Abstract - In addition to the academic preparation engineering students receive in the classroom, today's graduates also need to be prepared to enter the workforce with the ability to confidently interact in a corporate setting, as well as have an awareness of their own personal strengths and weaknesses. Technically competent graduates who also possess these “soft skills” are much more attractive candidates for potential employers. To address this need, the Lee College of Engineering at the University of North Carolina at Charlotte has developed the Leadership Academy, a unique program providing the opportunity for students to develop their leadership potential. The Leadership Academy teaches engineering students to deal with realistic challenges they will face in the business world, explore their own personal development process, and practice their leadership skills in a controlled setting. This extra-curricular program is conducted through evening and weekend retreats and is facilitated by a range of engineering faculty, alumni, and corporate partners over a two year time span. This paper describes the purpose of the Leadership Academy, engaging structure of the active learning environment, partnerships with industry, and specific areas of focus within the program components.

Index Terms - leadership, ethics, service-learning, professional development, active learning

INTRODUCTION

The Leadership Academy at the University of North Carolina at Charlotte was created in 2002 to give students an opportunity to develop their leadership potential through a series of activities spanning over two years of a student’s education. It was carefully designed by engineering faculty, local employers, and current students to enhance the traditional undergraduate technical education with “soft skills” that make students more marketable and successful upon graduation. Students selected to participate in the program practice professional skills and build confidence in their abilities under a supportive learning environment.

NEEDS FOR THE PROGRAM

The necessity for developing the Leadership Academy was voiced by a range of stakeholders both on and off campus. Employers had a need for establishing this program because it would help increase the quality of potential future job applicants. Additionally, these employers are given the unique opportunity to become a part of the undergraduate education process by shaping the content of the Leadership Academy’s material. The program also provides employers access to the top students in the college, allowing companies to have the chance to promote themselves to the students who they would most likely want to consider for employment. While this program is not designed to be a screening process for selecting potential employees, a number of students have already connected with employers through internships with companies involved in the Leadership Academy.

Students are attracted to the Leadership Academy as a way to broaden their educational experiences beyond the walls of the classroom into an environment where they can actively learn some of the principles that will help them to be successful in their careers, in addition to the remainder of their technical education. They are able to connect with real professionals in industry in ways that other students would not normally have access. Through the series of activities in each part of the program, students gain confidence in their own abilities and practice developing skills in a safe and controlled setting with peers and coaching professionals. The students in the Leadership Academy recognize this as an opportunity to set themselves apart from their peers and develop the extra skills that will guide their careers.

The College of Engineering may be impacted in a wide variety of ways, as it is the permanent connection among all other stakeholders. One of the college’s interests is to develop a self-sustaining culture of leadership within the engineering student body. With active student leaders in campus organizations, the impact of the Leadership Academy training can spread across the larger student population. Over the years, this ongoing mindset of student involvement and service could translate into an alumni group willing to maintain more of a connection with the university. The college also benefits by maintaining a close relationship with local employers, which can progress into corporate involvement in other activities within the college. The Leadership Academy provides a unique forum for students, faculty, and employers to come together and creatively meet the needs of each group.

STUDENT INFORMATION AND SELECTION

The Leadership Academy is a new program in place at a growing campus. The University of North Carolina at Charlotte is a regional, urban campus with 20,000 enrolled students. The College of Engineering contains 2,000 of these students among the various engineering and engineering technology programs. Over the last five years, the College of Engineering enrollment has grown an average of 6% each year.
and has similar growth goals for the next five years. The most recent engineering incoming freshman class had an average SAT of 1120 and 13% of the students were in the top tenth of their high school class.

Direct leadership experience is not necessarily a prerequisite to application to the Leadership Academy. Any motivated student with an interest in developing their leadership potential is encouraged to apply. The targeted population for participation in the Leadership Academy includes rising sophomores and juniors in engineering or engineering technology with at least a 2.5 GPA. Students with lower GPAs are in jeopardy of academic probation and should focus time on schoolwork without the extra commitment of this program. After the minimum cutoff of a 2.5, higher GPAs are not a factor in selection as some of the best leaders may not have a 4.0 GPA.

The application and selection process involves two stages. The first step is a written application including six short essay questions and three professional reference forms. Then, students who complete a full application are given the opportunity to interview with the selection committee as the second step in the application. Through these two stages, students are evaluated in four areas:
- motivation to be involved,
- communication skills,
- ability to contribute to others’ experience, and
- ability to learn from others’ experiences.

Since so much of the learning is collaborative among students in teams, a diverse group of students is needed. The final consideration for applicants is for those that have unique backgrounds or experiences that would contribute to the diversity in the group. For example, preference may be given to a student with international experience, or who has served in the military. Non-traditional students with families or full time jobs can bring a different perspective to the conversations too, and are also given some preference in selection. The in-depth application and selection process leads to a well-rounded group of committed engineering students that are ready to begin the journey of leadership development.

**Program Format**

There are many types of leadership programs already existing on campus, but none of these established programs specifically meet the needs of the engineering students and employers. Other programs have a range of formats from one-time events to weekly meetings all semester. Most of them involve a relatively short time span of development and include students from all majors on campus. The Leadership Academy was developed to specifically address issues for engineering students in a comfortable environment with students in similar academic programs. The timing of the program is also designed to fit around a student’s busy academic course load without adding excessive time commitments. The length of the program provides students time to develop their skills as they become involved in more activities on campus, thus giving more time to apply the lessons learned during each component of the Leadership Academy.

The main components of the Leadership Academy are three off-campus modules held one weekend per semester and one final capstone service project in the last semester of a two-year time span. These weekend modules on different aspects of leadership are the carefully designed core of the whole program. Other activities in the program include weeknight dinner speakers, individual development sessions, and a formal graduation ceremony. These extra activities keep students connected to others in the program between modules, help them to stay motivated to develop their leadership skills, and give added opportunity to connect with partners from industry. Through a program website, students are able to get updated information, pictures, and connect with prior alumni from the Leadership Academy.

In order to ensure that the content of the program remains inline with employer expectations, a corporate advisory board was created to review content and suggest learning outcomes for each aspect of the program. This 12-member board meets once each year and members are individually involved in some of the other activities throughout the year such as being a dinner speaker, interviewing applicants for selection, or facilitating part of a weekend module. The advisory board is chaired by a representative from Philip Morris, USA as they are the Leadership Academy’s largest financial contributor.

The first concepts for the Leadership Academy format were written in Spring 2001 through a series of meetings with engineering faculty and corporate partners. The following year, a group of ten hand-picked students served as a pilot group to participate in some of the activities and provide feedback from a student point of view as specific content delivery methods were established. In Fall 2002, the first grant for funding was received and the first group of 23 students was selected to begin the program. During the next academic year, the second full class was selected while the first class graduated in Spring 2004.

**Weekend Module Content**

Each weekend module builds upon the previous one in the students’ development process. These modules each have a set of specific learning outcomes and contain engaging activities so that students can meet these objectives through experience. Students are assured that they will never hear a lecture or feel that they are in a classroom setting. From Friday afternoon to Sunday afternoon, the modules are packed with hands-on activities, skits, and active conversations that often last very late into the evenings. In some critical activities, group composition is pre-selected by facilitators to ensure a diverse mix of students. In other activities, groups are randomly selected so that all students can interact with each other throughout the weekend.

**Module 1: Introduction to Leadership**

The first module is likely the first time most of the students meet each other, so the initial activities are focused on getting to know one another and laying the foundation for the open
learning environment. One of the longest activities is a team challenge course where small groups compete in six games that build upon each other. This challenge course lets them get to know other students in the group, as well as create a common experience that they can refer to as they begin to discuss their own abilities and preferences in team settings. Following the team activities, students individually complete the DISC profile [1] for personal behavioral assessment. Other topics in the module include a session on role models and giving/receiving feedback.

Through the various activities scheduled in this first module, students are expected to accomplish certain learning outcomes:

- Understand different leadership styles,
- Learn their personal strengths and weaknesses,
- Observe team dynamics and anticipate conflict, and
- Recognize that leadership development is a process.

This last objective is the most important for transitioning into the next stages of the Leadership Academy. They need to realize that the development process is not something that can happen overnight or on a weekend, but is something that they must be willing to invest both time and effort into this gradual progression. The true leadership development in the Leadership Academy happens over the course of the entire two years, beginning with the understanding that it is a process. [2]

**Module 2: Values and Ethics**

The second module gives the students the opportunity to step out of their comfort zone. They begin with an activity depicting the significant components of their background often voluntarily including very personal details about their childhood and defining moments growing up. This sets the framework for the subsequent activities which challenge them to take a stand on a range of controversial social issues. For many of the students, it is a new experience to articulate their opinions and discuss what they believe in. Students may not be accustomed to speaking out for their beliefs. [3] Another session focuses on defining values and differences between individual values and group values. Students also perform skits on ethical situations in personal, academic, and professional settings. The weekend closes with discussions on the need for understanding diversity from the position of a leader.

The intense personal activities within this module create a risky environment that could require careful intervention by observant facilitators. Students frequently recall this module as having a great impact on their life and they remember the emotion that accompanies the experience. The atmosphere in this weekend is far removed from the traditional technical courses they are accustomed to in their day-to-day lives. These discussion-based activities are intended to have the students leaving the module knowing how to:

- Consider why they believe what they do,
- Form/voice opinions on controversial issues,
- Organize a set of group values,
- Practice investigating ethical issues,
- Value diverse opinions, and
- Constructively articulate opposing points of view.

**Module 3: Creating Your Future**

This third module promotes thinking beyond their current academic setting and explores the business world they are about to enter. The previous modules were primarily led by engineering faculty; however this module has a heavy focus on employers as facilitators. Employers can provide “real-world” experience and insight that students are interested in hearing. During this weekend, students work on their own personal vision for the future, and steps needed to accomplish their goals. A long session on strategic planning takes up almost half of the program as students learn methods of making business decisions and practice the process in different scenarios.

This module has the least amount of physical activities, but still engages students in discussions and presentations of their team’s ideas. During this third module, students:

- Develop a personal vision of leadership development,
- Understand the basics of strategic decision making,
- Practice making decisions as a group, and
- Consider an engineer’s responsibility to society.

While the majority of this third module deals with an engineer’s duties in the workplace, the last part of the weekend focuses on their responsibility to the community. They discuss ways in which they could contribute to society as professional engineers. This leads to a discussion of the next module in which they are given the opportunity to lead a service project in the community.

**Module 4: Serving the World around You**

The final module is a culmination of the prior three as students plan and carry out their own service projects in small groups. [4] These projects are completed according to the small group’s schedule, which may include a weekend, spring break, or a long-term project spread over a few months. The scope is not specifically defined and few limitations are placed on students’ creativity.

At the end of the previous module, students are given a set of expectations and a timeline for completing key tasks. In small groups, they must submit a proposal for a project idea that articulates the need for the project, implementation plan, and budget requests. Upon approval, students are given a small amount of funding to use for their community project. Some successful groups complete projects that do not require any financial assistance, while others have been approved for proposals of up to $1,000 of project needs. At the end of the last semester in the program, students must present a summary of their projects and discuss what they have learned as a result of this experience. Some of the outcomes students are expected to address are to:

- Provide an opportunity to apply leadership skills in a real-world setting,
- Operate outside of their comfort zone,
• Make a contribution to the community,
• Experience success in completing a project, and
• Recognize personal value to society.

ADDITIONAL SCHEDULED ACTIVITIES
The weekend modules in the Leadership Academy described above constitute the majority of the program’s planning, content, and expenses. However, as described in Module 1, the development is an on-going process that doesn’t happen solely on a weekend. Therefore, additional activities are scheduled between modules to keep students connected to each other and motivated to push the development of their own leadership skills.

Dinner Meetings
Once a semester, a selected speaker is invited to a dinner on a weeknight with the students. This is the one setting where students in both the current groups in the program are pulled together for a common meeting, giving the speaker an audience of up to fifty inquisitive students. Each speaker is encouraged to talk for twenty minutes about their path to leadership and to reserve most of the evening for questions. Students get very excited to have this opportunity to interact with a current leader in the local industry.

Individual Development Sessions
All of the weekend modules include some time for individual reflection, usually through a worksheet that students keep. Some students learn best from the individual quiet time and need it to process the large group activities. With this individual need in mind, students meet one-on-one with the program director, once each semester between modules. The series of individual sessions lets the students give feedback on previous modules and gets them started thinking about the content of the next module. It also lets the students get help on their individual development process by challenging them with individual tasks, specific to their goals and abilities.

Internships
Specific internships are not a guaranteed part of the Leadership Academy. Employers are not promised interns and students are not promised or forced into internships. What has happened so far is that employers may request that applicants for a position be among the group of participants in the Leadership Academy. They may prefer to have a student in this group, and students are more interested in applying for a job in which they know the pool of applicants is more limited. Even if an employer does not specifically request Leadership Academy students, having the program listed on a resume is a great talking point for students during an interview. It opens the door for discussion of their training in “soft skills” that would not necessarily be listed on a resume.

Leadership Academy Graduation
The graduation ceremony is the most formal aspect of the Leadership Academy, as compared to the other informal open sessions in the rest of the program. Students, employers, facilitators, and guests are all invited to a formal dinner and awards ceremony. During the closing remarks, students are challenged to continue the development process and stay connected with the Leadership Academy as alumni. They will have the opportunity to give back to future students in the same way that they have learned from other employers.

ASSESSMENT METHODS
The Leadership Academy has a few methods of assessment in place for evaluating the program, activities, and student personal development. In the beginning of Module 1, students complete an individual assessment of their opinions of their own abilities in a range of leadership skills. This survey was adapted from a similar instrument used on campus for other leadership programs with the intention of comparing students in the Leadership Academy to these other programs. From the initial survey responses, facilitators may identify areas of focus for an individual or the group as the modules progress. The same assessment is given to students at the very end of the program to measure their individual growth in certain areas, as well as comprehensive measures from the group of students considering how well the program impacted their confidence in each area measured.

For each module in the program, students are given an immediate feedback form on the last day to capture their opinions on specific activities just completed. This is most useful in comparing one activity to another for its impact on their development. Activities that are rated relatively low compared to others are discussed in more detail by facilitators in the following weeks. Appropriate changes are made to the module to account for the student feedback.

The final method of assessing the Leadership Academy is through qualitative feedback in students’ individual development sessions. This gives students time to process the material from a module and provide feedback a few weeks following the session. These individual meetings can also be used to respond to feedback received in written assessments and explain why some activities are designed the way they are. This allows students to gain a better understanding of what is behind some of the decisions in the program format.

FUTURE
Spring 2004 marks the completion of the first full cohort of students in the Leadership Academy. The second cohort is in the middle of their program and the third will be selected Fall 2004. The Leadership Academy has secured some permanent funding from the University, and has had success in seeking external funding on an annual basis. A source of long-term funding for the entire program is desired to maintain current activities. Further content development involves a full review of the first cohort’s feedback during the annual meeting of the corporate advisory board. Based on their feedback, modifications to each module will be an on-going process through the years.

Another area of future development will involve refining the assessment methods. The two-year duration of the program presents a challenge of having a slow cycle time to
assess the impact of specific changes. Also, as more cohorts complete the program and enter the workforce, additional data can be collected from this pool of students. From their feedback, some trends may develop into future program needs or changes. Long-term growth of the program will be evaluated considering size of the college, demand from students, and funding opportunities.

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REFERENCES