over the summer increases dramatically.

II. Younger Member Involvement

A successful student organization, like a corporation, may occur due to the work of one or more gifted individuals who through personal will, ability and effort can create a strong student chapter. However, relying on this type of individual leaves the success or failure of the organization to chance. When these individuals graduate, there may not be another similar performer to replace them. Repeating student chapter success year after year requires an organizational structure and operation that involves interested students early in their academic career and trains them to carry on the work of their predecessors. Therefore the program operation and organization should involve interested students early and train them to continue the work of their predecessors. Dedicated student leaders are often identifiable early in their academic career and their participation should be encouraged as early as possible. This allows them to develop an interest in the student chapter early. One strong indicator of success is that officers spend more than one year in various leadership positions. If they are involved in leadership as sophomores and juniors, they gain corporate experience on leading the organization and develop their own personal vision on what the organization should do while they still have time to act on those goals. Students who are involved multiple years have the opportunity to attend regional conferences and workshops for student chapter leaders more than once to learn from others and share their experiences with others. Finally, students who become involved earlier and progress into leadership positions tend to challenge themselves to continue the success of their predecessors. They work hard to maintain or improve upon the tradition of success that has been developed. In recent history, all of our chapter presidents have previously held other officer positions and proved their abilities to their peers. Creating younger member involvement may come from creating necessary but relatively lower responsibility positions. Positions that require younger members may include having a freshman and sophomore class representative, community service coordinator, publicity chair, recruiting chair, and others that support chapter activities. All of these positions have been implemented at SDSU.

Along with the officer positions, a number of strategies have been attempted to reach a wider group of younger members. The first attempt to contact students is made during the summer prior to their freshmen year. Each summer, the Dean’s office sends a welcoming letter to each incoming freshmen. A letter of welcome from the student chapter is inserted with the Dean’s letter along with a membership card which they are asked to send to the department and an invitation to the fall kick-off picnic. This resulted
in many students signing up for membership prior to their arrival on campus. A second incentive is that annual dues are waived for freshmen. During the first semester, most freshmen are required to take GE 101, Introduction to Engineering. Student chapter officers are provided time during the second class period to spend a few minutes addressing the class to promote ASCE. At this time the freshmen are again invited to the fall kickoff which is the student chapter picnic. Freshmen may eat for free and the picnic is located within walking distance of the dorms. At the picnic the students are introduced to the faculty members and students of all classes stand up an introduce themselves. Two fun activities are discussed at this meeting: attending the annual ASCE national conference in October or November and our annual unofficial concrete canoe competition with our in-state rival, South Dakota School of Mines & Technology which is held in September. Finally, two to four times a semester attempts are made to call all freshmen and sophomores and meeting information is distributed via e-mail.

III. Support from Institution

Institutional support for a student organization begins within the department. Within the department, faculty members have a key role in providing organizational support. Faculty may begin by attending student chapter meetings and activities. Their attendance shows their interest in the students and keeps the faculty members aware of the student efforts. It is also important for faculty members to accommodate students whose authorized chapter activities require them to miss class and labs. Students will limit or stop their participation in chapter activities that cause them to miss classes if they feel or perceive they will receive lower grades or are being treated differently by faculty. Faculty may also assist by announcing upcoming chapter meetings in class, or showing how the topics presented at the meetings are relevant to the technical content of their class. Our staff also shows their support by being active at professional society events (not just ASCE) on and off campus. Participation in Branch, Section and National activities sets a positive example to the students. Faculty make a sincere effort to interact with the students at these events, introduce them to practicing engineers and inquire about chapter activities. Departments, College and University support may also come by ensuring the chapter has space to conduct meetings, publicize events, and raise funds. Additional support may also come by providing student and organization recognition for successes and significant efforts. A successful chapter will find it is much easier to obtain institutional support in recognition for their efforts.

At SDSU, we have not been able to provide our student chapter with an office as may be the case at some institutions. For administrative space, our students have a few file cabinets in the departmental student computer room. Chapter meetings are held in an auditorium style classroom which has worked very well. For the steel bridge and concrete canoe, space is set aside within our departmental laboratories. Typically this only requires at least 300 to 500 sq. ft. Fabrication of the steel bridge occurs at a local steel fabrication company. Also, the students are provided access to the departmental technician workshop for tools and equipment. This requires a certain level of trust between the department and student chapter which the students have honored to date. Space is also needed to display
trophies, plaques, concrete canoes and steel bridges. Finally, Institutional support for funds is also necessary, as discussed in Section VIII.

IV. Active Program

The most visible part of any student program is the scheduled chapter meetings. The SDSU chapter has meetings every two weeks. It is beneficial to have the meetings on a fixed schedule so it becomes a regular part of the student’s schedule. A calendar should be posted at the beginning of each semester showing the times, dates, locations and nature of each chapter event. This provides an organized schedule of events for the chapter officers and members. The meeting agenda should be organized and may include regular updates from the chapter officers, advisor, and a program. Professional speakers may be selected to talk about engineering projects, career development, or other relevant topics. Speakers may be found from the local community, on-campus, alumni, or region. Our chapter develops a list of diverse speakers to address the wide range of interest students may have. The SDSU chapter allows time each fall for students to speak about summer work experience so other students can see the opportunities available to them. Employers who are coming for on-campus interviews may schedule their visits so they may speak at a meeting. This is often very desirable to the employers because it provides them an opportunity to highlight exciting projects they are involved with. It may be advisable to ask the speakers to focus on the engineering aspects of their work and to avoid focusing on company pay, benefits, and other subjects that serve solely to support their recruitment.

Another key component of activity for the SDSU student chapter has been the community service program. One area has been to work with area youth to promote science, math and engineering. Students have worked to help Girl Scout and Cub Scout groups to earn badges for engineering and geology, judged science fairs, and conducted hands on activities for elementary, middle and high school classes to demonstrate math, science, or engineering principles. Other activities include: food drives, clothing drives, blood drives, working on houses for Habitat for Humanity, visiting shut-ins, providing Christmas gifts for the needy, assistance to the Brookings Sheriffs Department by surveying accident sites to provide location details for the necessary reports, developing awards for engineering projects for 4-H, helping staff departmental displays at High School recruiting fairs, mentoring younger students, conducting an engineering poster contest for second graders, Salvation Army bell ringing, collecting tabs from aluminum cans for the Ronald McDonald House, serving as crossing guards during the 5K race held every homecoming weekend, calling alumni during our annual fundraising phonathon, and participating in professor selection interviews.

Most student organizations also have competitions they may be involved with. For Civil Engineers, the concrete canoe and steel bridge competition provide an opportunity to use technical skills, work in teams on a long-term project, encourage the active participation of younger members, and travel opportunities.

Other activities may include field trips and social events organized through the student
chapter. Examples of other activities at SDSU include a picnic at the start of the fall semester for all chapter members at a nominal cost and is free to all freshmen. An annual golf tournament each fall brings together alumni, practicing engineers and students. In the spring, the students square off in a softball game against alumni and the faculty. Along with skating, bowling, and other social activities the organization continues to find opportunities for the students as well as faculty and alumni. Finally, the annual chapter banquet is conducted by the students with the cooperation of the department. At the banquet departmental scholarship winners are recognized as well as awards for the outstanding member for the freshman through senior class. The students send invitations to faculty and parents who are encouraged to attend. As an alternative to having a dinner speaker, the students have chosen to make a slide presentation showing pictures of their activities over the past year. This is well-received and provides a chance for the students to show off their efforts as well as provide some humor to the evening. Another fun part of the evening is the presentation of the Royal Shaft Award. This award is presented to the professor who, in the eyes of the seniors, provided the greatest challenge to their timely graduation. In many cases national leaders are invited to the banquet and other activities. We have had good success in having national leaders come to our student activities.

The social activities are another reason for students to come to meetings so they may be up-to-date on what is happening and to participate in the planning. Another method to help meeting attendance is to provide incentives for students to attend. Serving pizza and soda for a nominal fee for a late afternoon or early evening meeting can be effective in promoting attendance as well as offering door prizes. For this chapter, having a 5:30 pm meeting with pizza has proved to be much more popular than the previous 7:00 pm meeting time. On many occasions the guest speakers buy the pizza as many have learned that free pizza draws a crowd.

It is also important for the chapter to publicize their activities through local media. Newspapers, television, and university publications promote the activities of the students to their peers, alumni, financial supporters, businesses and future students.

Finally, to provide continuity and carryover of the successes of the past, it is important to document all activities and involvement. This provides the necessary information for preparing the annual chapter report as well as giving the chapter reference material for planning in subsequent years. This documentation, along with younger member involvement and younger officers greatly facilitates year-to-year carryover.

V. Attend Activities Away From Campus

Each year there may be numerous opportunities for students to participate in off-campus activities. The local professional society branch and section meetings bring students in contact with practicing engineers and provide excellent networking opportunities. Our ASCE section meetings are held in the evenings at a restaurant. To encourage student participation, the local chapter provides a free dinner to all students who are attending for
the first time each year. The student chapter also provides a report on their activities at each section meeting. Attendance at the professional societies National Conference held every fall has proven to be an exciting opportunity for students and may be achievable depending upon the conference location and travel costs. Planning typically begins in the spring and commitments are finalized at the start of fall semester. National conferences include specific activities for students and student registrations are at a reduced rate. Costs are shared between the student, chapter, department and college. In some cases, funding has been obtained from the campus Student Activities Office and from the University President. Regional student workshops are typically conducted by the professional societies and this provides the students a chance to work with chapter members from other institutions to share ideas and have fun. Students return from these activities energized with new ideas and enthusiasm for their work. ASCE’s Workshop for Student Chapter Leaders, which is held early in the spring semester, is a must for all new officers who can attend. It is the number one ASCE activity to get students excited and knowledgeable about ASCE. We have traveled by van with students from the South Dakota School of Mines & Technology to help reduce costs, learn about their activities, and build friendships and contacts. Finally, as mentioned before, discipline specific competitions also provide a chance for students to get out and interact with their peers as well as develop technical, team building, and communication skills.

VI. Active Practitioner Advisor

Along with the faculty advisor, a local practitioner is recruited to serve as an advisor. Having a mentor who is not in a faculty role may provide the students another link to the profession. It is most desirable if this person may attend meetings and provide advice to the students. The practitioner advisor should have an interest in the professional society and work well with students. In our chapter, the practitioner advisor has spoken at chapter meetings, helped organize the student-alumni softball game, helped judge various student competitions, hired students, assisted with field trips and helped develop student chapter outreach activities.

VII. Active Advisor

No matter how many students a chapter has or their capabilities, an active advisor is necessary to help provide consultation to the students and help keep them on track. The advisor must be willing to commit the time and effort to advising the chapter. An enthusiastic and sincerely interested advisor is a key component to the chapter. If this type of person can be involved for many years, the contacts and knowledge they develop will be an asset to the chapter. The advisor must also be willing to attend the student regional training programs, student conferences, scheduled meetings and many of their other events. It is important that the staff also support the advisor by attending meetings and student events. Also, other faculty members may have to step in temporarily when the advisor is on sabbatical, traveling, or otherwise absent. Finally, the active advisor provides continuity and carryover from year to year as student leaders come and go.
Strong and committed advisors must also be recognized within the department for their time, effort and commitment. Recognition can be made through the institutions award system as well as the professional society’s award system. The number of evenings required to attend all the board and chapter meetings, drive state vehicles on trips, participate at the branch, section and national level, stay involved with national committees, and help raise funds is significant. The advisor will become the spokesperson for the students in the department. In our department, this type of activity is recognized as part of the faculty members’ workload. Success in this advising role should be highlighted in the advisors annual evaluation and salary enhancement.

VIII. Adequate Funds and Fund Raising Activities

Finding sufficient funds for any organization to be able to participate in all the activities available to them is a difficult goal to achieve. Each chapter must be willing to try different fundraising activities in an effort to determine what efforts work best in helping them achieve their financial goals. Some examples used at SDSU include an alumni phonathon, where students call alumni annually to solicit financial support for the department. In many cases alumni specifically designate their pledges to support the student chapter. The golf tournament, which started very modestly, has grown each year and is quickly becoming an annual ritual for local engineers, students and faculty. Funds are solicited directly from area engineering businesses as well as from the branch, section, college and university. Nominal dues are charged to each student and an annual raffle has also been a successful fund raising activity. The success of these solicitations often increases as the chapter becomes more successful, active and visible. Finally, each student who participates in an out of town trip will pay part of their costs. It has been observed that when students are asked to pay part of their trip expenses they tend to have a greater interest in participating in the activities and represent their chapter with pride. When students are allowed to travel at no personal expense there tends to be less motivation for full participation in the activities.

Relationship to the Engineering Curriculum, Profession and Departmental Outcomes

Having a successful student professional society provides many benefits to the department and student including: 1) exposure to the practice of engineering and the types of work and contributions they may make as an engineer, 2) creating contacts for summer and post-graduation employment, 3) providing avenues to learn about and exercise social responsibility, 4) exposure to the importance of life-long learning and licensure, 5) development of teamwork, communication, and leadership skills, and 6) service to profession.

*Exposure to the Practice of Engineering and the Types of Work and Contributions They May Make as an Engineer*

Most students come to college with a very limited knowledge of the specific types of work done in their engineering discipline. Even as they progress in their coursework, the variety
of opportunities and options available within their discipline may not be readily evident. The interactions with professional speakers, field trips, attending conventions and other chapter activities provides a wider exposure to the engineering practice and their important contributions to society and their profession.

Creating Contacts for Summer and Post-graduation Employment

An active student chapter draws employers to the program to give presentations and they have the chance to identify and recruit summer and full-time employees. The SDSU student chapter has employers that come on regular cycles to talk about engineering work and who then stay on campus to conduct interviews. Through the meetings, travel, attending branch, section and national meetings, students establish a network of contacts to aid in their employment search. Additionally, many employers will seek out information on a candidates resume regarding their participation in their respective student professional society. During our annual fundraising phonathon contacts have also been made with alumni that have helped students obtain summer employment. This has also resulted in employment opportunities well outside the immediate geographic area of the University as they call alumni nationwide.

Providing Avenues to Learn About and Exercise Social Responsibility

In working with this generation of students it is quite evident they sincerely wish to make a positive impact on society. The student professional society, by taking an active leadership role in community service, has provided an avenue for students to help others. Activities that help educate school children about engineering to help motivate them to do well in school and pursue courses in science and math helps impact our public educational system. Providing to the needy as detailed in paragraph IV has significantly increased student participation in chapter activities as well as brought a wealth of positive publicity to the chapter, department and university. These activities contribute to the development of students who care for society in their personal and professional lives.

Exposure to the Importance of Life-Long Learning and Licensure

The interaction with practicing engineers, especially in the civil engineering discipline, clearly demonstrates to the students the importance of professional licensure. The engineers who interact with these students are almost exclusively professional engineers and many discuss how that is necessary in their particular field. With regards to continuing education, attending conferences exposes students to practicing engineers participating in continuing education. Additionally, professional speakers will often discuss how new technology, materials and other advances have changed the profession over their career. Attending presentations at student meetings and engineering conferences helps develop an interest in licensure and life long learning that they will carry into their professional careers. These presentations help support the departmental goal of having every student take the Fundamentals of Engineering Exam and many students also take the Fundamentals of Land Surveying Exam prior to graduation.

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Development of Teamwork, Communication, and Leadership Skills

The development of teamwork, communication and leadership skills is not unique to participation in engineering professional societies. These skills may be developed through a myriad of activities available to students. Students who are active in their student organizations strive to accomplish specific goals find they must work together, communicate and learn to become both leaders and followers. The student professional society allows them to develop these skills with other engineers in the context of their profession. These skills are not only developed by chapter officers but by all students who participate in the chapter’s activities and competitions. Chapter officers learn through planning and scheduling the events for the entire year. They have weekly board meetings and bi-weekly chapter meetings. Members learn through participation with the concrete canoe or steel bridge teams and all other professional and service related activities.

Service to Profession

One way engineers serve their profession is through the work of professional societies. Professional societies actively work to promote their profession so that it may best serve the public and its members. Practicing engineers do not support their professional societies because it will result in personal monetary gain or great notoriety. As with their professional counterparts, students do not generally participate in their student chapters because it will result in a grade or monetary reward. They understand that their work provides a mechanism to serve their profession by supporting the academic development of both themselves and our future engineers. All of the activities should help instill in the member a feeling of self-satisfaction and pride.

Summary

The keys to having a successful student chapter are no secret and certainly not uniquely developed by the authors. The eight important factors discussed in this paper are cited as the most important items that had helped lead to a student chapter at South Dakota State University that has achieved great success in recent years. Each of the activities and programs detailed in this paper have been done in our chapter. In retrospect, when looking back on how the chapter received national awards, having success in these eight areas appeared to be critical in achieving this recognition. Along with the recognition, has come the understanding that this successful program has become an important part of the civil engineering program at SDSU and greatly compliments the classroom education received by our students.

Author Biographies

RICHARD A. REID, Ph.D., PE is the Assistant Dean of Engineering and Acting Head of the Civil & Environmental Engineering Department at South Dakota State University. He is active in the ASCE ExCxEEd program and has received three major teaching awards since he started teaching in 1995. He received his Ph.D. and M.S. in Civil Engineering from Georgia Tech and his B.S. from the Citadel.
CHARLES A. TILTRUM, PE, LS is an Associate Professor of Civil Engineering at South Dakota State University (SDSU). He has been an ASCE student chapter advisor for over 20 years and has served ASCE as the District 16 Director and on Committees for: Student Activities, Scholarships, Education Activities and Policy. He was named ASCE Zone III Advisor of the Year and holds MS and BS degrees from SDSU.