The Academic Centers for Engineers and Scientists—A Team Model for Student Support at The University of Texas at El Paso

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Abstract

The Academic Centers for Engineers and Scientists at The University of Texas at El Paso has been an initiative of the Model Institutions for Excellence program for four years now. These student support centers have been resources for students studying science, engineering, and math, and each year, these Centers have evolved to meet the needs of the students that they serve. The student management team that has been responsible for running the two Centers on a daily basis has also learned many lessons throughout this four-year effort. The Centers are run by a total of 25 undergraduate students who manage the day-to-day operations at each location. Each site has a team leader who assists in coordinating the procedures, activities, and work schedules of the students employed at ACES. The student team oversees and provides customer service to students that frequent the facility; they design and facilitate workshops for students and assist them with electronic equipment that is available for students to use in the Centers. Although the members of the management team are students themselves, they strike a balance between their roles as students and leaders in the environment that ACES provides, and benefit from the experience of working at the Centers. Students who are ACES team members get the opportunity to learn how to work in teams to make the Centers successful. Students frequent the Centers to get assistance with their educational needs, and at the same time, the team members learn valuable skills that allow them to develop into sensitive, productive, and capable project managers that will benefit them as they move into the professional world. This model gives students a sense of ownership, responsibility, and professional growth that is necessary for this transition.

Introduction

The University of Texas at El Paso (UTEP), as a National Science Foundation (NSF) Model Institution for Excellence (MIE), has created two multi-functional, state of the art facilities to serve the needs of undergraduate engineering and science students. ACES, or the Academic Centers for Engineers and Scientists, are student support facilities, intended to serve as hubs for engineering and science student activities. Through funding provided by NSF, the facilities were created through renovation of existing academic space. Cost of renovation of this space was relatively $100.00 per square foot. The Centers provide comfortable, well-equipped space for group and individual study, meetings, workshops, and symposia, as well as places to relax and meet with other students. The Centers include active learning centers, specialized classroom facilities, quiet study areas, multi-purpose rooms, computer workrooms, lounges and vending café facilities. The Centers also serve as clearinghouses for information regarding graduate and
professional schools, scholarships, undergraduate research assistantships, and other employment opportunities [1].

But ACES isn’t just a set of facilities – it’s a reflection of systemic change in the preparation of engineering and science students well into the 21st Century. Although it signifies a change in academic culture – valuing integration as well as specialization, teamwork as well as individual achievement, and educational innovation as well as research, ACES builds to foster the refinement of intellectual skills needed by practicing engineers and scientists for decades to come [2].

Science, engineering and mathematics (SEM) fields of college study are difficult and time demanding. Entering students may not be prepared for these difficult academic programs depending on their pre-college preparation and their general orientation towards university studies. The problem with college preparedness may be more acute on a commuter campus, where students may only remain on campus as long as class hours and laboratories demand [3]. UTEP’s student population is typical of major urban universities, serving the academic needs of a regional, place-bound population. Our students are also non-traditional from the perspective that the majority are ethnic minorities, first in their families to attend college, and balance their academic lives with required part-time, and sometimes, full-time employment. With so many activities, our students tend to minimize their time on campus, and unfortunately, minimizing the utilization of academic support activities.

Research findings support the fact that efforts to foster academic and social integration are especially important for commuter students [3]. A sense of community plays an important role in retention. Campus integration can be achieved by providing students with an academic and social environment that enhances learning and various opportunities to connect with others. The congruence of the SEM core curriculum lends itself to students forming collaborative networks. ACES provides an environment that allows these networks to flourish. The Centers also provide foundations for outside of the classroom initiatives: engaging cooperative group work and reinforcement of the information learned in classroom and laboratory settings.

ACES - The Past

In 1997, ACES began as a student support center run by students for students on the first floor of the Classroom Building. The Center provided space for students to work and congregate in conjunction with academic resources such as laptop computers and multi-media equipment, and

![Figure 1 - Students take advantage of tutoring services offered by members of the ACES Team in subjects in science, engineering and mathematics. The facilities and their services are available to students seven days a week.](image)
office equipment during operational hours. Three key areas provided study space in this 5500 ft$^2$ facility – The Active learning Center (group study), individual (quiet) study, and carrels or small group study rooms. Thus, any SEM student could pick and choose their study atmosphere [4].

The one-stop-shop academic services concept within ACES was a popular attraction for students in the early years, but the Center also functioned as a hub for students to meet, relax, and network with one another. Since the Center was managed by undergraduate students, the atmosphere and services that were offered were always student-focused. ACES also served as a venue for workshops and meetings by university staff and corporate visitors promoting professional development. However, engineering students predominated the use of this facility in the beginning.

ACES - The Present

Today, ACES has grown into two facilities. The second facility is located in the Physical Science Building, which opened its doors in November 2000. This Center (Physical Science ACES) is approximately 4000 ft$^2$ in size with three large rooms and a comfortable lobby area to accommodate students who study the General Chemistry and Introductory Physics courses. This Center includes a Studio Classroom and provides PC’s for use in Physics and Chemistry tutorials. An Active Learning Center, tutoring rooms and a lobby area are also available in this facility. SEM students, who are enrolled in the Chemistry and Physics courses, represent the majority in this facility.

As in the case of the initial Center, the second ACES is run by a student management team, who make the day-to-day decisions about the events, services and policies within the facility. The undergraduate SEM majors who are employed by both ACES centers collectively work 19 hours per week at an hourly rate that is above the minimum wage. A coordinator is responsible for supervising these students, as well as training and guiding them in their tasks and specific projects that must be accomplished. With two management teams, the challenge has been to continue the high standards and quality customer service. Both groups meet regularly to discuss issues, changes, and to re-evaluate our operating practices; these practices keep ACES functioning as dynamic facilities.

ACES - The Future

The Classroom Building ACES has commenced the expansion of its facilities to the basement level, adding an additional 5500 ft$^2$. This expansion will provide additional space for quiet study, formal meetings and lectures, group study and private tutor rooms. It is anticipated that this expansion will be more inviting to students in the biology disciplines by offering more reference and study materials, organization meetings, and a quiet study atmosphere.

Student Team Leaders

As noted earlier, ACES is run by students for students, which means that student employees are responsible for the day-to-day operations of the Centers as well as providing students with workshops, a website, and a monthly newsletter. For student employees, ACES has provided a
comfortable study and challenging work environment, which has enhanced their personal,
academic, and professional growth through valuable work experience.

The undergraduate students who work at the Centers are not just employees who run errands and
answer telephones. All student employees participate in periodic training on how to interact with
customers, work as a team, and perform all of the duties required of them as managers in the
facilities. For example, our staff keeps these Centers open seven days per week during the
regular semester from 7:30 a.m. to 10:00 p.m. during the week and from 10:00 a.m. – 5:00 p.m.
during the weekends. During final exams, both centers are open 24 hours a day.

Students are hired to perform specific tasks. We have students who are hired to run the front desk
area. Their tasks include opening and closing the facility, greeting students, checking out
reference material and laptops to students, assisting student organizations with scheduling
meeting and workshops. We also employ student tutors who can tutor in various courses in
science, engineering and math. There are system administrators who manage our computer
server and are charged with keeping all of our electronic equipment serviced and in working
condition. This takes great commitment and responsibility. These student staff positions also
help keep them on campus, which is important for our commuter-based student population.
Besides, who better to serve students than student staff members? Each team member is familiar
with the ACES processes and procedures, and can run the Centers with very little supervision.
This type of responsibility, ownership and commitment is instilled in the members of the team in
order to successfully operate the Centers.

Since the students who work at ACES also study and congregate there, they are often recognized
and associated with being an employee. The teams for the facilities work very closely together,
and have come to understand that their individual actions and quality of service reflects on the
Centers, as well as on them personally. When the teams have their bi-weekly meetings, they
discuss issues and challenges that must be met, brainstorm on solutions and initiate new ways of
doing things. From semester to semester, no team is ever the same. Students graduate and
vacate positions, which leaves room for new students to join our team and learn how our student-
managed center is run.

Daniel Grajeda and Jose Fierro are two of our student management team leaders. Daniel, a senior
biology major, is a team leader for the ACES facility in the Physical Science Building and Jose,
a junior industrial engineering major, is a team leader for the facility in the Classroom Building;
both have been working at ACES for over one year. In the next part of this paper, we will
highlight their student experiences:

Before Daniel and Jose began working at ACES, both had worked for the CircLES of Learning
for Entering Students (CircLES) program on campus as orientation leaders: Daniel, as a
sophomore and Jose, as a freshman. The CircLES program, also an MIE initiative, is a week-
long orientation program for freshmen entering the university in the fields of science,
engineering and mathematics. For six weeks during the summer, Daniel and Jose facilitated
modules, led tours, assisted with design projects and constantly interacted with incoming
freshmen. Working for CircLES introduced them to many skills that they are now applying at
ACES, such as dealing with diverse groups of people with different backgrounds. Such skills
also included, but were not limited to, interacting with and handling large groups of students, solving problems when things did not go according to plan, and treating students with care and respect while trying to guide them to the answers to the questions that they had.

Daniel and Jose have always been motivated individuals who sought challenges and saw ACES as an opportunity to improve their interpersonal skills. Working at ACES has helped them develop their leadership skills by being able to manage a student team. Here, they were challenged to work in a more closely-knit team dynamic in an office environment. How they accomplish this is by coordinating employee work schedules, structuring meetings, and resolving conflicts that may arise: just like in any workplace. Every day, all members of the team work together to make sure that students who frequent ACES receive the best tools in order to succeed in the classroom and beyond; as students themselves, they know first-hand the kind of tools the students need. This is the reason that they chose to be a part of this organization: to help students succeed. CircLES gave them an opportunity to introduce entering students to their new college environment; ACES gives them a chance to actively participate in and contribute to this environment.

ACES’ purpose is to provide students with top quality service and being part of this service has taught Daniel and Jose to treat people with respect and dignity. As ACES employees, Daniel and Jose have had the opportunity to interact with fellow colleagues and share ideas. By constantly interacting with different people, the working environment at ACES is never mundane. Moreover, ACES has helped them enhance their time management skills, which are essential in the classroom and in the work place. It has improved their time management skills by presenting them with the challenge of balancing a job, as well as being full-time students, and excelling at both. Even though their schedule at ACES is very flexible and works around their courses, they have to keep track of their study time. Because they have to balance time between work and school they have become more disciplined individuals and, in turn, better students.

Being a part of ACES has given Daniel and Jose the opportunity to excel in many fields, but none more important than academics. As ACES employees, they are challenged every day to apply their knowledge to an array of projects such as developing better methods to promote ACES, developing workshops appealing to students, and constantly assessing innovative ways to serve the needs of our students. The inquisitive and analytical skills they developed at the Centers have helped them become more conscientious thinkers in their opinion. Furthermore, ACES has provided them the opportunity to work in teams and to share ideas with their peers and colleagues. Working as a team has given them a chance to improve their communication and social skills, which will be very helpful in the classroom as well as in future employment. Everything that this team attempts to accomplish hinges upon its organization, planning and interpersonal skills; as they meet to discuss and plan how they will execute projects throughout the semester, they must come to consensus on plans of action, and are responsible for setting and meeting deadlines.

ACES has not only assisted them in their academic pursuits, but it has also inspired Daniel to pursue his dream of becoming an epidemiologist by giving him a place to interact with students and professionals in that field. He feels that ACES will help him to achieve his goals by improving skills that will be essential in graduate school, skills such as time management, and...
study skills. His peers and supervisors have inspired him to work hard and pursue his goals. Furthermore, ACES has provided him the opportunity of acquiring knowledge of multimedia equipment, which will be extremely important in future endeavors. Being affiliated with ACES has also helped him in the graduate school application process. His immediate goal after he achieves his Bachelor of Science degree in biology in May 2002 is to attend graduate school. ACES provides workshops that aid students in the difficult process of completing graduate school applications. Professionals from graduate schools come to the Center to give these workshops and give students the best advice on how to get into the schools of their choice. ACES has played a very important part of his college career and he feels very strongly that every student should get the opportunity to experience the great facilities and resources that it offers.

As an industrial engineering major, ACES has helped Jose in his academics by providing him a facility where he can do his homework, and network with other engineering students on projects using the resources that these facilities provide. Since ACES supports corporate recruiting efforts, Jose has also been able to connect with a number of companies offering co-ops and internships without leaving his place of employment. As a seasoned staff member, it has also given him the opportunity to develop into a role model for his co-workers and other students who frequent the facility. This experience has influenced Jose in a positive way as a professional, as well as in his every day life.

Since members of the ACES Team are responsible for the daily operations and decision-making, this also gives them the ownership to define their direction and their purpose. Recently, the they worked together to develop a mission statement, which states that ACES will:

“provide a quality learning and study environment, through exceptional service, to enable students to excel in the fields of Science, Engineering, and Mathematics.

Through quality customer service, ACES will provide a variety of services and resources to help students succeed academically personally and professionally. Such services include tutoring, workshops, study and meeting areas; and access to reference material and technology in a facility that allows for networking with peers, faculty and professionals. ACES will instill the fundamental values of unity, leadership, scholarship, integrity, responsibility, and customer service in their team members in order to promote excellence.”

When a group of students can successfully run an organization, which meets the needs of science, engineering and mathematics students today, and constantly challenge themselves to be
a dynamic facility through motivation, innovation, and the desire to be a positive part of the student support process - **everybody wins**. Those who frequent the facilities receive the highest quality of service, and the students who manage the Centers learn and practice the essential skills of teamwork, accountability, and ownership before they graduate from this university. Students, who care about the level of excellence that they produce in college, will no doubt be equipped to offer that, and much more to any organization that they join after college. This is why ACES is a living model for student support.

References


