# AC 2009-1078: CHANGING POLICIES AND PRACTICES FOR THE PROMOTION OF STUDENT RETENTION

**Ardie Walser, City College of the City University of New York**

# Changing Policies and Practices for the Promotion of Student Retention.


## Abstract

The retention of engineering students, particularly those from underrepresented groups, remains a major challenge for colleges and universities. Often when addressing this issue, colleges will develop special programs that are outside the normal operations of the institution. The success of these programs in improving retention and graduation rates vary from school to school. One thing that is common with these programs is that they tend to be expensive and only schools with deep pockets can afford to effectively sustain these programs long enough to have the desired outcome of improved retention. In the current economic climate, already limited funds for such programs are bound to become more difficult to find. Rather than develop or add on new programs, we will have to fundamentally change how we interface with students as part of our everyday operations. We present an examination of modifications in policies and practices at the Grove School of Engineering at the City College of New York and discuss how these alterations can have an impact on student retention.

## Introduction

Attracting students from underrepresented groups to engineering and retaining them has been a struggle for engineering schools for many decades. Often what schools do to meet this challenge is to develop special programs. These programs target at-risk students and are developed around one or more of three major themes such as: mentoring/advisement, financial support, academic acceleration/remediation or some combination of all three. The primary objective of such programs is to give the at-risk student what every s/he needs in order to succeed in the engineering program of their choice. A number of these programs have shown considerable success at attracting, retaining and graduating students from underrepresented groups with degrees in engineering and computer science. These programs tend to require a significant financial investment funded by the academic institution or some outside source. With the implosion of the U.S. (and world) financial market, raising funds for these programs will become more and more difficult as private and federal agencies adjust to the current economic climate. Schools of engineering will have to become more creative and do more with less in their efforts to graduate more students from underrepresented groups with degrees in engineering. In this presentation we will suggest some ways of taking advantage of things most schools already do that will help to promote the retention and ultimate graduation of engineering students from underrepresented groups.

## Advisement Organizational Structure

Advisement is a key factor in moving students successfully through any program, particularly for students who are at-risk. Good advisement is more than making sure that the student takes courses in the proper sequence. It is also a way to help students find direction for both their career and their life. How this is accomplished varies from institution to institution, with different degrees of success. Assessing and evaluating the strengths and weaknesses of an advisement protocol is imperative if schools of engineering are to meet the new challenge of developing engineers that have the tools to compete in a global market and who are conscious of the pros and cons of technology and how it impacts the world as a whole.

All post secondary schools have developed, either deliberately or by happenstance, some form of an organizational structure used for the advisement of their students. **Centralized**, **Decentralized**, and **Shared** are three major categories that can describe the organizational structure used for the delivery of advising services (Pardee, C. F., 2004)[i]:

1. **Centralized**: where professional and faculty advisors are housed in one academic or administrative unit, a subgroup of this model is the **Self-Contained Model** where all advising is performed primarily by professional advisors or counselors in a central office, about 14% of all institutions use this model;
2. **Decentralized**: where advisement occurs in the respective departments of professional counselors and/or faculty, a subgroup of this model is the **Faculty Only Model** where all students are advised by a departmental advisor, usually a professor, used at 28% of all institutions;

3. **Shared**: where the advisement of students is shared between advisors in a central administrative unit and those in the academic department, a popular subgroup is the **Split Model**, found at 27% of all institutions, where advisement is performed by both the faculty in their departments and professional counselors or advisors in an advisement center.

The Split Model is the organizational structure of choice, at 46%, for most 4-year public colleges and universities.

Identifying the organizational structure for advisement at an institution is the first step in determining how well that structure services the needs of the students and the institution. Each of the structures referred to above have strengths and weaknesses. How an institution can maximize its strength and minimize its weakness depends on a number of factors, including the demographics of the student body, the type of institution (e.g., public, private, 2-years, 4-years), the faculty and the mission of the school to name a few.

## Identifying and Strengthening Weaknesses

The Grove School of Engineering (GSOE) at the City College of New York (CCNY) organizational structure for advising is a variation on the Split Model. This model has been in place for sometime and in the spirit of ABET (Accreditation Board for Engineering and Technology) we continuously assess and look for ways to improve it. A review of the transcripts of engineering students, by an internal and external committee, revealed instances of courses taken out of sequence in conflict with the official engineering curriculum. We also learned that some engineering students were confused about who their primary advisor is for career and curriculum advising. These are clear weaknesses in our modified Split Model structure. The GSOE has developed and successfully implemented a number of new procedures for advising and communicating with engineering students. These new processes and changes in policies will help to insure that students receive the support they need to become successful engineers for the 21st century.

The advisement of engineering students extends beyond the boundaries of the GSOE. Students, particularly those who did not declare their majors initially or who are in special programs, receive advice and guidance on course requirements, course selection and sequence from numerous offices and divisions across the campus. It is for this reason that engineering students, especially freshmen and sophomores may be confused about where to receive appropriate advising. We have taken a number of steps to address the challenges mentioned above.

### A Clear Path To Advisement

The GSOE streamlined the process for admissions by defining clear paths for new students to follow, depending on their status (e.g., freshmen, transfer, engineering major or prospective engineering major), to insure that they receive proper advisement. This information is communicated regularly, as a part of the new protocol, to all offices at the

college that come in contact with engineering students (e.g., Office of Admissions, Registrars Office). This information is also distributed to a number of our major feeder institutions such as neighboring community colleges.

Depending on the student's accumulation of credits, all engineering majors are assigned a professional counselor or both an engineering faculty member and a professional counselor, who will guide him/her through the program. The faculty member's strength as an advisor is in their experience as an educator and a professional in their area of expertise (e.g., electrical, civil, chemical engineering). They help the student make good decisions in choosing a career path that suits their interest and talents. The professional counselor tends to be more versed in the policies and procedures of the college than the faculty and they help the student avoid making costly mistakes that can either cost them additional money or delay their graduation. Engineering students who have earned 44 credits or less receive academic advisement from professional counselors through the Office of Student Development (OSD) in the GSOE. Engineering students with 45 credits or more are advised by faculty members in their department, along with a professional counselor through the Office of Undergraduate Affairs (OUA), also located in the GSOE. The duties of the counselors in the OUA extend far beyond advisement. They perform other important functions such as making sure students have the proper requisites for courses, verify that a graduating senior has fulfilled all degree requirements, as well as perform the evaluation of transcripts for students who wish to transfer to the GSOE.

With well defined roles and a targeted student population the departments, the OSD and the OUA work in concert to move engineering students smoothly through the program of their choice. It has become much easier for the GSOE to communicate to new engineering students where they should go for advisement, addressing the issue of students being confused about their primary advisor.

### Mandatory Advisement

School policy on voluntary student advisement was changed, partly to address the issue of students taking courses without the proper requisites and partly because we wanted to be proactive and avoid situations like these that can delay or derail a student's progress towards attaining their degree. It is now mandatory for every engineering student to meet with an engineering advisor at least once per semester. Students cannot register for courses until they have been advised by either a professional counselor in the GSOE or by an engineering faculty member. To insure that this occurs the GSOE implemented a new procedure for the advisement of engineering students.

At the beginning of each semester the Registrars Office issues engineering advising stops, disabling web registration for all engineering students. The students are informed (via e-mail, signage, and web) that they must meet with their GSOE advisor, either a professional counselor for students with 44 or fewer credits or a faculty member for students with 45 credits or more, for advisement before they are cleared for registration.

The mandatory advising process has proven to be very beneficial to students. With increased contact with advisors and support staff and early intervention, the GSOE has helped a number of our engineering students avoid common pitfalls that would impede their progress through the program.

In the past it has been difficult to convince students to use their college e-mail address. A secondary benefit of mandatory advisement is that students now use their school e-mail accounts to reap the benefits of receiving important information in a timely fashion.

## Enhanced Communication

Further efforts to eliminate confusion about advising sources and other procedures in the GSOE, took the form of an aggressive low cost communication campaign. We have incorporated a number of different mediums to get the word out about important information our stakeholders and students need to know about the GSOE.

### *Intercampus Communication*

The administrative staff of the GSOE meet with representatives from the Freshman Year Program (FYP); Student Support Services Program (SSSP); English as a Second Language Program (ESL); Humanities Division of the College of liberal Arts and Sciences (CLAS); Search for Education, Elevation and Knowledge Program (SEEK); Admissions Office and the Honors Center. The objective of these meeting are to review policies and procedures for advisement and to discuss how the various offices can better cooperate with each other in order to provide accurate and consistent advisement to engineering students.

### *GSOE Student List Serve*

Every student in the College is given a school e-mail address upon enrollment. Students are currently informed of their web-based registration schedule, and course grades via their college e-mail address. The result is that most students expect important college announcement through their college wide e-mail address. The GSOE has developed a GSOE student listserv that allows Deans and Chairs to communicate with the entire GSOE student body via e-mail. This medium is used to quickly inform students about departmental and school wide events and issues of concern to them, such as advisement and registration schedules, new academic procedures and career opportunities. The student listserv is subdivided by major (e.g. Electrical Engineering, Civil Engineering) and academic status (e.g. Freshmen, Sophomore) so that relevant information is directed towards a targeted audience.

### *Signage*

We understand that students are constantly bombarded with all sorts of electronic messages such as, e-mail, text messages, and web banners and pop-ups and that any communication we send via e-mail may become part of the noise. To avoid this we decided to include in our arsenal for communication the use of a very old technology-

signs. Strategically placed signage, to inform students about when and where to go to receive advisement and other academic and career support, has proven to be very effective. A key thing to remember when using signs is to use them for very short periods of time. Removing the sign immediately once the time sensitive information is no longer useful.

## Analysis

To gain insight into how effective the practices and policies outlined above are in improving the retention of engineering students we looked at the number of occurrences of academic probations for a given calendar year (defined as the probation rate). We choose to look at the occurrences of academic probations because it is very likely that the student who is on probation can still be retained at the college. Retention rates by definition mean that the student is either no longer in the program or has left the college altogether and retaining him/her is often not an option. While the relationship between the retention rate and the rate of probation may not be causal, it is reasonable to assume that there is an inverse relationship between these two parameters; that is as the probation rate increases the retention rate drops.

Illustrated in Figure 1. below is a bar graph of the probation trend for engineering students. Whenever a student's academic record falls below a certain minimum requirement (e.g., GPA less than 2.0) the student is given probation and the letter P is placed on their record. The height of the bar in the bar graph represents the total number of occurrences of the probation designation (e.g., P) within a calendar year.

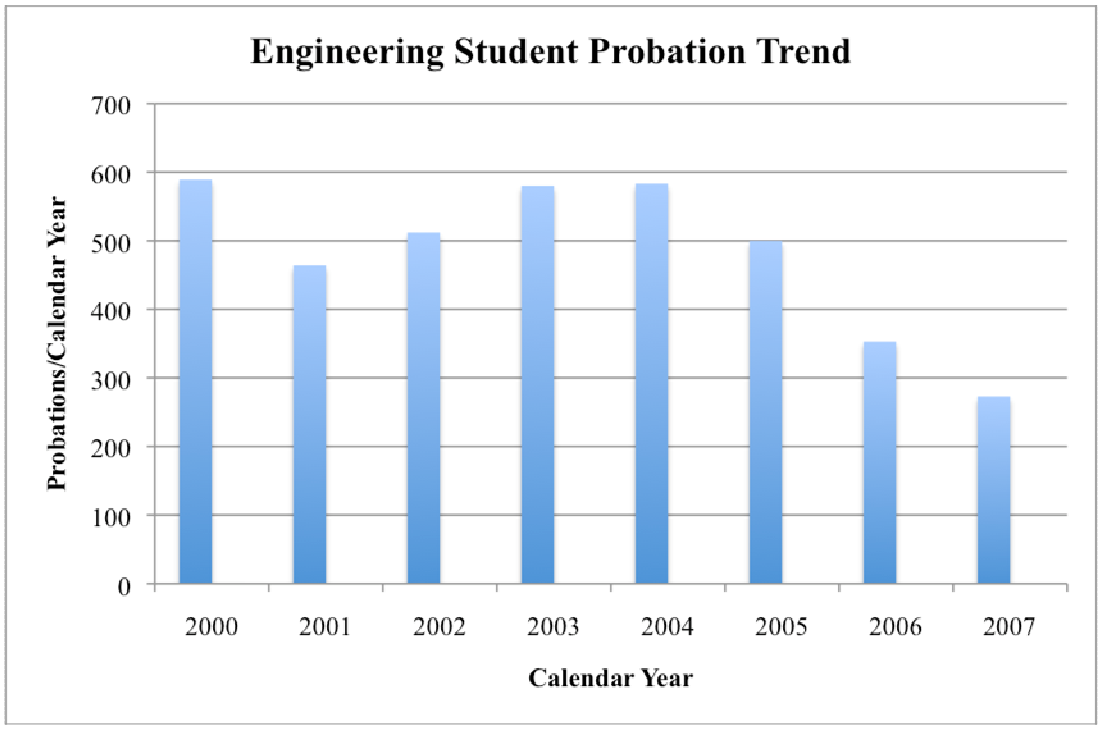


**Figure 1: Graph of the Probation Trend for engineering students from 2000 to 2007.**

Note, that it is possible for the same student to have a P in more than one semester, and that the height of the bars does not represent the number of students who are on academic probation. The most salient feature of the chart is the decrease in the number of occurrences of the probation designation from 2004 through 2007. This indicates that the practices and policies we have implemented may be having a positive impact on retention. This is a preliminary study and we are planning on looking more closely at other indicators that with help us to both understand some of the less obvious hurdles in student retention and to develop better ways of addressing them.

## Conclusion

There is considerable evidence that recruitment and retention programs that are well designed and funded can increase the number of students from underrepresented groups who graduate with degrees in engineering. In the current economic climate schools are asked to do more with less. We have proposed a number of actions that can be taken by schools, for little cost, that can have an impact on the success of their engineering students.

Bibilography

[i] Pardee, C. F. (2004). Organizational Structures for Advising. Retrieved February 4, 2009 from the NACADA Clearinghouse of Academic Advising Resouces Website:http://www.nacada.ksu.edu/Clearinghouse/AdvisingIssues/org_models.htm