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AN ANALYSIS OF AN ENROLLMENT CONTROL PROGRAM AT AN OPEN ADMISSION UNIVERSITY

University officials at many institutions of higher learning have initiated enrollment control programs (ECPs) in over-subscribed majors. Although the qualifying academic barriers determining program admission associated with these ECPs establish hardships for some students, the general intention of such programs is to prepare students for a particular curriculum as well as to select individuals deemed most qualified when limited enrollment opportunities exist. At universities where collegiate admission is a selection process, these ECPs fit into the framework of normal operation. At institutions (such as Youngstown State University) where "open admission" to the university is the policy, however, the establishment of ECPs has caused inadvertent conflicts for academic advisors.

INTRODUCTION

Historically, fluctuations in the activity level of the national economy have affected enrollment at institutions of higher learning. For example, the relatively high level of unemployment present in some areas of the country has influenced many college students to select majors that they perceive will provide them with job and economic security (Wegrnann, 1985). Researchers have also discovered that factors such as high salaries and job status may play important roles in why some collegiate majors have experienced increasing enrollments (Krukowski, 1985).

As economic trends affect career choices (Stodden, 1988), engineering-related majors have become popular (Lowenstein, 1981). Unfortunately, these majors have become popular not only with academically qualified students, but also with "high-risk" students. Due to this increased popularity, university officials at many institutions have developed various forms of enrollment control programs (ECPs). For example, the Ohio University College of Engineering and Technology admits only those students who have a minimum number of high school units of math, chemistry, physics, and English, in addition to being in the upper half of their graduating class. These criteria were established to help students meet the high engineering curricula standards (*CE & T Today,* 1981). Ohio State University, required by state law to accept all high school graduates while also being limited by a legislative enrollment ceiling, established an ECP to stabilize its engineering enrollment. Dean Glower of OSU's College of Engineering stated that "the University and the College of Engineering want to be certain to enroll the students most likely to graduate. In the final analysis, this is the only fair thing to do" *(News in Engineering,* 1984). Like OSU, many universities have developed ECPs: 1)

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to ensure that students academically prepared to begin an engineering program were given the opportunity, and 2) to encourage the less academically prepared students to remediate their math, English, and/or science skills where needed, or to encourage them to choose other appropriate fields of study where their probability of success is higher.

Although Youngstown State University has an open admission policy, it is not a stranger to an enrollment controlled environment. The School of Engineering (as well as other programs on campus) instituted an enrollment control program at the undergraduate level because of faculty shortages, limited facilities, and budget constraints. The enrollment control program (later described in The Model) was designed to deal with three categories of students. First, it was designed to admit students to the School of Engineering whose likelihood of completing the program was supported by their solid academic credentials. Second, it was hoped that the policies would encourage weaker students (admitted under the "open admission" policy to the College of Arts and Sciences as Pre-Engineering majors) to take a realistic look at their academic capabilities and, in turn, to select a more appropriate major. Third, the program contained policies that encouraged self-assessment and, in most cases, program redirection to students admitted to the School of Engineering whose collegiate academic performance indicated that remediation, a change in study habits, and/or a program change was necessary. It was hoped that these policies would force the students in the last two groups to redefine their goals, thereby reducing the inefficient use of time and money spent in pursuit of an engineering degree when the probability of success was low. The dilemma that results from this protectionist program, however, reflects the basic economic principles of supply and demand. More precisely, the number of individuals wanting engineering as a major is larger than the number that can effectively be handled. In the economy, when the demand exceeds supply, price goes up. In education, when demand for a program exceeds supply, admission criteria are increased. The result is the development of enrollment control programs.

The enrollment control program has, for the most part, achieved its intended objectives. It has ensured that students complete proper prerequisites before enrolling in courses and before being admitted to engineering programs. In addition, every engineering student must be advised each quarter by his/her engineering advisor or he/she cannot enroll in the permit-controlled engineering courses. This mandatory advising policy helps advisors detect and remedy the student's academic problems early. Another positive result of the ECP is that the number of academically suspended students in engineering has been reduced by approximately 90 percent per academic year.

Despite the positive features resulting from enrollment control, a dilemma surfaced when it was discovered that students were getting caught in the system. Some, admitted as Pre-Engineering majors, never matriculated to the School of Engineering; others, who initially qualified for direct admission as Engineering-Undetermined majors but experienced academic difficulty, never matriculated to a specific engineering department. In both situations, students desired transfers to other programs but were unable to transfer to their desired majors. In essence, these students found it easier to get *into* a program than to get out. This usually occurred because the student's grade point average (GPA) was too low to meet transfer requirements or because the coursework required for program admission was lacking. The dilemma is that these students are dejected with one major and rejected by another—caught in an enrollment-controlled environment.

These ever-present scenarios are frightening to academic advisors at open admission institutions. In essence, the advisors are also "caught" between academic policy and academic integrity. Although the ECPs were developed to correct the academically unethical situation of allowing high-risk students to enroll directly into majors where probability of academic success is low, a question remains as to whether the unintended negative results of students getting caught in the system have outweighed the positive features of such programs.

THE MODEL

The model, illustrated in Figure 1, provides a simple view of the numerous paths through the ECP at Youngstown State University. It is believed that the issues raised are applicable to other open admission institutions with enrollment control programs.

YSU is a state-supported, urban institution with an enrollment of approximately 15,000 students drawn primarily from the surrounding Ohio and western Pennsylvania regions. Sometimes referred to as a "commuter campus," it is estimated that approximately 70 percent of the student population work on a part-time basis while matriculating at YSU (YSU, Student Data Services). The average composite ACT of entering freshmen is 17, while in engineering the average composite ACT score is 23.

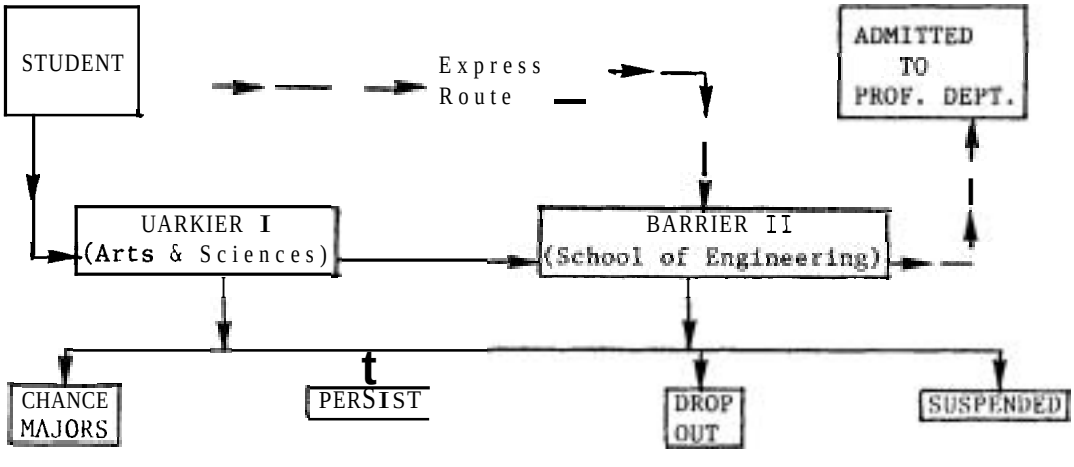

FIGURE 1: PARADIGM OF THE ECP

A student who has applied for admission to the School of Engineering may experience several roadblocks as he/she pursues an education. Students who satisfy the first admission criteria (i.e., ACT composite score of 20+ or SAT score of 950+) are admitted directly to the School of Engineering and follow the "express route" to a professional department, where a transfer from an Engineering-Undetermined major to a professional engineering major (chemical, civil, electrical, industrial, materials, or mechanical engineering) occurs after two or three academic quarters. These "express route" students are not the focus of this research. It is, rather, those students whose normal rate of matriculation into a professional engineering program has been delayed.

In this research, we are concerned with two categories of students: 1) those who are initially denied admission to the School of Engineering and accepted into the College of Arts and Sciences for remedial work, hereafter referred to as GROUP I—Pre-Engineering Students, and 2) those accepted initially into the School of Engineering but who are unable to progress at a satisfactory rate to an engineering department. This group will be referred to as GROUP 11—Engineering-Undetermined Students.

The Barrier I criterion in the model, a minimum ACT composite score of 20, is the first obstacle for entering freshmen to gain admission to the School of Engineering as an "Engineering-Undetermined" major. The title Engineering-Undetermined indicates that the student has been accepted initially into the William Rayen School of Engineering; however, the actual major, whether it be chemical, civil, electrical, industrial, materials, or mechanical, has yet to be determined. The Barrier I minimum ACT score was selected after an intensive review of engineering graduates from YSU over the previous decade.

Freshmen with ACT composite scores below 20 do not qualify for direct admission and are admitted as Pre-Engineering majors to the College of Arts and Sciences until they qualify for an internal transfer to the School of Engineering. Satisfying Barrier I of the ECP as an internal transfer results from successful remediation of high school math through trigonometry and/or satisfactory completion of Calculus I (C or better grade) and a 2.0+ GPA. It is believed that students meeting this criterion have illustrated the capability of handling the math level needed to begin the engineering program.

The sequential transition through the ECP results primarily in the formation of two groups of students: those who transfer to a professional engineering department and those who do not. Four paths emerge for those individuals who do not transfer to a professional department:

1. They change to a department other than an engineering department;
2. They persist in spite of being caught at either Barrier I or II (classified as Persistors);
3. They drop out (The student leaves YSU. The problem of incomplete data prevents us from doing a follow-up on whether or not these students who are no longer attending YSU have transferred to another university.); or
4. They are placed on academic suspension.

For purposes of this research, primary attention is given to those classified as Persistors (#2) who remain "caught" in the collegiate environment.

ANALYSIS OF THE DATA

In this study, the combined sample consists of both Group I and Group II students for a total of 250 entering freshmen tracked during their first two years at YSU. As a result of this analysis, it is hoped that trends may be recognized that will assist advisors in effectively dealing with students caught in an enrollment controlled environment.

Group I: Arts and Sciences fie-Engineering Students

This sample was comprised of 156 students who did not initially qualify for admission to the School of Engineering based on their composite ACT scores. The average composite ACT score for this particular group was 15 (with scores ranging from 8 to 19). These individuals were admitted to the University as Pre-Engineering majors in the College of Arts and Sciences. In most cases, mathematics remediation was necessary before the student could begin the engineering curriculum. The average math ACT score for this group is 14 (with scores ranging from 01 to 23), which is approximately at the 30th percentile rank of both the national and

YSU norm (ACT, 1987). In addition, remediation in the areas of chemistry, physics, and/or English was necessary as evidenced by the group's performance at the 50th percentile or lower in the remaining ACT subject areas (English, Social Sciences, and Natural Sciences).

Table 1 provides a comparison between the number of math remedial courses taken at YSU and the level of performance at the collegiate level two years after the students began their collegiate careers. In this study, success (or failure) has been arbitrarily defied as follows:

(1) Failure: 0.00-1.99 GPA (A 2.00 is needed for graduation.)

(2) Successful: 2.00-2.74 GPA (An average GPA indicates marginal success.)

(3) Very successful: 2.75-4.00 GPA (The YSU Career Services Office reports that the likelihood of employment upon graduation increases when the grade point average is at least a 2.75.)

TABLE 1

A Comparison of Student Performance with the Number of Math Redemption Courses Taken at the End of Two Academic Years

Number of Remedial Math Courses Taken	*No. of Students*	Percentage of Student Performance Measured By Overall Grade Point Average		
		Failure **0.00 - 1.99**	*Successful* **2.00 - 2.74**	*Very Successful* **2.75 - 4.00**
0	28	8%	75%	17%
1	30	29%	63%	8%
2	36	58%	42%	—
3	22	75%	25%	—
4	19	82%	18%	—
5	21	84%	16%	—

We conclude that the probability of collegiate success in engineering is inversely related to the number of high-school-level math courses taken at YSU for remediation. It appears that the more math remediation a student needs, the smaller the probability of acceptance into an engineering curriculum. The underlying implication is that math "remedial" courses taken in college cannot effectively counteract several years of academic deficiencies.

Table 2 provides information regarding the current academic standing of the Group I students. While some individuals stopped attending when poor academic standing occurred, 65% are persisting. In spite of poor pre-college academic preparation and continuous efforts at remediation, these students are still enrolled—caught in the system. After two years of enrollment with no apparent progress toward their desired majors, we questioned YSU's social and ethical reponsibility to these students in allowing them to continue.

TABLE 2

Summary of Group I Students' Academic Standings

	Good Standing	*Warning*	*Probation*	*Suspension*
Persistors	**85**	5	**11**	—
Stop Outs	**21**	**12**	**10**	**12**
TOTAL	**106**	**17**	**21**	**12**

Perhaps a refusal of admission into the Pre-Engineering major for these high-risk students would be the answer. Probability means uncertainty, however, and there may be some intangibles that cannot be measured (e.g., motivation and maturity). Students should be given the opportunity to pursue their goals, but when their progress comes to an obvious standstill, they should be strongly encouraged to re-examine their goals in relation to their abilities. The challenge to faculty and advisors is to identify these students as soon as possible and provide them with viable academic and career alternatives via early alternatives advising (e.g., workshops, courses, and advising sessions) when their goals appear unreachable.

Group 11: Engineering-Undetermined Students

This sample includes 94 students with ACT composites scores of **20** or higher who qualified for direct admission to the School of Engineering as Engineering-Undetermined majors. This group's average composite ACT score is **21** (with scores ranging from **20** to **28)** and the average math ACT score is **22** (with scores ranging from **18** to **27).** While the group's ACT scores and performance in high school preparatory courses (math, chemistry, and physics) indicate a high probability of success in an engineering program, these students did not perform as expected. The question then becomes, why didn't they transfer to a professional engineering department?

These students were given a questionnaire during their first advising session asking them to evaluate their high school preparation as well as their expectations of the engineering program. General conclusions were that they perceived the quality of their high school preparation not to be a problem; however, their study habits were not adequate for college work. Many times during advising sessions, comments such as "I never took a book home to study in high school and I still got an A" were frequently made. These students now realized that study habits used in high school were no longer satisfactory, and the development of study skills as well as the development of time management skills would be a prerequisite before collegiate success could be achieved. This conclusion, we believe, provides an explanation as to why these students found the engineering program more difficult than expected. The issue then becomes what can we as representatives of the University do to help students identify and correct these ineffective study skills.

We believe that an answer might be that the University adopt a marketing concept in dealing with students. University officials must become more knowledgeable with regard to the needs and limitations of their students. An attempt must be made to match the product (college education) with the needs of the consumer (students). It is a University-wide challenge to satisfy the consumer—a challenge that necessitates a well-defined strategy. For example, math and English professors must make students aware of existing math and writing tutorial services available on campus. Beginning this academic year at YSU, personnel from the various tutorial service areas, on a quarterly basis, send faculty members announcements to be read in class and tutorial referral forms to be distributed when tutoring is needed. The entire University community, not just advisors, must share in this responsibility. Advisors cannot be expected to be "truant officers," making sure that announcements are read, that referrals are made, and that students follow through. It must be emphasized, however, that the final responsibility still rests with the student.

Another resource not to be overlooked is the ability of students to teach other students. Although these tutorial centers are staffed by faculty and staff tutors, they also employ graduate and upper-division students to aid in the tutoring. Some students feel more comfortable being tutored by other students, and sometimes other students who may have "been there before" can personally relate better to the student in need of tutoring. YSU's School of Engineering has also recognized the importance of establishing an environment where students can help each other, the result being the remodeling of several classrooms into engineering student study lounges where a great deal of "group study" and tutoring occurs.

CONCLUSION

Enrollment control programs (ECPs) were developed to control enrollment in over-subscribed majors where faculty shortages, limited facilities, and budget constraints are present. The policies associated with the ECP were designed 1) to insure that academically prepared students have the opportunity to begin an engineering program, and 2) to encourage the less academically prepared students to remediate or choose other fields of study where their probability of success is higher.

Although the establishment of the ECP at Youngstown State University achieved many of its intended objectives, it was discovered that it had also become a double-edged sword—not only cutting off initial program admission to academically unqualified students, but also keeping students from making program changes after being enrolled for several quarters. For example, some students persisted and remained in required courses for engineering although the result was failing grades. Many times, their overall GPAs were so low that no other program would accept them until they were in good academic standing.

Some students, such as the Group I students, may have unrealistic academic or career goals. Possibly they have been encouraged to pursue, and persevere in, a particular major by family/friends, or they believe that desirable career opportunities exist in particular areas. Even though their high school preparation and pre-college test results are inadequate for admission to engineering, they strongly desire to enroll in the program. University officials at "open admission" institutions must admit these individuals to the University into "pre-" programs in hopes that transfers to more appropriate majors will eventually occur. The resulting scenario is all too common: a continual struggle to remediate deficiencies and a clinging to an unrealistic goal. In essence, these students become caught in the system.

Students who become caught, such as the Group 11 students, appear to have the academic ability to complete the program, are admitted to the school of their choice, but for one reason or another are unable to transfer into the program. Once again the trends are all too clear.

While marginal academic success is achieved, they are blocked in their efforts to transfer to an engineering department, and their GPAs are below that necessary to transfer to another major.

As witnessed by the slow progress of these two groups of students, the presence of barriers associated with ECPs creates significant hardships upon them as they endeavor to receive a college education. Reasons for these hardships take diverse forms and stem from several sources: inadequate high school preparation, lack of motivation, poor study habits, too many outside activities, and/or the inability to complete basic core requirements. Advisors, then, are placed in the role of trying to mediate the students' interests and abilities with alternate academic programs.

The acceptance of the ECP paradigm provides an interesting challenge to help students deal with the barriers present in an academic environment. In order for advisors to serve this population better, we believe several steps should be taken. The first step is ***RECOGNITION.*** Not only advisors, but university officials as well, must recognize that these student groups are a by-product of ECPs. University officials must make a commitment to deal with this dilemma in a socially responsible manner.

The second step would be ***INTERVENTION.*** Strategies must be developed for advisors to become involved aggressively in a student's educational path when the probability of success in the student's chosen major appears to be diminishing. These policies must be designed to provide a delicate balance between student rights to a career choice and university responsibility 1) to prevent deterioration of quality in programs as a result of overcrowding, and 2) to give every qualified student the opportunity to pursue his or her chosen major without fear of being shut out of a program. It is in the student's best interest, academically and financially, to be stopped in a program when academic success becomes unlikely, even after provided services no longer help. Unfortunately, not all students are willing to recognize this fact. Then, the University must take action to help these students identify and achieve their niche in academia through the following methods:

> ***tutorial services***—If we are going to invite marginally prepared students to pursue a college degree, then we must provide services to help them.
>
> ***reading and study skills testing and classes—There*** is a need for tests to indicate problems in reading comprehension and a need for classes to help students improve their study skills.
>
> *workshops/courses for undetermined* majors—These would be for students who need help when choosing a major or when program redirection is necessary.

The third step must be ***POLICY FORMATION*** in order to put teeth into the interventions. The following suggestions could be very effective:

> ***a mandatory placement test administered to every incoming freshman to measure reading comprehension and study skills ability*** (At YSU, we administer the Nelson Denny Reading Test as well as our own writing test to measure the student's reading level and writing ability. Enrollment in a reading and study skills class is mandatory if the student's test results indicate the need; and the student's enrollment at the university is dependent upon his/her enrollment in these courses.)
>
> ***mandatory advising every quarter for students who have not yet officially enrolled in a specified major.***

establishment of a "ceiling" on the maximum number of hours a student may earn by which time a major must be declared. If the student is still classified as an undetermined major by the time the maximum amount of hours is earned, the student must then enroll in a career course/workshop for undetermined majors so that help may be obtained in selecting an appropriate majorlcareer path.

The final step is RESPONSIBILITY—a University-wide responsibility. Advisors must watch for trends to help find pitfalls in established programs such as with ECPs. They must develop an investigative attitude and take a more definitive role when policies and programs are being developed. This may represent a dramatic change at many institutions since, many times, advisors are not consulted on policy formation. Faculty must also share in the responsibility particularly in the area of identifying students who need help and making the appropriate referrals. The ultimate responsibility, however, still rests with the student—responsibility to take advantage of services and to realize when program redirection becomes necessary.

In summary, although the characteristics of ECPs differ greatly from open admission policies, we believe that ECPs at open admission institutions can work well if interventions are made and services provided at crucial points in the student's career. Policies must be developed to administer these interventions, and all individuals involved (advisors, university officials, faculty, and students) must act responsibly in the roles they play. Then, and only then, can ECPs serve all students ethically at open admission universities.

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