"Student in the University": A Format for Retaining Students in Engineering Technology

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Abstract

Student in the university is a freshman orientation course in the Department of Engineering Technology at East Tennessee State University (ETSU) that was developed during the summer of 1994. The course initially was an elective course that became very popular with our freshman students. Because of its popularity, it became a required course for all freshmen with less than thirty credit hours. The focus of the course was and is to foster relationships with students and faculty, help students verify their decision to choose engineering technology or help them at least make informed decisions centered on choosing a major. The course uses a variety of teaching strategies and innovative approaches of instructions to attract and retain students in the field. This manuscript details many of the approaches that are used in the course that has been proven successful. Due to the versatile content of this course, we believe other programs with similar orientation courses could benefit from our experience.

I. Introduction

The fields of engineering and engineering technology both reported declines in the fall of 1993.[1] In view of these startling statistics, it is extremely vital that innovative techniques are implemented, and current programs revamped in order to retain those students who are enrolling in engineering and engineering technology.

Faculty and staff in the Department of Engineering Technology at ETSU are trying to do just that. During the fall of 1994, the department offered a freshmen orientation course. The goals of this course were to: 1) provide students with a department mentor, 2) engage students in activities that will better introduce them to the university and the technology department, 3) include activities that will allow students to socialize with one another, and the departmental faculty/staff outside of the classroom, 4) encourage creatitivity, and 5) improve freshman retention.

Academic counseling and advising should not be limited to assisting students in class scheduling, but include being accessible and assisting in any way that will contribute to their

achieving success at the college or university. Faculty and staff must form a bridge to students so that a connection can be made to the department college, and university, and students can feel a sense of belonging and availability from the department. Because ETSU has a large commuter population, for many students academic advising or counseling may be as simple as suggesting ways to balance school, work and/or family.

Further, the engineering technology department at ETSU has put into place a departmental mentor, student mentors, and mandatory advisement, to assist students and potentially prevent them from dropping out prematurely. This paper identifies and describes retention techniques utilized by the department of engineering technology at East Tennessee State University, Johnson City, Tennessee.

Retention is a process of implementing programs and techniques designed to prevent students from dropping out of college. In the Department of Engineering Technology at ETSU, an effort is being made to combat the attrition rate among students. The department advisor / mentor responsibilities includes but are not limited to the following: 1) monitoring the educational progress of students, especially beginning freshmen and transfer students; 2) creating and maintaining advisement records and academic plans for advisees; and 3) actively participating in student orientation, recruitment, and retention activities. In addition to these responsibilities, the advisor / mentor teaches a freshman orientation course. The individual who has the responsibility for this position must create an atmosphere where students fill comfortable enough to openly communicate. The advisor's availability is another key factor that enhances the effectiveness of the retention process. Even though a position has been created specifically for retention, doesn't forfeit the responsibilities of other faculty, staff, and/or administrators' responsibilities to the department or university to assist in the overall process.

In order to effectively advise students, especially freshman and transfer students, it is important to be knowledgeable about your program. At ETSU, there are eight program options within the engineering technology department that are available to students. It is extremely important that information such as current placement data, course requirements, course substitutions, transfer credit, etc. is given correctly. These are some of the basic concerns that students have. In addition, advisors need to be knowledgeable about the college and university. There are many services available to students that advisors need to be aware of, in the event a student needs to utilize those services. Being able to provide students with pertinent information will in essence help students remain focus, and potentially prevent them from dropping out.

It is important that the administrators, faculty, and staff take time to get to know the students. At ETSU, one way of doing this is by planning informal activities, such as volleyball games, between freshman faculty, staff and administrators. However, upper classmen and transfer students are not excluded. These types of activities not only create an atmosphere where students feel comfortable talking to faculty, administrators, and staff, but it potentially establishes protégé / mentoring relationships. The students that participate in these activities have often indicated that the faculty seems more down to earth than initially perceived. It is believed that this will positively effect some of the students' perceptions about many of our faculty, thus encouraging class participation.

II. Communication

Communication is a key factor in the retention process in the Department of Engineering Technology at ETSU. To effectively advise students, an advisor must have good communication skills, transmitting as well as receiving information. It is easy to transmit information, however, oftentimes it is more important to listen. Students need and want to be heard because they have genuine concerns that are extremely vital to their individual growth as well as to the growth of the department, college, and university. Addressing issues as they pertain to individual students, may require faculty to acquire additional training and/or attend workshops to gain more insight and knowledge about a subject matter that have not been apart of the education and professional training of engineering and technology faculty.

Traditionally, engineering technology has not placed a major focus on academic advising. Because the field is beginning to see a major need to redefine the advisement process, more engineering and engineering technology programs are beginning to revamp their existing strategies of advisement and/or establishing other creative means of advising students.[2]

III. Mandatory Academic Advisement

In an attempt to avoid having students take unnecessary classes, mandatory advisement has been put in place. Each student in the engineering technology department is required to see their advisor at least once every quarter. This not only assures that students are taking appropriate classes, but allows for an in-depth discussion about the students progress or shortcomings. Also, mandatory advisement helps the students and faculty develop at least a minimum rapport with each other. This rapport has on occasions, made students feel comfortable about discussing other matters with faculty.

IV. Student Mentors

Traditionally, mentoring is defined as a one-to-one learning relationship between an older person and a younger person that is based on modeling behavior and extending dialogue between them.[3] The primary role the student mentors is to help students who are accepted, but have not enrolled at the university. Incoming freshmen (those individuals who are enrolling in college level courses for the first time) are at the highest risk for withdrawing from the university. The new student mentor program has been incorporated to remove unnecessary frustration and ambiguity, created by the lack of information concerning university policies and procedures. The student mentors keep in constant contact with the students prior to their arrival at ETSU via telephone. When these students arrive on campus, they will have someone to provide them with positive encouragement and help them to become familiar with an unfamiliar environment. To ensure effective mentoring, the students mentors participate in a one-day training seminar addressing factors that make the mentoring process enriching.

V. The Freshman Experience

The Freshman Experience is a freshman orientation course offered by the Department of Engineering Technology at ETSU. The course was initiated after studying a similar course developed at the University of South Carolina, which was proven to be very successful. The course was first taught at ETSU in the fall of 1994. At that time, the course was not required, but seventeen students did register to take it. Starting fall 1995, the course will be required for all incoming freshmen majoring in engineering technology.

The Freshman Experience is an innovative freshman orientation course at East Tennessee State University aimed at building trust, understanding, and opening communication between the students, faculty, and administrators. The goals include the following:

* Promoting a positive adjustment and assimilation into the university.
* Teaching students to balance their freedom with a sense of responsibility.
* Helping them to learn and develop study, coping, and survival skills.
* Improving freshman attitudes toward the teaching / learning process and toward faculty who are responsible for imparting this information.
* Assisting student to understand different teaching / presentation styles
* Improving relations between faculty and students.
* Involving students in the total life of the university.
* Assisting students to find a mentor on campus.
* Teaching students about the university's history, purpose, organization, rules and regulations, people, services, resources, and opportunities for student development.
* Promoting use of the institution's diverse resources, (library, health center, etc.
* Reducing anxiety about written and oral communication.
* Providing students with information about health and wellness issues.
* Introducing students to American Higher Education.
* Helping them to learn about the Johnson City area.
* Helping them to discover in general, how they can fit in and develop within the university, community, world, and profession.
* Improving freshman retention.

The course consists of many topics covering issues deemed important by the engineering technology faculty. The overall objective of this course is to decrease the attrition of students in engineering technology at ETSU. The topics addressed in this class are taught in no particular order, thereby, permitting the instructor to arrange content based on the availability of resources (e.g. guest speakers, campus visits, etc.).

VI. Cultural Diversity

One of the topics addressed in the "Freshman Experience" is cultural diversity. To critically address this issue, questions were raised to determine students' initial knowledge and perception of what diversity means. Interestingly, many students excluded people and cultures of other races, gays and lesbians as well as the female gender. This may be due in part to the geographical location, backgrounds and family traditions of the students in this region. The Tri-Cities area, (Johnson City, Kingsport, Bristol) where most of ETSU students are from, is not very diverse at all, (mostly white). This in essence limits the students' interactions with other cultures, and serves as a catalyst to develop stereotypes based on insufficient information. After a day of discussions, the students watched a video that addressed diversity on college campuses, and the importance of being able to work with people of other cultures. In addition, guest speakers were invited to speak on diversity. Often the speakers spark many interesting questions from the students. On a couple of occasions, the misperceptions that a white student had toward minorities, specifically blacks, were revealed. Many of the students' feelings toward minorities were strictly based on perceptions that were established by incorrect information, or no concrete information at all. The students were also asked to go out and interact with someone different from himself or herself, with difference being race, religion, sexual orientation, etc. The students were then encouraged to discuss their experiences openly in class. Based on observations of class interactions after this assignment, these discussions encouraged many students to become more open, potentially understanding and tolerant of others.

VII. Information Superhighway

The students were also taught to access and utilize electronic mail (E-mail) and the information superhighway, Internet. According to Krol, "the internet is a collection of computers that incorporates thousands of networks, hundreds of thousands of computers, and millions of users in several countries around the world".[4] With the information highway becoming a major means of accessing information and researching topics, it is a must that students gain this exposure. As a class activity, students were required to utilize the Internet to research a unique and unusual topic of choice and come up with as many references as possible. This increased students' interest as they began to "surf" the Internet, exploring many other subjects and topics. As a class activity, the students discussed ethics and how it may potentially affect the way we utilize the Internet. Current articles addressing the misuse of the Internet were also addressed and discussed. The students were then required to communicate with their instructors and each other via E-mail. This has a great potential use as a means of academic advisement in the future.

VIII. Communication Skills

Students were also taught the importance of excellent communication skills (written, oral, and graphical). According to Gunn (1994), many graduating engineers lack a variety of communication skills that are vital to their success in the workplace.[5] This generated the questions, what assignments lend themselves toward improving communication skills, and what

methods engineering faculty could use to give students the message that engineers really do need to communicate.

The freshman orientation course provided students with opportunities to improve upon their communication skills. Assignments such as technical reports generated from the use of the Internet and oral presentations were especially helpful. To provide adequate feedback, we used a peer review strategy. The students read each other's papers and critiqued them on grammar, spelling, etc. Over the course of a semester, great improvement could be seen. Oral reports were handled in a similar manner; all students were given an evaluation form to evaluate the presenter on verbal and non-verbal communication skills. The presenter received copies of the evaluation forms from each student and used the constructive criticism to improve upon other presentations in the course.

IX. Department Activities

Students also engaged in activities that involved the department administrators, faculty, and staff. Such activities included volleyball games, interviews, panel discussions and written biographies of school personnel. The purposes of these activities were to develop a connection between students and the department. As a result of these activities, students indicates that administrators, faculty, and staff appeared more down to earth and more approachable than initially perceived.

Students were charged with selecting several services, organizations, and facilities on campus to investigate. The students then interviewed someone in each area and prepared a report, which was later presented in class. The objectives of this assignment included:
(1) Familiarizing themselves with university facilities, services, and organizations, (2) getting acquainted with fellow students, (3) enhancing information management and writing skills, and (4) gaining self-awareness, self acceptance, and self-growth. The objectives were intended to connect the students to the university, enabling them to know first hand where to go for assistance, and becoming familiar with other faces on campus.

Other topics that are addressed include drug and alcohol use and abuse; health issues such as sexually transmitted diseases; note taking; professor / student relationships; time management; money management; academic dishonesty; test taking strategies, and how to get and keep a job.

X. Conclusion

Retention of students majoring in engineering and engineering technology has been an ongoing topic of discussion. Traditionally, retention of engineering students was not given a lot of attention because if students were not doing well, it was an assumption that these students were not cut out to become engineers.

The retention program in the Department of Engineering Technology at ETSU is an attempt to prevent students from dropping out of their major. The retention program started in 1994, the success of the program (retention through graduation) is not easily determined. Some students

changed majors; others took longer than the usual four years to graduate. However, it will be useful to track students through their tenure in the engineering technology department and have them evaluate the usefulness of the Freshman Experience course and other efforts use by the department.

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