

AN EVALUATION OF THE DEVELOPMENTAL STUDIES PROGRAM  
DESIGNED TO INCREASE PERSISTENCE AND  
ACADEMIC PERFORMANCE OF  
HIGH-RISK STUDENTS AT  
NORTHEASTERN STATE  
UNIVERSITY

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in partial fulfillment of the requirements  
for the Degree of  
DOCTOR OF EDUCATION  
December, 1981

Thesis  
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## ACKNOWLEDGMENTS

The author wishes to express his appreciation to his committee chairman, Dr. Thomas A. Karman, for his valuable guidance and assistance during the entire doctoral program as well as in the preparation of the present study. He is a valued friend and teacher. Appreciation is also expressed to the other committee members, Dr. Carl R. Anderson, Dr. Patrick Forsyth, Dr. Dan Wesley, for their assistance in the preparation of the present study.

A special note of thanks is due Mr. James K. Watkins, Registrar for Northeastern State University. Through his encouragement and understanding the research material utilized for the study was made available. The Registrar's Office supplied the needed academic records for compilation of pertinent data.

The present study would not have been possible without the time and cooperation of the students who participated in the study. They are a very special group of young men and women.

Finally, special appreciation and eternal indebtedness are extended to the writer's wife, Rosanne, his daughters, Teresa, Sandra, and Kimberly, who sacrificed the most in order that the doctoral program and this dissertation could be completed.

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## CHAPTER I

### INTRODUCTION

An awakened social conscience during the decade of the sixties brought a national commitment to extending post-secondary educational opportunities for everyone. This commitment was reinforced by a special report of the Carnegie Commission on Higher Education (1970) which recommended that a public community college be established within commuting distance of every potential student by 1980.

The opening of college doors to every one has meant the burden of education for both student and college is awesome. Few recent educational issues have captured the interest and imagination of both educators and the general public as has finding that test scores for college-bound students are declining.

Two possible explanations for decline in admissions test scores were studied in American College Test's comprehensive research (Research Report No. 71) into the phenomenon (Munday, 1976). In that research, theories concerning who takes the tests and their preparation levels were explored. Somewhat oversimplified for brevity, the two theories are:

There is a changed pool of students going to college today. Many more students from the lower half of their high school classes are attending colleges, and these 'new' students are not as well prepared academically as were the 'traditional' college students. The pool of college-bound students has changed as colleges, particularly two-year colleges, have recently increased efforts to serve all students interested in education after high school (p. 9).



High school students are academically weaker today than they were 5 to 10 years ago. For various reasons - including greater use of electives, lowering of teacher demands and expectations and schooling directed relatively more by students than by teacher - today's students leave high school and enter college or work with less academic preparation than previous years' students (p. 10).

The report concluded that colleges and universities have responded to declining test scores by adapting. Colleges at all levels are today enrolling more students with lower admissions test scores than previously. Many of these low achiever, "high-risk" students have little chance of achieving academic success in a traditional program. In an effort to accommodate these "new" high-risk students, colleges initiated special courses and programs. The general ineffectiveness of compensatory education and remedial programs has been well documented (Roueche, 1968; Moore, 1970). Indeed, some evidence suggests that most remedial programs developed during the 1960's consisted mainly of watered down versions of regular college level courses.

Northeastern State University, like many other institutions, developed courses which were primarily preparatory in nature and were organized and taught through the regular academic departments of the university.

The effectiveness or ineffectiveness of these courses at Northeastern State University has not been documented to date. Hence, the question of how well these courses are serving the needs of high-risk students is just as real an issue today as it was a decade ago.

Northeastern State University is committed to an innovative and flexible educational approach designed to meet the needs of its unique student body. A large segment of that student body may be classified as "high-risk" for the following reasons: (1) severe rural isolation,

(2) deprived cultural backgrounds, (3) deprived economic backgrounds, and (4) deprived educational backgrounds. In short, many are entering college unprepared for college level work. The result is an average attrition for freshman of 40 percent for the years 1972-75. A feasible solution for declining enrollment and meeting high-risk student needs is the development of a program which may better ensure success for this type student.

The university draws 85 percent of its students from 15 counties in northeastern Oklahoma, and nearly two-thirds of its students come from nine counties that are classified by the United States Census Bureau as predominately rural (U.S. Bureau of the Census, 1973). Three of the nine counties are classified as 100 percent rural in composition and all but one are classified as 60 percent rural composition. The existence of 41 dependent school districts in this nine county area is further indication of the extreme rural isolation of much of the population served by the university. According to American College Testing (ACT) freshmen profiles, many of the students who come from these nine counties are handicapped by severe financial problems, inadequate educational backgrounds, low aspiration levels, extremely limited cultural and social experiences and in general, all of those problems which are identified with persons who have grown up in depressed and isolated rural areas.

Data from the American College Test profile on the 1977-78 freshman class at Northeastern showed 262 of 708 students, or 37 percent, had an estimated annual family income of less than \$7,500 (American College Testing Program, 1978). The number of students indicating that they expected to apply for financial aid was even higher, i.e., 545 or 77

percent of the class.

A recent study of ACT scores by the Office of University Relations, whose function is to advise all beginning freshmen, revealed the typical freshman class profile to be as shown in Table I on the following page.

An analysis of Table I indicates a rather constant percentage for ACT scores in the interval 26-36; however, a small decline is noted for the interval 21-25. A rather significant decrease is noted for the interval 16-20. The largest increase is noted in the interval from 1-15. In the freshman class of 1977-78, 56 percent had composite scores of 15 or less. Specific areas, mathematics for one, revealed an increase of 30 percent in the interval 1-15 over the eight year period.

When the percentages in the interval 1-15 are translated into number of freshmen, the results are as shown in Table II. Students in this lowest interval generally have negative self-concepts and are not prepared to face reality. They usually do not have a commitment to education as a life goal. Many of the students do not have adequate skills in studying, reading, time management, decision making and problem solving.

Roueche (1973, p. 4) referred to this type of student as "new students, high-risk students, students whose parents did not attend college, students who never gave serious thought to attending college."

Moore (1970) characterized the new student as a low achieving individual who has experienced little, if any, success in previous educational endeavors. As Moore (1970, p. 5) emphasized, the "new student" should receive the best education possible in college commensurate with his needs, efforts, and abilities.

TABLE I  
 AMERICAN COLLEGE TEST SCORES FOR ENROLLED FRESHMEN FROM 1970-78

Year	Score Interval	English % NSU	Math % NSU	Social Studies % NSU	Natural Science % NSU	Composite % NSU
1970-71	26 -- 36	1	7	6	13	3
1971-72	26 -- 36	1	6	6	15	3
1972-73	26 -- 36	2	6	10	16	3
1973-74	26 -- 36	3	7	9	13	5
1974-75	26 -- 36	2	5	9	12	5
1976-77	26 -- 36	1	5	5	10	3
1977-78	26 -- 36	2	3	6	12	2
1970-71	21 -- 25	19	14	28	20	20
1971-72	21 -- 25	19	10	24	16	19
1972-73	21 -- 25	19	11	24	19	20
1973-74	21 -- 25	18	11	19	18	16
1974-75	21 -- 25	18	9	21	18	15
1976-77	21 -- 25	15	6	14	17	10
1977-78	21 -- 25	16	8	16	18	14
1970-71	16 -- 20	46	36	24	36	41
1971-72	16 -- 20	42	32	22	38	36
1972-73	16 -- 20	39	29	18	32	34
1973-74	16 -- 20	38	28	26	32	32
1974-75	16 -- 20	37	29	13	28	28
1976-77	16 -- 20	35	19	13	33	27
1977-78	16 -- 20	37	16	18	33	27
1970-71	1 -- 15	34	42	42	30	36
1971-72	1 -- 15	37	51	48	31	42
1972-73	1 -- 15	39	53	48	33	44
1973-74	1 -- 15	41	53	57	37	47
1974-75	1 -- 15	44	57	57	42	52
1976-77	1 -- 15	49	71	68	40	60
1977-78	1 -- 15	45	72	60	37	56

TABLE II

THE NUMBER OF FRESHMAN STUDENTS WHO SCORED IN THE INTERVAL 1-15 FOR THE YEAR 1977-78

Year	Standard Score	Number of Students	English	Math	Social Studies	Natural Science	Composite
1977-78	1 -- 15	708	322	512	422	264	400

In April, 1977, a study committee was appointed by the Vice President of Academic Affairs and instructed to formulate a program which might insure a higher degree of success for students scoring in the lowest quartile on the ACT. The study committee's recommendations grew out of the negative performance records cited previously rather than any correlations of test scores and college grades or credit hours completed. The committee recommended a general education program for a group of students defined, according to ACT composite score of 14 or below, as educationally disadvantaged and high-risk.

#### Program Design

The program implemented was entitled the Developmental Studies Program (DS). It was initiated in the fall of 1978 and has in the intervening period undergone several revisions. The history of the program is detailed in Chapter III.

The full-time DS student was required to take a series of basic academic skills courses in reading, writing, and mathematics. To round out the program, each student enrolled in Business 2112, Career Opportunities, where small groups of students discussed common problems and interests with one another and a counselor.

Several features of the program were designed specifically to meet the needs of the students assigned to the Developmental Studies Program: the emphasis on participation in small classes, the lab concept of doing the work in class, the counseling focus on group problem solving, and extra time allotted to complete a course.

## Statement of the Problem

Northeastern State University has experienced average freshmen attrition of 45 percent for the years 1975-78. A feasible solution for a decline in enrollment and meeting high-risk students needs is the development of a program which may ensure success for this type of student. The problem stated in a more specific manner is as follows: can a learner-centered, open-minded, developmental, success-oriented program designed for high-risk students, reduce the rate of attrition of freshman students at Northeastern State University?

The criterion measures used in this study were: (a) first semester grade point average (GPA), (b) second semester GPA, (c) the attrition rate for the first semester, and (d) attrition rate for the second semester.

The following specific questions arose:

1. Will there be a difference between the DS group and the respective matched groups in mean GPA at the end of the first semester?
2. Will there be a difference between the DS groups and the respective matched groups in mean GPA at the end of the second semester?
3. Will there be a difference between the DS groups and the respective matched groups in attrition at the end of the first semester?
4. Will there be a difference between the DS groups and the respective matched groups in attrition at the end of the second semester?

## Hypotheses

Because of the questions suggested by the problem, the following null hypotheses were formulated:

1. There is no significant difference between the mean grade point average for students enrolled in DS group I (DS I) and matched group I (MG I) or between DS group II (DS II) and matched group II (MG II) at the end of the first semester.
2. There is no significant difference between the mean grade point average for students enrolled in DS group I (DS I) and matched group I (MG I) or between DS group II (DS II) and matched group II (MG II) at the end of the second semester.
3. There is no significant difference between DS I and MG I or between DS II and MG II in attrition at the end of the first semester.
4. There is no significant difference between DS I and MG I or between DS II and MG II in attrition at the end of the second semester.

If the null hypothesis in each case were rejected in favor of the DS groups, then presumably the conclusion would be that the Developmental Studies approach was a more effective means than the traditional approach of initiating academically high-risk students into the college so that their needs for further education could be met in a way that would allow them to succeed. If, on the other hand, the null hypothesis in each case were rejected in favor of the matched group, then presumably the conclusions would be that the traditional approach was more



effective than the Developmental Studies approach. If, however the null hypothesis in each case were not rejected, then presumably the conclusion would be that the approaches were equally effective or equally ineffective.

#### Purpose of the Study

There have been national, regional, and state surveys in recent years which delineate the type of programs, the number of students enrolled in them, and the nature of the services provided for high-risk students. But evaluations of their effectiveness are still lacking. The present study will aid in filling this gap. Its purposes are to:

1. assess the effects of selected innovative remedial education programs on students' academic performance and persistence in college;
2. determine students' attitudes toward selected aspects of the innovative programs; and
3. identify and describe those characteristics which appear to be related to the success or failure of the program in terms of student attitude, persistence, and academic performance.

#### Significance of the Study

The significance of this study is two fold: (1) to contribute to the literature and research in higher education dealing with the high-risk students and (2) to provide information and data which may be used to guide university personnel in revising the Developmental Studies Program.

In their comprehensive review, Kendrick and Thomas (1970, p. 171)

observed that "research on the extensiveness and effectiveness of compensatory programs and practices has been limited in quantity and scope."

Gordon and Wilkerson (1966, p. 156) reported: "Despite the almost landslide acceptance of the compensatory education commitment we find nowhere an effort at evaluating these innovations."

The 1960's and 1970's produced a voluminous professional literature which documented and popularized ideas about high-risk students and used them to justify the remedial and other compensatory programs which have now become institutionalized (Baehr, 1969; Berg and Axtell, 1968; Bragg et al., 1966).

Acceptance of a hypothesis, however, is not a test of it. Analysis of the literature to date revealed little more than a collective re-statement of the problem. Thus, there is considerable question about the extent to which poor achievement can be traced to the social, economic, family, motivational, and environmental backgrounds of the student.

The foregoing discussion should not be misleading. High-risk students are an identifiable group, and one cannot deny that certain students may appear to have some of the characteristics of being culturally disadvantaged, as described earlier. The point here is that the teachers and administrators who make these determinations should have some data or research basis to support their evaluations, since these descriptions have come to be badges of affliction for the student so designated.

## Definitions of Key Terms

Developmental Studies Program. An educational program consisting of five special courses and extra services designed to remedy student deficiencies to a level where students can advance to other college credit courses.

American College Testing Program Examination (ACT). The ACT is an examination which measures a student's ability to succeed in various academic areas as compared with other students in nationwide testing. The ACT composite standard score is the mean score of the four areas tested: English usage; mathematics usage; social studies reading; natural science reading.

High-Risk Student. An educationally disadvantaged student who has scored 14 or below on the ACT (American College Testing Program Examination) and whose potential for failure in college is extremely high. The term itself is used interchangeably throughout this study with low achieving, academically disadvantaged and Developmental Studies students.

Attrition Rate. A measure of the number of students withdrawing completely from the university.

Persistence. The act of a student completing a semester of course work at the university.

Over-All GPA. The cumulative or total grade point average computed on a 4.0 scale.

Matched Students. Students who would qualify for Developmental Studies--that is, those who scored 14 or below on the pre-admission, placement test (ACT)--and who chose not to enroll in the Developmental Studies Program.

### Limitations

One should be cautioned against generalizations drawn from the finding of the descriptive project. This exploratory study is being conducted with several intervening variables not held constant. Age, intelligence quotient, family background, size of the high school, and other factors are not considered in regard to the probable effect on the participating subjects. The method of selecting the enrollee (only those at one institution) would caution against generalizing the finding to other groups at different institutions.

College selection and class choice by both groups is in no way controlled. The possible variables in grading technique by instructor is not considered. Therefore, it is not determined which of the intervening variables will affect the outcome of the study or to what extent.

The study should be considered as descriptive research, exploratory in nature with implications of possible additional research in regard to the high-risk student.

## CHAPTER II

### A REVIEW OF LITERATURE

#### Introduction

There appear within our educational system today many areas of vital concern to administrators, faculty, and the public. High-risk students at institutions of higher education is one such area.

Policies pertaining to high-risk students can be better viewed if one explores existing conditions which affect such policies. The purpose of this chapter is to present: (1) considerations for determining successful programs for high-risk students, (2) factors affecting student attrition, and (3) suggested categories of high-risk student personalities.

The literature cited in the chapter is not presented as comprehensive in nature but reflects a broad spectrum of current views by noted authorities in the field.

#### Considerations for Determining

#### Successful Programs

A review of the literature revealed that there exists strong motivation to support the evaluation of programs for the high-risk student. When Aarons (1975, p. 6) undertook a major study, he found two unfortunate trends: (1) "current literature shows there to be approximately 25-30 evaluations, of which only ten have some form of control groups"

and (2) the literature on evaluation appears somewhat contradictory.

Losak (1972, p. 7) believed that the whole area of remediation is so important that, as he put it, "the community colleges will be made or broken on this issue of how well they cope with the academically under-prepared." Losak was quick to suggest criteria under five areas for the evaluation of a program. They were: (1) academic, (2) attitudinal change, (3) personality changes, (4) change in self-concept, and (5) job placement. In discussing elsewhere the effectiveness of reporting on these five areas, Losak (p. 43) clearly stated that "the criterion of academic progress is generally given the highest priority."

Roueche and Hulbert (1968) argued that evaluation of remedial programs is essential if for no other reason than the knowledge that current efforts with the low achieving students are ineffective. They stated: "We believe that community colleges can no longer assume that remedial courses 'remedy' student/deficiencies" (p. 186). Rather it becomes increasingly clear that two year colleges are going to accept the challenge of demonstrated student learning as the criterion for the success of any program for the low achiever.

In 1973, Roueche and Kirk published Catching Up: Remedial Education, which investigated and evaluated five successful developmental programs. During the course of their study, Roueche and Kirk (1973) discovered 11 common denominators among the five different programs which they evaluated. First,

    Singled out for its central importance was the role of the chief administrator of the college. He/she should voice and demonstrate a strong commitment to staff, faculty, students, and community that the college will seriously attack the problem of providing real educational opportunities for high-risk students (p. 83).

In fact, according to Moore (1970, p. 126) the chief administrator is a

"key figure in the success or failure of any developmental program. He is the liaison person between the program leader and the board of trustees, the community, the faculty, and others." The budget, staff, curriculum, rooms, equipment, and program must be addressed by the chief administrator with the same amount of vigor that he applies to other academic programs.

Second, "Only instructors who volunteer to teach high-risk students should ever be involved in developmental programs" (Roueche and Kirk, 1973, p. 82). In his earlier study of remedial programs, Salvage, Redirection, or Custody, Roueche (1968) found that the instructors most often assigned to teach developmental courses were either fresh out of graduate school or were being "punished" by a dean or chairperson. It was a low status assignment, and little was expected from either the instructor or the students in those classes. In general, the faculty did not enjoy what they were doing; however, in successful programs, Roueche and Kirk found that the instructional staff had volunteered for the assignments, had high expectation of their students, and were totally committed to student learning. In short, they must be objective enough to deal with the student's limitations without becoming emotionally bound to them.

Third, "A separately organized division of developmental studies should be created with its own staff and administrative head" (Roueche and Kirk, 1973, p. 83). Piecemeal approaches do not work and do not allow a total or wholistic approach to the student's attitudes, communication, human relations skills, and career needs. It is particularly important that the developmental student develop a positive attitude about learning and about going to college. Most likely, the student has

had a history of failure or only limited success, and this caused him to feel threatened by new learning situations (Roueche and Kirk, 1973; Cross, 1971).

Fourth, "Curricular offering in developmental programs should be relevant" (Roueche and Kirk, 1973, p. 85). This is essential because the high-risk students are likely to have negative attitudes toward learning. They have turned themselves off from traditional curriculum as a result of their inability to succeed with it. According to Moore (1970, p. 168), the "disparity between the available curriculum (traditional) and the learning styles or academic characteristics of high-risk students is all but convulsive." They argue for a basic skills curriculum, for example (reading, writing, spelling, listening, grammar) that is linked to a general education program.

Moore (1970) and Roueche (1968) also endorsed the concept of including within the curriculum a course in personal development. High-risk students are often characterized by a feeling of powerlessness, lack of self-confidence, worthlessness, alienation, hostility, and unrealistic levels of aspiration (Cross, 1971; Moore, 1970; Roueche and Kirk, 1973). Since all of these characteristics can have an adverse effect upon learning, a course should be offered where these personality and attitudinal patterns are given attention.

Moore (1970) listed 14 objectives for such a course:

1. orientation to college environment,
2. orientation to curriculum,
3. assisting students learning to project educational plans,
4. assisting in the projection of vocational plans,
5. discussion of efficient methods of study skills,



6. helping students satisfy the need for acceptance,
7. providing a sense of belonging to a specific group,
8. providing a release of emotional tension by having the group study common human problems,
9. increasing student's self-insight and self understanding,
10. making individual counseling more effective,
11. helping students communicate through listening and self expression,
12. providing standardized test service to give students insights to their personal weaknesses and interest,
13. providing a laboratory of human relations with students working cooperatively with others on problems of common interest, and
14. coordinating all phases of the developmental program (pp. 180-181).

Fifth, "Regular college curriculum offerings should be comprehensive" (Roueche and Kirk, 1973, p. 86). The college should offer an extensive range of choices for high-risk students. The career program offering should include terminal two-year and less than two-year occupational programs in addition to the regular four-year programs. Sixth, "All developmental courses should carry credit for graduation or program certification" (Roueche and Kirk, 1973, p. 87). Roueche and Kirk report that when credit is given, student motivation, commitment and interest increase. Seventh, "Grading policies and practices should be non-punitive" (Roueche and Kirk, 1973, p. 87). At a minimum, this implies the elimination of the failure grade. In addition, it could mean that course objectives and standards as to what constitutes mastery of minimal passing requirements would be specified. It does not mean that standards would be modified or lowered; they would remain the same for both traditional and high-risk students. Eighth, "Instruction should

accommodate individual differences and permit students to learn and proceed at their own pace" (Roueche and Kirk, 1973, p. 87). Roueche and Kirk present a strong case for individualized instruction as the type of instruction that would be most successful for developmental education programs. Proponents of individualization contend that students are more likely to learn if they know what is to be learned. Individualized instruction, whatever the type, begins with stated objectives. It should also permit the students to choose the type of learning activity that suits them where alternatives are available.

To assist the learner, many developmental programs which Roueche and Kirk studied employed student or para-professional tutors. Quite often the tutor was able to communicate better than the instructor when a student was having difficulty. Also, many students may be less willing to tell an instructor they do not understand something for fear of being judged. Ninth, "The counselor function in developmental programs must be of real value to students" (Roueche and Kirk, 1973, p. 90). According to Roueche and Kirk, the counselor has a crucial role to play in developing positive student self-concept. He/she must understand the values, reluctance, and habits of the high-risk student and be willing to expend the time and effort needed to unlock the potential of each student. Tenth, "Efforts should be made to alleviate the abrupt transition from developmental studies to traditional college curricula" (Roueche and Kirk, 1973, p. 90). In each of the five programs studied by Roueche and Kirk they found that when the students left the developmental program they experienced some difficulty and a decrease in grade point average in the regular college curriculum. Roueche concluded that if open labs, tutoring, and peer counseling were available, the

transition might be easier. Eleventh, "Once programs are established, effective recruiting strategies should be developed to identify and enroll high-risk students" (Roueche and Kirk, 1973, p. 91). They emphasize, however, that this should not be done until a sound program exists.

#### Conclusions Presented in Roueche and Kirk's Study

Although commonalities between programs have been stressed so far, the five developmental programs Roueche and Kirk (1973) investigated differed from one another greatly. For example, the Tarrant County Junior College program employed a block-type, vertical team approach. Admission to the program was voluntary, but students with a composite score of less than 13.0 on the American College Test were strongly advised to enter (Roueche and Kirk, 1973). In contrast, the Burlington County Community College program had mandatory enrollment and no separately organized division or program. Developmental courses in English, reading and mathematics were offered. Students could take regular courses while being concurrently enrolled in developmental courses (Roueche and Kirk, 1973). The obvious conclusion is that developmental programs can differ greatly and still be successful.

Success was measured three ways by Roueche and Kirk. They collected data on student performance in terms of grade point average, persistence rates, and students attitudes. For all five programs, the cumulative mean grade point average for the first year of study for a sample of students in the program was 2.66 on a four point scale. The average persistence rate was 82 percent for two semesters, 50 to 54 percent for a third semester, and 35 percent for two years. All of those rates compare favorably with performance data on groups of high-risk

students who chose not to enroll in the developmental program (Roueche, and Kirk, 1973). One of the programs, Tarrant County Junior College, however, had a 95 percent retention rate for the 1972-73 academic year. A student attitude questionnaire was administered by Roueche and Kirk. Seventy percent or more of the students surveyed expressed satisfaction with services offered by the program.

### Summer Programs

Operation Second Chance, a college discovery program for the disadvantaged at the Bronx and Kingsborough Community Colleges, was one of the better publicized and continuously researched summer programs in the country (Meister, Tauber, and Silverman, 1962; Freedman and Myers, 1964; Meister and Tauber, 1965; Lee, 1969). It was a program of special guidance and instruction in English and mathematics for New York City high school graduates who had been denied admission to college.

The program was designed for educationally disadvantaged youth who showed intellectual promise. The goal was to have students complete their first two years of college work at the community college and then transfer to a senior college. Meister and Tauber (1965) reported that four-fifths of the students in this program were from minority groups, whereas less than one-fifth of the regular students at the City University of New York were from minority groups. Of the first two entering classes, 202 students out of 760 obtained degrees from the community college by January 1968, and most of these students (178) eventually went on to a senior college. Even for students not earning degrees, the research suggested other personal gains resulted from exposure to college.

Lee (1969) studied the students who entered this special college discovery program at Kingsborough Community College during the 1967-68 school year. The 53 students who took the six-week, pre-college program constituted the experimental group, and Lee randomly selected a control group of 53 regularly admitted students from the lower end of the achievement curve of all freshman enrolled in the liberal arts curriculum for the fall of 1967. In the experimental group, 81 percent of the students were minority students. Lee found block-programming, lack of formal remediation courses, the standard course load, and uniform regulations of probation and dismissal were institutional features that deterred educationally disadvantaged students in college. The pre-college summer program proved to have some immediate measurable effects, but in long-range evaluation most gains proved transitory. The components of the program which appeared to have the greatest effect were counseling, psychological services, faculty advisement, anonymity of the experimental group, and tutorial assistance. For the experimental group the best predictors of success were verbal ability and past achievement, although they did not predict especially well. Many students pre-judged as unable to do college work were able to perform satisfactorily in college. Although they did not perform as well as the control group, 77 percent of the experimental group were still pursuing a college education at the end of the first year.

Shea (1967) examined the effects of remediation and counseling on a selected sample of subjects (N=33) who were classified as non-admissible applicants to a public community college in western Massachusetts. All subjects voluntarily enrolled in a seven-week summer program and were thereby guaranteed admission in the fall semester subject only to

reasonable daily attendance throughout the summer. All subjects were administered a pre-and posttest battery which included test of intelligence, personality, educational development, scholastic aptitude, listening, and reading skills. The results indicated significant differences ( $P = .05$ ) on five subtests, and Shea noted that each of these presupposed an ability to use and understand the English language as well as skill at reading with comprehension, accuracy, and speed. He concluded that the significant post-treatment test results came about because the subjects acquired more skill at reading during the summer remedial sequence. There were no significant results on other subtest. Subsequently, only 40 percent of the participants had failed by the end of the fall semester, whereas based upon admission criteria none of these students should have succeeded in college.

The results of an experiment to determine the effectiveness of a summer program at Spartanburg Junior College were reported by Couch (1969). An experimental group ( $N = 51$ ) was chosen from those students required to take the eight-week summer program before admittance to the college. The program included English, mathematics, reading, study aid, science, and group dynamics. The control group ( $N = 51$ ) was selected from students whose academic load was limited to four courses. The pairs were matched by college board scores within plus or minus 20 points. An analysis of the grade point averages for both groups at the end of the fall semester showed that the experimental group surpassed the group in academic achievement, though not to a significant degree. The author concluded that the summer program was worthwhile.

Solomon (1972) concluded that after a summer program of intensified remediation for those freshmen diagnosed as needing such a program, the

students demonstrated they were able to do regular work rather than remedial work. Students reported enjoying the program, and their motivation was high. However, there was no statistical evidence or control group.

### Regular Programs

Some of the summer programs were successful, some not so successful, in preparing high-risk students to achieve in college. The summer programs attempted in six to nine weeks to alter behavior patterns that had built up over years. Most colleges, however, did not attempt such "crash" programs. Instead they devised full-semester, and in a few cases two-semester, programs for the academically high-risk students. Although they allowed themselves twice as much time to do whatever was to be done, they showed the same variety of purposes, means, and methods of evaluation as seen in the summer programs.

Over the years the basic studies program at Miami-Dade Junior College has been carefully studied by Handy (1965), Losak (1968, 1969, 1972), and Losak and Burns (1971). At the time Handy (1965) studied the program, the students were required to enroll in one-semester, noncredit courses in mathematics, writing and a group guidance course called Educational Planning. He found that after completing the basic studies course, the students in the experimental group earned a GPA during the first semester of credit courses in college superior in achievement to the GPA of the control groups of equivalent students. The results were somewhat inconclusive, however, because one control group made gains of a comparable level through a reduction in hours of course load.

Losak (1968, 1969, 1972) focused his attention specifically on the

remedial reading-writing program as operated at Miami-Dade in 1967-68. He selected an experimental group of students (N = 427) who were required under normal admissions procedures to enter the program and a control group of students (N = 73) who were randomly selected to be precluded from taking the remedial program. Neither students nor instructors were aware of the experiment. The remedial program did not produce any meaningful differences in student withdrawals from college. It was not effective in raising the GPA during the second semester of college enrollment to a "C" level and was not effective in producing a score on a reading test or a writing test that was any higher for those students in the remedial program than it was for those students in the randomly selected control group. Although the students in the experimental group who took the remedial program did not achieve a grade level of "C" during their first semester, they did achieve a slightly higher overall first-term GPA than those in the control group. However, 70 percent of the control group succeeded in the regular freshman English course.

Young (1966) summarized the results of an experimental program for low ability students at Los Angeles City College. Students under 22 years of age who scored 39 or below on the SCAT were divided into experimental and control groups. The experimental group was enrolled in a special block program of English, psychology, and speech. Of the 110 students in the special program in the fall of 1964, 30 had a "C" average or better, 91 completed the semester, and 75 re-enrolled the following semester. As compared with the control group, the experimental group had a more favorable attitude toward the college, better student retention, and a better GPA.

Two separate studies evaluated the Educational and Cultural



Development (ECD) Program at Macomb Community College over the four-year period from 1965 through 1969 (Almquist, 1968, 1972). The ECD program was carefully planned as a first-year college level curriculum of general education based on the philosophy of general education, the theory of personality development, and the research available in student outcomes of college experience. The program consisted of five areas of study planned as a coherent whole: social science, natural science, communication, humanities, and an orientation course. The student enrolled in these 16 credit hours of courses on a block schedule basis with no more than 100 in each team-taught block each semester.

Almquist (1968) compared the two groups of students placed in the ECD program in the fall of 1965 (N = 393) and the fall of 1966 (N = 561) to a group of full-time day liberal arts students who entered the fall of 1965 with comparable SCAT scores (N = 156). All three groups had SCAT total scores in the range between the tenth and fifty-eighth percentile. They found that the ECD students and the student enrolled in liberal arts courses persisted at about the same rate both in their first year and in their second year in college. When persistence was measured as the number of credits attempted and earned, the ECD students earned more credits in a shorter length of time than those in the liberal arts group. The ECD Students stayed in school and earned more credits with higher grades than the students who were in the comparison group. About three times as many ECD students as liberal arts students graduated from Macomb at the end of two years.

In his doctoral dissertation, Almquist (1972) studied the next two years of operation of the ECD program, but in the meantime the entrance criteria had been changed slightly. Instead of the SCAT total below the

fifty-eighth percentile, students were placed in the program on the basis of scoring at the sixtieth percentile or lower on the American College Testing Program Aptitude Test Composite (ACT-C) scores.

Almquist focused on comparing the academic performance of a random sample of full-time students who entered the liberal arts program in the fall of 1967 and the fall of 1968.

Almquist (1972) found the students in the ECD program persisted at a significantly higher level during the first year of college than did the liberal arts students. However, there was no significant difference in persistence at the end of two years. The ECD students reached significantly higher levels of credit hours attempted, credit hours earned, and GPA than did the liberal arts students during the first year of college. Neither the ECD nor the liberal arts students did as well during the second year of college as they had during the first year of college. However, in spite of the greater drop in performance during the second year, the credit hours attempted, credit hours earned, and GPA for the ECD students reached significantly higher levels than did those of the liberal arts group at the end of two years.

"One of the best researched projects in developmental learning," said Monroe (1972, p. 120), "was carried out by the City Colleges of Chicago from 1967 to 1969," and the federally funded Project Success has been amply described by Baehr (1969). It was a general education program that carried college credit. Very small classes, intensive counseling, and tutorial services characterized the program. Remedial education in basic skills was to be incorporated in the general education courses. Students who would otherwise have been assigned to one of the regular developmental programs at the various campuses of the

City Colleges of Chicago volunteered to be in Project Success. The volunteers were matched with students in developmental programs at the various campuses. Neither the basis for matching nor the other programs were described in the report. The matched groups were compared on a series of objective measures provided by Science Research Associates. The Project Success group was outperformed by the control group on four of the five variables that showed significant differences between the groups. The subsequent year, however, more Project Success students were still in college (80 percent to 56 percent), but neither group performed particularly well in the regular college programs (1.5 GPA for the Project Success group that semester and 1.51 GPA for the control group).

From the students enrolled in compensatory courses at the two campuses of St. Petersburg Junior College, Morgan (1971) identified those who could be classified as high-risk students on the basis of high school GPA's, low scores on a guidance battery of tests, and apparent low self-concept. An experimental group of volunteers for a special program was formed, and a control group of students enrolled in the regular compensatory courses was made. Of the various items studied, the results indicated that the experimental group performed at a significantly higher level than the control in only the communications (reading) course. That was the only significant difference between the two groups. Morgan concluded that the compensatory efforts were of value and functioning as intended.

Federico (1972) studied the effects of voluntary and forced enrollment in a study skill program on academic achievement and attitudes of first-year, high-risk community college males. He found that volunteer

status was not a significant factor related to the effectiveness of the study skills program. The program did influence, in a positive way, the participants' self-reported study habits and attitudes toward school independent of their volunteer status. The investigation also demonstrated that the study skills program did not produce significant differences between the experimental and control groups when academic performance was considered. More importantly, in Federico's opinion, the study did not support the hypothesis of theorists who contend that volunteers differ from nonvolunteers in performing tasks.

A developmental mathematics program, relying on individualized instruction and programmed test, at Danville Community College (Virginia) seemed to be effective in preparing students for some of the regular mathematics sequences (Moore, 1973). An interesting aspect of that approach was the identification of the specific programs the remedial students seemed adequately prepared to take; this was invaluable for counselors interested in helping remedial students succeed with their educational aspirations since counselors can function better if they have data with which to advise their high-risk counselees.

Leeward Community College, in Hawaii, developed a variety of developmental reading courses, and Broadbent (1977) studied the effects of the different programs. The programs were general reading, using individualized exercises; an integrated skills approach combining reading and basic English skills; a curriculum designed for each student from diagnostic testing; a program based on social competency or "survival" skills; and peer-tutoring in reading, writing, and computation. The findings were particularly interesting in that they may be construed as controversial by some developmental educators. Major conclusions were

that primary emphasis should be placed on students with at least high school reading ability; the integrated skills approach does not result in reading gains; survival skills are best attained by learning to read generic materials, and students with reading ability below the high school level might best be served in secondary school programs.

Additional developmental studies should be considered. For example, Denver's Metropolitan State College, matched four groups of low ability high-risk students, two control and two experimental, to test the effectiveness of two approaches to remediation (Yuthas, 1971). Persistence and GPA were used as criteria. The results led to the conclusion that enrollment in remedial programs of the type offered by Metro resulted in substantially reduced rates of attrition and higher grade point averages among low achievers.

Students assessed as high-risk at Essex Community College (Maryland) were paired by identical scores on vocabulary and reading comprehension tests and as to whether they elected to take a learning skills course or to ignore advice and not take a learning skills course. The learning skills course used a programmed multimedia approach and as much individual attention as possible to attain goals set by the student in a learning skills contract. A significant advantage in grade point average was demonstrated by the students attending the program who also took an average of three more hours of college work than their counterparts. Students who did accept the college recommendation of getting learning center support tended to be older and took a greater range of the number of standard three credit academic courses. Of learning skills students, 82 percent returned to their studies the following semester compared with 59 percent of nonlearning skills students (Bourn, 1978).

Beginning in 1974, with the developmental studies program at Amarillo College, continuing efforts have been made to assess the characteristics, attitudes, motivation and goals of the high-risk students in the program, which was designed to build self-concept and improve reading, English, math and study skills. Over the three years of the study, students tended to be older than other students, more frequently male, Anglo-American, single, non-military and employed. A sample of 70 high-risk students was traced from enrollment in the fall of 1975 to the Spring of 1977. Only 27 remained enrolled carrying an average of 12.5 hours per semester with a mean grade point average of 2.69. The total hours earned averaged 49.4. Although over 80 percent since 1974 intended to continue their education, their confidence in completing their education had fallen from 42 percent "very sure" in 1974 to 16 percent in 1976 (Henard, 1977).

#### Ohio State Programs

Directors of over 50 developmental education programs funded partially by state funds were asked, in 1976, by a Subcommittee of the Ohio Statewide Advisory Committee on Developmental Education, to report on any efforts made to assess the impact of their programs. A total of 29 assessment reports from two- and four-year colleges were received. The studies focused upon four types of outcomes:

1. improvement of basic skills,
2. grade point average,
3. retention, and
4. personal growth objectives (Conference Proceeding, 1974).

The studies reported that the developmental education programs were

effective in improving writing skills, reading skills, basic math skills, study skills, application of language skills, in proof reading, and in reading newspapers. Overall grade point averages for students in developmental courses improved more than GPA's for a control group, and the participants in the developmental courses were able to maintain a GPA above 2.00. Two studies reported retention rates of students in developmental education courses higher than retention rates of regular students. The remaining studies reporting retention each indicated favorable results. Similarly, the six studies of personal growth reported accomplishment of objectives, such as self-confidence and self-esteem. Accomplishment of personal growth objectives was related to improved GPA, fewer racial incidents, competency in accounting courses, career choice, improved study habits, knowledge of the campus, and staying in college (Conference Proceeding, 1974).

### National Project II

One of the most comprehensive reports dealing with developmental education is National Project II: Alternatives to the the Revolving Door (Donovan, 1977). Ten associate institutions were selected to form a consortium on the basis of evidence of success from relatively small, special programs for underprepared students. The programs included: the Upward Bound Veterans Program at Oscar Rose Junior College; the Teaching Center at Marquette University and California State University at Fullerton; Resources for Student Learning at Southeastern Community College; the People Center at the College of Staten Island; the Study Skills and Counseling Program at Malcolm King Harlem College Extension, and the College Assistance for Migrants Programs at St. Edward's. Bronx

Community College was also selected although it chose not to highlight any specific program (Donovan, 1977).

Each of the National Project II Associates programs has considered retention. Retention has usually meant survival through the initial period of enrollment or the freshman year and has served as a primary goal throughout the project. Several associates stated or inferred that a rate superior to the national average of fifty percent should indicate success. For a student who by traditional criteria often does not have the academic skills or goals of the regular college student and who finds himself in a strange and seemingly alien environment, persistence has been seen by most of the projects as a sound measure of his achievement and growth toward the goals of the program (Donovan, 1977).

In the case of St. Edward's University in Texas, where the program was for the children of migrant farm workers, evidence that the program students survived an initial summer program and completed the fall and spring semesters of the freshman year in increasing numbers each year is seen as important documentation of the effectiveness of the program. Marquette University, California State at Fullerton, and the University of Florida have gone beyond examining the retention rates for entering students and have tracked their program students through the general education portion of the curriculum and on to the senior year and baccalaureate degree. Tracing the progress of a special group of students from their entry as freshmen to their graduation four to five years later proves to be a complicated task especially in large universities. Enrollment patterns of regular students no longer follow the traditional criteria consistently for predicting success in college. The patterns of persistence in college indicate that many students drop



out from time to time and that the period for earning the baccalaureate degree may be closer to five years than four in any event. This was the finding at the University of Florida. Therefore, if the special student persists and takes three years to complete a two year program or five years to earn a degree in a four year college or university, he not only is succeeding but is doing so at a rate not too different from his more advantaged peers (Donovan, 1977).

Quality of student achievement beyond survival for all students is generally determined by grade point average. The ubiquitous GPA is an acronym that carries meaning for everyone who is even remotely associated with post-secondary education. The associates of National Project II have looked at GPA and the relationship of credit hours attempted to credit hours earned in order to provide evidence of the cognitive gain of the student in the special programs. The criteria of success was the 2.00 or better GPA which represents satisfactory progress supposedly or average achievement. Thus, in each program, the special student has been compared with his regularly admitted peers using the same traditional performance measures (Donovan, 1977).

That such high percentage of high-risk students in National Project II programs earned GPA's of 2.00 or better is a remarkable achievement. In most institutions, aside from a special summer sessions or a limited number of remedial or basic skills courses, the program student enrolled in the same courses and competed with the regular students to earn that GPA. For instance, at St. Edward's University the young migrant workers were placed in courses in every curriculum of the University with regular students. Over a period of several years, these migrant youths had maintained a 2.40 GPA at the end of the first semester, which compared

with the regular freshmen who reported a 2.70. At California State at Fullerton, which reported a retention rate for the study of 48 percent, those students still enrolled after four years earned a GPA of 2.24. University of Florida students earned GPA's of approximately 2.50 by the end of their first year, and few withdrew during their junior and senior years because of academic problems. In each of the National Project II institutions, students learned and achieved at close to the same rate and almost at the same level of achievement as their peers and within the same degree programs (Donovan, 1977).

In a slightly different approach to assessing student learning, the Associate at Marquette University attempted to identify predictor variables for continuing academic progress of special student. This evaluation reported a finding that the accumulation of quality point better predicted achievement than GPA or number of hours earned. At Marquette it was suggested that the educationally under-prepared student's chances for success may be improved if the student reduced the number of credit hours he attempted in order to achieve higher grades in basic courses. Logically, this was not a surprising result. A sizeable body of research in Personalized Instruction (PSI) indicates that if the task is held constant, the time needed for students to achieve the task will vary with individual learning rates. If a student enters a program with an initial handicap in traditional academic skills, his achievement can be enhanced by providing him with additional time to meet the demands of general education courses. What seems surprising is the number of students in each of the National Project II programs who succeed at the same rate as their more educationally advantaged colleagues (Donovan, 1977).

Several of the National Project II Associates looked to pre- and posttesting of program students with standardized, norm-referenced test as a measure of student cognitive gain. The hazards of this technique are well documented in the literature of educational research. In addition to the inability to control variables beyond the scope of the program, program evaluators often find standardized test, because of their broad-range purpose, not to fit the curriculum or the special abilities of the program student. In addition, standardized tests, especially college and admissions test, have been found to be notoriously poor predictors of success in college for the population for which national Project II programs were designed (Donovan, 1977).

Even so, several institutions were able to document increased reading scores for program students. Both Oscar Rose Junior College and California State at Fullerton reported almost two year gains (from ninth to eleventh grade performance). Additional analysis of the data at Fullerton also found reading gains correlated positively with GPA for students who attended classes regularly. Reading gains alone did not account for academic achievement. Achievement occurred only in tandem with the student's determination to persist (Donovan, 1977).

The finding of the project reports are not consistent in terms of student gain based on the results of standardized tests. What does seem clear is that special program students have no more appetite for sitting through the examinations than the rest of the college population (Donovan, 1977).

Using the evidence of retention, grade point average, and--to a lesser extent--standardized test scores, the National Project II Associates have documented the effectiveness of their programs. It is clear

the programs work, but why? Two common threads seem to run through the reports of the Associates. One is emphasis on helping students make up academic deficiencies, especially in the basic skill areas of reading, writing and mathematics or arithmetic--the catch-up function--and the other is teaching students how the academic world operates--the catch-on function.

### Student Attrition

Few institutions of higher education, whether public or private, can afford to be complacent about the way in which students come and go. For every three students who enter college each year, at least one of the three will drop out of college before finishing his studies. The costly process of recruiting new students to take the place of those who drop out is becoming an unconscionable burden to colleges and universities. The question arises, what can be done about attrition?

Data on the national norms and significant categories of attrition are available in the research report entitled, College Dropouts: A National Profile, by Astin (1972). Data for the report were collected by the Cooperative Institutional Research Program of the American Council on Education and involved a four-year following of the class of 1966.

The summary findings of the report are as follows:

1. National dropout rates seem to be somewhat lower than has been suggested in other reports. Even by the most severe measure of persistence (completing a baccalaureate degree within four years at the college of matriculation), nearly half of all students entering four-year colleges and

universities can be classified as non-dropouts. If students still enrolled for work toward a degree at their first institution are also regarded as non-dropouts, the persistence rate is nearly 60 percent for students at four-year colleges and universities.

2. Dropout rates at two year colleges are somewhat higher than those at four-year colleges and universities. Although these higher rates are primarily attributable to the lower level of motivation and poorer academic preparation of students entering these colleges, the retention rates of the two year colleges are still somewhat lower than would be expected.
3. The principal predictors of persistence are the student's grades in high school and his scores on tests of academic ability. Other important predictors include being a man and a non-smoker; financing one's college education chiefly through aid from parents, work-study, scholarship or personal savings; not being employed off campus during the school year.
4. Using these predictors of the student's persistence in a multiple regression equation, it is possible to compute an "expected" persistence rate for individual colleges. Usually from the actual pre-expected rates at the typical college, there are many exceptions. At a given college, the actual rate may exceed the expected rate by as much as 40 percent or fall below it by as much as 25 percent (Astin, 1972).

The following areas appear to be points at which most institutions of higher education can take significant action to reduce the rate of student attrition:

1. Institutional Research,
2. Institutional Policies,
3. Freshmen Orientation,
4. Freshman Curriculum,
5. Freshmen Counseling,
6. Academic Skills, Training for High-risk Students, and
7. Special Students.

#### Institutional Research

Who stays? Why? Unless these questions are asked and satisfactorily answered, subsequent efforts to curb attrition may be akin to trying to keep a ship afloat with its sea cocks wide open. Once an institution has prepared a profile of students who persist at that institutions, its admissions staff can proceed to recruit students for retention, i.e., students who fit the persister profile. Otherwise, admissions staff members find themselves recruiting "in the dark," while other institutional staff members find themselves following in that train.

Summerskill (1962), in one of the often quoted reports on the subject of attrition, put it this way:

The failure on the part of most colleges and universities to study clinically the cause of student mortality has denied to administrative officers and faculties valuable information in the area of serving constituent needs. We need to know more about what really motivates the successful college student, whether these motives be personal and essentially affective or academic and essentially rational (p. 648).

### Institutional Policies

As soon as the institutional research staff begins to try to shape a profile of students who persist successfully, as well as a profile of those who fail, the staff discovers that the existence or nonexistence of institutional goals plays a major part in the drama of academic success and failure.

The profile of those who succeed at a given institution will have general but no specific outlines, such as ACT scores within acceptable range, major and/or occupational goals, but not specific interest in specific institutional goals and objectives. Those who fail may well do so not because the essential aspects of the institution were submerged beneath its bumbling movement toward unstated goals.

Once institutional policies are formulated, however, all may proceed with a sense of direction--institutional researcher, admissions recruiters, and academic counselors.

Summerskill (1962) again offers pertinent comment:

In any study of motivational factors in attrition it is most important to pay attention to institutional characteristics and values . . . It is inadequate to ask whether a student has sufficient and appropriate motivation for college. The more meaningful question is: does the student have sufficient and appropriate motivation for a specified college with specific characteristics and objectives (p. 640).

### Freshmen Orientation

Of all the factors mentioned as providing significant opportunity for an institution to curb its rate of student attrition, adequate freshmen orientation both before and after the start of classes is listed most often by researcher in the field (Sheffield, 1974).

Regarding orientation before classes begin, one researcher had this

to say:

Prospective students seem to have a hazy picture about the life that lies ahead of them in college. They have little idea about class schedules, organizations and activities on the campus. They are unprepared for the competition for their activities. Students about to enter college have a general stereotyped and perhaps idealized image of college life which imperfectly relates to what they are about to find out. . . . The amount of difficulty and the nature of the adjustments during the early college months depends on the background and personality of the student as well as the environment of the college he/she enters. However, most students program themselves for persistence or withdrawal during the first eight weeks of college (Meeth, 1972, p. 2).

### Freshmen Curriculum

Often overlooked as a key factor leading to student attrition is the matter of the curriculum that is offered to incoming freshmen. Most often such courses are content-centered, survey in nature, and presented in a way that would be difficult for upperclassmen to grasp let alone students fresh out of secondary school. There appears to be urgent need for faculty to join concerned administrators in a willingness to overhaul the freshmen curriculum in whatever way may seem appropriate, so that it becomes developmental in its approach, specific when possible, and geared to the age and understanding of the students involved.

Meeth, in his previously-mentioned paper on orientation, indicated the most critical phase of orientation is the first semester curriculum. Since students are not particularly committed to intellectual experiences but are oriented to academic achievement, the curriculum of the first semester can solidify their conceptions, or it can attempt to offset new student expectations and, by structure and teaching methodology, approach the full collegiate experience in a stimulating manner.

Researchers reveal that the first few weeks of college are critical,



reinforcing through the remaining four years student expectations, aspirations and preconceptions or denying them and establishing new guidelines by which the students view themselves in the educational process at the college. A number of investigators have noted that individuals both expect and want to change and develop in college and the opportunity for the college to capitalize on this expectation is virtually limited to the first semester (Sheffield, 1974).

### Freshmen Counseling

Few studies have made their way either into print or campus discussions, and many have failed to pin-point the counseling of freshmen at least throughout the initial semester as being another key factor in raising or lowering the rate of attrition. This appears to apply to personal as well as academic counseling. At best, it would appear to involve not only professionals but also peers, faculty, and administrators--including a secretary and clerk here and there who has demonstrated interest in and empathy with students.

Hannah (1962) notes that the evidence indicates that college personnel are little involved with leavers during the process of withdrawal and that they participate infrequently in the discussions through which the final decision is made. Furthermore, when they are brought into the process it is after considerable thinking and discussions have taken place--after ideas have hardened.

Summerskill (1962), indicated the college counselor learns that there are two dimensions to the dropout problem that are not immediately apparent in the classroom. First, the student is still highly responsive to psychological and sociological forces originating outside the

immediate college environment. Second, although colleges are principally concerned with cognitive and rational matters, students are human beings who act according to emotions, feelings, and desires.

During an ACT workshop on attrition, resource leaders put heavy emphasis on developmental, personal and academic counseling for freshmen, both individual and group. The following recommendations were made:

1. Develop an early warning system involving faculty, peers, and administrators. Train these groups to listen for those who don't talk, who sit in the back row, who take no notes, who resist advising, who show signs of hostility, withdrawal and anxiety, especially during the first eight weeks. Then train those involved to go out of their way to support such students and to alert others in the campus community to the problem.
2. Focus special attention on the critical moments in the experience of a new student during the first semester, i.e., before the classes begin, after classes begin, before midterm, after midterm, before finals, at the end of the semester. These are times when students are particularly open to assistance.
3. Provide continuing training and evaluation opportunities for counselors of all groups, e.g., sensitivity workshops and advising manuals (Noel, 1976).

#### Academic Skills Training for High-Risk Students

Research reports indicate that high-risk students, such as probationary freshmen, drop out most often because of inability to handle

college-level work. It is recommended, therefore, that such probationary freshmen be provided with at least a viable opportunity to get special training in such academic skills as reading, writing, and comprehension.

Hannah (1969), suggested the following is needed for high-risk students: A major need to create conditions that foster more frequent contact between high-risk students and college personnel and permit more participation of college persons early in the discussion through which decisions are made. Programs identifying high-risk entrants, offering special supports, and discussing problems of adjustment and entering freshmen are currently underway at some institutions.

Special opportunities should be given high-risk students to meet with faculty members, deans, or counselors to discuss feeling of anxiety, anger, frustration, or despair. High-risk students should be given an opportunity to deal with impending failure, with incompletes, and with the large gaps between achievement and self-expectations that may occur even when a passing grade is managed.

These, then are the six areas to which Sheffield (1974) recommends that institutions address themselves in an ongoing program to curb attrition:

1. The office of Institutional Research should proceed to develop a profile of students who leave and students who persist to form an effective foundation for efforts at student recruitment and retention.
2. The school should proceed forthwith to formulate its institutional policies and objectives.
3. It should continue to present pre-class freshmen orientation programs with a continuing career opportunities program.

4. The college of general studies should institute an in-depth study of its freshmen academic offerings with a view to revising such offerings so they may become developmental in their approach.
5. Counseling at all levels for freshmen should be reexamined and strengthened in the direction of support and developmental goals.
6. Probationary freshmen should be given a working opportunity to get special training in reading, writing and basic communicative skills.

#### Student Characteristics

In order to design a program to serve a particular population, it would seem reasonable that the attitudes and characteristics of the population would have to be known. If the population to be served was defined on the basis of previous poor academic performance and/or poor performance on aptitude or ability tests, then a start could be made in terms of gathering other information about this population. Some general characteristics as noted by Cross (1971) and Moore (1970, 1971) were summarized in the first chapter, and none of that material will be repeated here.

Stein (1966), who investigated some of the concepts held by 236 Los Angeles City College entrants on probation because of low SCAT scores, found they viewed college from a vocational orientation. They expressed faith in the college to provide what the economy and social system had not offered them, belief in college as an aid to a more productive economic life, fairly high self-esteem as students, and an expressed

willingness to subject themselves to the discipline of regular study.

After reviewing the literature on students in remedial education courses in junior colleges, Roueche (1968) made several generalizations about their characteristics. Not surprisingly, he found they were deficient in basic skills in language and mathematics and that they had poor study habits. He claimed they were weakly motivated, lacking home encouragement to continue in school, and they had unrealistic and ill-defined goals. However, they represented homes with minimum cultural advantages and minimum standards of living, and they were the first of their family to attend college, which Roueche interpreted to mean that they had a minimum understanding of what college required or what opportunities it offered.

Losak (1969) studied the psychological characteristics of the academically underprepared students at Miami-Dade Junior College. After administering and interpreting a number of psychological tests, they concluded that a high percentage of the population needed some form of counseling or psychotherapy to help them cope with their psychological conflicts in order to increase their chances of realizing maximum potential.

Abell (1970) identified specific variables and categories of variables which correlated with the achievement of students in the Flint Community Junior College remedial program. For the groups he studied the American College Testing (ACT) program's battery of tests were the best predictors of academic achievement as measured by grades received during the first semester of college work. The English sub-test was the most powerful predictor of the four sub-tests in the ACT. The mathematics test was the next most powerful. When the ACT composite

scores were held as the dependent variable in a step-wise multiple regression, marital status, father's occupational status, and college attendance by a sibling were among several non-intellective variables that achieved a higher order or rank.

Jones (1970) studied the upward mobility of disadvantaged community college students who attended Bakerfield College between 1958 and 1968. Among other things he found that the upwardly mobile disadvantaged student typically was a highly motivated and self-adjusted person. Disadvantaged students expected counseling to be directive and specific in nature. They usually perceived the open-door junior college as their only avenue to higher education. Disadvantaged students perceived the college as being well oriented to serving primarily the needs of students with middle-class behavior.

Martin (1972) analyzed the characteristics of high-risk students at Cleveland State Community College in Tennessee. His analysis revealed that the high-risk students were largely male, young, caucasian, non-veteran, undecided and unrealistic about career plans, and they had poor preparation in mathematics and social studies. They had the least academic success in mathematics and natural science and exhibited low enrollment rates in available remedial courses. They contributed to a high attrition rate and rarely completed graduation requirements, at least within a period of eight academic quarters.

Roueche and Mink (1975) suggested that since student failure is frequently the result of an external orientation, in which students feel that chance or other forces control their future, a shift from external orientation to internal locus-of-control is needed. So if the student's behavior becomes the major determinant of success, a higher success rate

for high-risk students will prevail.

Lack of motivation, also looked upon as a cause of lower achievement, is related to another area of concern, self-concept. This possible cause provides a challenge to the creativity of remedial educators because it deals with the highly ingrained psychological make-up of the student.

The socioeconomic, psychological, and academic characteristics of academically high-risk students are varied, and from this review of studies it would be difficult to generalize. Some of the variance was due to the real differences in the students themselves, but no doubt some of the variance was also due to differences in the researchers' standards and expectations. However varied the data in this section was, this type of information is necessary before a special curriculum for a special population can be designed.

#### Summary

From the review of the literature, it is clear that the problem of the high-risk student is prevalent throughout our educational system and has no one simple answer. The move toward the universality of education has apparently begun, and it appears that current trends in admission policies necessitates programs for the high-risk student.

The student, in regard to available research on high-risk students and college programs for them, was not as desperate as Moore (1970) and Kendrick and Thomas (1970) made it sound. However, as Gordon and Wilkerson (1966) reported, there is a need for better evaluation of the existing programs for high-risk students. In 1976, the Ohio State Advisory Committee on Developmental Education reported 50 programs for

high-risk students; however, only 29 reported any type of program evaluation. When Aarons (1975) undertook a major study, he found only 25 to 30 programs which employed any type of evaluation, and only 10 employment experimental and control groups.

Between the early sixties and late seventies, attitudes toward academically high-risk students went from Clark's (1960) tolerant condescension to Moore's (1970) impassioned defense. In that time period, most colleges responded to the influx of high-risk students by offering them special programs. Some of the programs stressed basic academic skills exclusively, others focused only on general education courses, and some offered both in varying combinations. Almost all of the programs were built with a strong component of counseling, either group or individual. Some evaluative studies were conducted and indicated positive results; however, as Aarons (1975) observed, the literature on evaluation appears somewhat contradictory.

The methodology used to evaluate the Developmental Studies Program at Northeastern State University will be discussed in Chapter III.



## CHAPTER III

### PROGRAM DESIGN AND STATISTICAL METHODOLOGY

#### Introduction

The Developmental Studies Curriculum was designed as a special program for academically high-risk students to prevent an open door from becoming merely a revolving door.

At Northeastern State University, the fall session, 1977, 95 students were placed on academic suspension, 112 students were placed on academic probation, 313 were officially withdrawn, and others stopped going without contacting school officials. The analysis of attrition data over the interval of the 1977 Spring and Fall semesters showed the bulk of attrition to be concentrated among freshmen and sophomores-- approximately 45 percent of the total attrition for the University was accounted for by freshmen and 28 percent by sophomores (Oklahoma State Regents for Higher Education, 1978). This happened despite the practice of limiting the course load of the students regarded as academic risks and despite the effort to offer three developmental courses to those wanting remedial help. This situation led the Vice President for Instruction, to establish the Northeastern State University Opportunity Committee.

#### Planning the Program

The Opportunity Program Committee studied programs offered in other

institutions and met over a three-month period to discuss its findings. The Committee seemed to have been influenced by the philosophy of Roueche and Kirk (1973) in regard to the desirability of general education for everyone and the program outlined by Roueche and Kirk (1973) in Catching Up: Remedial Education.

In April, 1978, the Committee recommended the establishment of a Developmental Studies Program to meet the needs of the educationally disadvantaged youth. They recommended the following goals for the new program:

1. Meeting the needs of students in the lower range of the ability spectrum.
2. Providing educationally disadvantaged students with intensive counseling on an individual and group basis for:
  - a. Minimizing student's emotional factors inhibiting success.
  - b. Aiding students to assess realistically their potential and to relate this to vocational goals.
  - c. Identifying students incapable of benefiting from any college program and referring them to community resources through accurate and complete knowledge of apprenticeship requirements, job openings, training courses, and other community resources.
3. Placing the student at the center of the learning process by increasing learning activity options and by reducing the amount of lecture utilized.
4. Recognizing and responding to individual differences in skills, values, and learning styles through a flexible

curriculum which permitted learning at different rates and in different ways.

5. Relating to students with openness and respect and providing a supportive climate for learning.
6. Providing students positive reinforcement and opportunities for success experiences.
7. Providing students an opportunity to develop competence in basic skills for those likely to fail in a regular college program.

The committee further recommended that the Developmental Studies Program seek to accomplish these general goals through a semester curriculum organized as follow:

1. About two-thirds of the program would be three-hour courses which stressed basics in reading, oral communication, and written communication.
2. About one-third of the program would involve concentrated academic and vocational counseling on a small-group basis.
3. Certain one-hour electives would be available in the areas of physical education and library media.
4. Individual counseling on a regular basis would be an integral part of the program.

The type of instruction would be student-centered with individualized, modular instruction in all three-hour classes. Students would take diagnostic tests in English, reading, and mathematics to determine an appropriate beginning module. Students would progress at their own pace through the modules, finishing a course when a specific level of

proficiency was reached, regardless of the time involved.

### Program Operation

A major feature of freshmen advisement at Northeastern State University was a one-credit orientation class which provides information about the academic programs and regulations and was an introduction to college life on the campus. This class was required for all beginning freshmen. The advisors in the Office of University Relations instructed the class and acted as advisors for the students until a formal declaration of major was made. For those enrolled in the Developmental Studies Program, the orientation course was expanded to a two-hour credit class and was modified to emphasize study skills instruction, academic survival information, and career planning.

In addition, a student counseling concept was introduced in the orientation program for Developmental Studies, with student academic counselors used in the classroom to accomplish the following activities: (a) to employ peer-group discussion procedures, (b) to communicate academic survival information, (c) to analyze potential academic and social adjustment problems, and (d) to initiate individualized corrective measures for identified problems. The student counseling program was funded by the Exxon Education Foundation and was adapted from the program which had been developed and refined at Southwest Texas State University (Brown, 1965).

Acting as small-group discussion leaders, the student counselors discussed academic survival information and instructed in study skills. The Student's Guides to Effective Study developed by Brown (1975) were used and students were given loose-leaf reproductions of various topics

which dealt with study skills. Study skills instruction was given in the following areas: managing time, note-taking, motivating techniques, reading textbook assignments, and taking examinations. Other areas were covered according to the time available and student interest. The student counselors also assisted with the career planning segment of the classes.

The following schedule of the orientation class activities indicates the involvement of the student counselors and the time spent in counseling activities with the Developmental Studies students:

Business Administration 2112

Week    Class Activity

1. Introduction to class and small-group assignments  
Library tour and assignment (student counselor and instructor)
2. Study skills and interest survey (student counselor and instructor)
3. Study skills (student counselor only)
4. Study skills (student counselor only)
5. Information from the catalog (instructor only)
6. Information from the catalog (instructor only)
7. Nelson-Denny Reading Test (instructor only)
8. Mid-term evaluation (student counselor and instructor)
9. Conferences with students about mid-term grades  
(instructor only)
10. Information on majors and degree programs (instructor only)
11. Degree plan assignment and general education requirements  
(instructor)

12. Career decision-making interest survey (student counselors and instructor)
13. Occupational briefs (student counselor and instructor)
14. Career development (student counselor and instructor)
15. Career development (student counselor and instructor)
16. Final evaluation (instructor only)

In addition to the orientation class, each student counselor was required to maintain close contact with the instructor whose students they tutored. Each tutor was required to attend some regular classes with his/her tutoring group and to keep up to date with the syllabi and other instructional materials. Representative comments by students in the counseled group regarding the counseling services are included in Appendix A.

### Curriculum

The curriculum recommended by the faculty committee was as follows:

English	3 hours
Developmental reading	3 hours
Basic mathematics	3 hours
Political science	3 hours
Business administration	2 hours
Physical education	1 hour
Library media	1 hour

Each student was enrolled in English, developmental reading, and orientation. One-half of the sample was enrolled in basic mathematics while the remaining one-half was enrolled in political science.

Students chose between physical education and library media to complete a 12-hour schedule.

The Developmental Program was not a separately organized administrative unit or a separate division of developmental studies. Rather, a representative or coordinator of developmental courses was designated in each department of the general studies program of the Northeastern State University. Each representative coordinated the remedial course efforts within the department and acted as liaison for the overall coordinator of developmental studies.

The English course emphasized grammar, punctuation, spelling, and basic communication skills. The mathematics course emphasized addition, subtraction, multiplication, division, fractions, decimals, and elementary algebra. In developmental reading, a complete reading ability diagnosis was afforded each student. The program emphasized spelling, vocabulary development, word attack techniques, increased reading rates and methods for improving comprehension. In political science, typical topics were the role of political parties; pressure groups; the legislative, executive, and judicial branches; and the role of the national government in selected areas of foreign affairs, fiscal monetary policies, and civil rights.

## Research Design

### Selection of Subjects

In the fall of 1978 and the fall of 1979, high-risk students were selected from all entering freshmen whose composite American College Test (ACT) scores were 14 or below. The Office of University Relations mailed letters of explanation and invitation to all beginning freshmen

meeting the criteria outlined (Appendix B). Each fall semester those students whose composite ACT scores indicated a need for possible developmental courses were invited to participate in freshmen orientation day. College counselors were present during the orientation and explained the program. Emphasis in the sessions was placed on: the competitiveness of college, the heavy reading required, the necessity of being able to read effectively in many areas, the ability to write term papers, reports and essays, and the ability to compute rapidly and correctly. It was stressed that these foundations courses, while not guaranteeing success, would "better" prepare students for regular courses.

The program was designed to serve 100 high-risk students on a first-come-first-served basis. In the fall of 1978, 175 letters were mailed to students who met the program criteria; however, only 54 chose to enter the program. In the fall of 1979, 220 letters of invitation were mailed and 59 accepted. Those students not accepting from each group chose to start their college careers in the general studies curriculum of the University and constituted the population from which the control groups were selected. In the fall of 1978, the experimental group consisted of 54 students while the total number in the control population was 121. For the fall of 1979, there were 59 students in the experimental group and 161 in the control population.

#### Matching and Data Collection

Since this study was an ex post facto study, matching was the best approach for the research design. ACT composite score, age, and sex were the variables utilized in matching.

Astin (1971) reported that, in his national sample of college



students, the women tended to get better grades than the men during their freshmen year.

Nearly half of the women, as compared to only about a third of the men, obtained GPA's of 2.50 or above. In contrast, twice as many men as women (14% versus about 7%) obtained freshmen GPA's below 1.5 (p. 5).

He found this to be consistent with literally hundreds of studies that have shown that girls get higher grades in secondary school than boys do. Since GPA was to be one of the criterion measures, it seemed advisable to control sex as a variable in matching.

A number of Northeastern State University faculty members have noted that the older students seemed to start off the year a bit "rusty" in performing academic routines. Their seriousness and motivation, however, usually enabled them to overcome their rustiness quickly and let their true "brightness" shine through. It seemed plausible that their low placement test scores were at least partly attributable to their rustiness. Age was, therefore, controlled to some extent in matching.

An analysis of the frequency distribution of the years of birth of students in the Developmental Studies Program indicated the median age was 27. Following this analysis, two age categories were created. One age category included students born before 1954, and the other included everyone born during or after 1954.

All freshmen who scored 14 or below on their composite ACT were identified through the records in the Office of University Relations. Using the records in the Office of Admissions and Records, transcripts of all students who scored 14 or below were examined, and a variety of data was collected: age, sex, GPA for their first two semesters of enrollment, and persistence.

Neither tentative grades of INC (incomplete) nor AUD (audit) grades

were included for initial calculations of GPA. By the time data for this study were collected (i.e., December of 1980), all of the incomplete grades for the fall of 1978 and almost all from the spring of 1980 had been changed to permanent grades. When incomplete grades were changed to permanent grades, the grades were included in the GPA's for the semester in which the course had been taken.

Using the matched-paired technique, scores in the population equal to each score in the experimental groups were isolated. The ACT composite scores ranged from a high of 14 to a low of seven. Utilizing the variable sex, each score interval was subdivided into two categories, according to the subject's gender, male or female, and age above 27 or age less than or equal to 27. The data for this matching is listed in Table III. This matched-paired technique was employed for each of the experimental and control groups chosen in the fall of 1978 and the fall of 1979. Within the categories created by the different combinations of variables for matching, the matching was done randomly. In this respect, the procedure was similar to stratified random sampling.

It was possible to collect from the control groups complete matching data, composite ACT score, age, and sex for 49 of the 54 students enrolled in the fall of 1978. The remaining five students from the experimental group were excluded from the sample due to the unavailability of matched data. These two groups were designed as (DS I) and (MG I). Matched data were collected from the control group for 53 of the 59 students enrolled in the fall of 1979. The remaining six students were excluded from the study due to the unavailability of matched data. These two groups were designed as (DS II) and (MG II). In the fall of 1978, females outnumbered males 33 to 21, but in the second group, fall

TABLE III

MATCHED PAIRS FOR THE EXPERIMENTAL AND CONTROL GROUPS FOR  
FALL 1978 AND FALL 1979

Composite ACT Score	Age 27 or less		Age above 27		Composite ACT Score	Age 27 or less		Age above 27	
	male	female	male	female		male	female	male	female
ACT 14					ACT 10				
population	24	17	1	4	population	15	17	9	11
experimental	2	1	0	2	experimental	5	4	4	3
control	2	1	0	2	control	5	4	4	3
residual	20	15	1	0	residual	5	9	1	5
ACT 13					ACT 09				
population	17	18	11	8	population	15	13	6	10
experimental	5	1	3	4	experimental	2	4	3	2
control	5	1	3	4	control	2	4	3	2
residual	7	16	6	0	residual	11	5	0	6
ACT 12					ACT 08				
population	19	22	14	10	population	10	9	5	8
experimental	5	6	6	5	experimental	2	2	2	3
control	5	6	6	5	control	2	2	2	3
residual	9	10	2	0	residual	6	5	1	2
ACT 11					ACT 07				
population	19	17	5	12	population	8	8	4	8
experimental	5	3	2	6	experimental	2	3	2	3
control	5	3	2	6	control	2	3	2	3
residual	9	11	1	0	residual	4	2	0	2

1979, males outnumbered females 32 to 27.

Some students attended Northeastern State University for only one semester and did not register for the second semester, and this factor was controlled in the matching. If either member of the matched pair failed to enroll for the second semester, the matched pair was deleted from the sample. This meant that the number of matched pairs (for the first group) decreased from 49 to 25, (for the second group) from 53 to 30.

### Data Analysis

Attrition and GPA's were selected as the variables for evaluation of the system, and they formed the basis for the four criterion measures used in the study. The criterion measures were: (a) first semester GPA, (b) second semester GPA, (c) attrition for the first semester, and (d) attrition after two semesters.

The null hypotheses have been listed in Chapter I. In brief, the first two hypotheses said there would be no significant difference in means on the criterion measure GPA for the first and second semester between DS I and MG I and between DS II and MG II.

After reviewing the explanation of the t-test given by Siegel (1956), the Student's t-test for means of two related samples was chosen for analyzing the difference in scores for each set of matched pairs. Siegel's comment that "a matched design is only as good as the experimenter's ability to determine how to match pairs" (p. 62) was duly noted.

Hypotheses 3 and 4 stated there were no significant differences in the attrition rates between DS I and MG I and between DS II and

MG II. For this study, attrition was computed on an enrolled or not enrolled basis per semester. Students who enrolled and completed the semester successfully were classified as enrolled; however, some enrolled and stopped attending class but failed to process a complete withdrawal before the last week of the semester. The latter group was classified as enrolled, and their GPA's were included in the calculations for the semester. The non-enrolled category was composed of students who were enrolled in the first semester and failed to enroll in the second semester or those who enrolled and later processed a formal withdrawal from all classes before the last week of the semester. Tables were generated from the enrolled/not enrolled categories for the variable persistence and were utilized to report comparative analysis of pertinent nominal data, as suggested by Wert, Neidt, and Ahmann (1954). An appropriate test for analyzing persistence of the groups was Chi-square. The .05 level of significance was set for rejecting the null hypothesis in each test.

The matched data on ACT composite scores, sex, and age were entered via a cathode-ray terminal (CRT) unit to allow the tests to be run on the various subgroups. All t- and Chi-square tests were computed at the Northeastern State University Computer Center, Tahlequah, Oklahoma.

## CHAPTER IV

### PRESENTATION AND ANALYSIS OF DATA

The t-tests for means of two related samples were computed for the means of the criterion of GPA for DS I and MG I. An identical test was conducted for the groups DS II and MG II. The formula utilized was

$$t = \frac{\bar{X} - \bar{Y}}{\frac{\sum d^2}{\sqrt{N(N-1)}}$$

Where  $\sum d^2 = \sum D^2 - \frac{(\sum D)^2}{N}$ , N is the number of pairs, and D is the difference in semester GPA's for matched pairs in the respective groups. The results of the t-tests for the variable GPA for the two matched groups are listed in Tables IV - VII.

#### First Semester GPA Matched-Paired Technique

Hypothesis 1 stated that there was no significant difference between the mean grade point average for students enrolled in DS I and MG I or between DS II and MG II at the end of one semester. The students in DS I had a mean GPA of 2.33 after one semester of course work, and the students in MG I had a mean of 1.86. These data are presented in Table IV. In the Fall of 1979, the students in DS II had a mean GPA of 2.37 while those in MG II had a mean GPA of 1.83. These results are presented in Table V. The t value for the first semester for DS I and MG I was 2.47, and the table value at the .05 level with 48 degrees of

TABLE IV  
STUDENT'S T-TEST FOR MEANS OF TWO RELATED SAMPLES  
FOR DS I AND MG I FALL 1978

Variable	DS I		MG I		t	df	Level of Sig.*
	$\bar{X}$	SD X	$\bar{Y}$	SD Y			
GPA First Semester	2.33	1.14	1.86	1.14	2.47	48	.05

\*For a two-tailed test.

Source: Siegel (1956, p. 248).

TABLE V  
STUDENT'S T-TEST FOR MEANS OF TWO RELATED SAMPLES  
FOR DR II AND MG II FALL 1979

Variable	DS II		MG II		t	df	Level of Sig.*
	$\bar{X}$	SD X	$\bar{Y}$	SD Y			
GPA First Semester	2.37	1.26	1.83	1.06	2.40	52	.05

\*For a two-tailed test.

Source: Siegel (1956, p. 248).

freedom is 2.05. A t-value of 2.40 was obtained for DS II and MG II, and the table value at the .05 level with 52 degrees of freedom is 2.01. The difference in means for both samples was significantly different at the .05 level. The significance was in favor of DS I and DS II. It was found that the GPA's of the developmental students were significantly better than the GPA's of those in the control groups.

#### Second Semester GPA Matched-Paired Technique

Hypothesis 2 stated that there was no significant difference between the mean grade point average for students enrolled in DS I and MG I or between DS II and MG II at the end of the second semester. The students in DS I had a mean GPA of 1.66 for the second semester of course work, and students in MG I had a mean of 1.76. These results are listed in Table VI. The t-value for the second semester of DS I and MG I was  $-.339$ , and the table value at the .05 level with 24 degrees of freedom is 2.06. The students in DS II had a mean GPA for the second semester of course work of 2.10, and those in MG II had a mean of 2.13. These data are presented in Table VII. A t-value of  $-.10$  was obtained for DS II and MG II, and the table value at the .05 level with 29 degrees of freedom is 2.05. The difference in means for both samples was not significantly different at the .05 level. Therefore, Hypothesis 2 failed to be rejected.

#### Persistence

Hypothesis 3 stated that there was no significant difference between DS I and MG I or between DS II and MG II in attrition at the end of the first semester. The hypothesis was tested utilizing



TABLE VI  
STUDENT'S T-TEST FOR MEANS OF TWO RELATED SAMPLES  
FOR DS I AND MG I SPRING 1979

Variable	DS I		MG I		t	df	Level of Sig.*
	$\bar{X}$	SD X	$\bar{Y}$	SD Y			
GPA Second Semester	1.66	.93	1.76	1.14	-.339	24	NS**

\*For a two-tailed test.

\*\*Not Significant.

Source: Siegel (1956, p. 248).

TABLE VII  
STUDENT'S T-TEST FOR MEANS OF TWO RELATED SAMPLES  
FOR DS II AND MG II SPRING 1980

Variable	DS II		MG II		t	df	Level of Sig.*
	$\bar{X}$	SD X	$\bar{Y}$	SD Y			
GPA Second Semester	2.10	1.27	2.13	1.01	-.10	29	NS**

\*For a two-tailed test.

\*\*Not Significant.

Source: Siegel (1956, p. 248).

$$\chi^2 = \sum_{i=1}^N \frac{(O_i - E_i)^2}{E_i}$$

where  $O_i$  equals the observed number of students withdrawing during a semester and  $E_i$  equals the expected number of students withdrawing per semester. The results of the Chi-square tests for the variable persistence are listed in Tables VIII through XIII.

The expected annual attrition rate of 45 percent was subdivided by semesters, 26 percent attrition rate for the fall semesters and 19 percent for the spring semesters (Wheeler, 1977). The following formula was utilized to calculate the total expected annual attrition by semesters:

$$\begin{aligned} \text{Total expected annual attrition} &= 45\% \text{ of the beginning fall} \\ &\quad \text{enrollment in the sample.} \\ &= 26\% \text{ (beginning fall enrollment} \\ &\quad \text{in the sample.)} \\ &+ 19\% \text{ (beginning fall enrollment} \\ &\quad \text{in the sample.)} \\ \text{Total expected annual attrition} &= \text{total expected fall attrition} \\ &\quad + \text{total expected spring attrition.} \end{aligned}$$

#### Fall Attrition

Table VIII lists an initial enrollment of 49 in the fall of 1978 for DS I and MG I. Fourteen students withdrew from DS I and 13 from MG I. The expected frequency ( $f_e$ ) of withdrawal for DS I and MG I was 26 percent of the beginning fall enrollment or 12.74. The probability of that occurrence was between  $P = .95$  and  $P = .90$ ; that is  $.95 > P > .90$  and that probability exceeded the .05 level.

For the fall of 1979, 11 students withdrew from DS II and 16 withdrew from MG II. These data are listed in Table IX. The expected

TABLE VIII

OBSERVED AND EXPECTED FREQUENCIES OF PERSISTENCE/WITHDRAWAL  
DS I AND MG I FALL 1978

Cell	Beginning Enrollment (N)	Number Withdrew		Number Persisted		$\chi^2$	df	Level of Sig.**
		$f_o$	$f_e$	$f_o$	$f_e$			
DS I	49	14	12.74	35	36.26	.015	1	NS*
MG I	49	13	12.74	36	36.26			
Total	98	27	25.48	71	72.52			

\*Not Significant.

\*\*Source: Siegel (1956, p. 249).

TABLE IX

OBSERVED AND EXPECTED FREQUENCIES OF PERSISTENCE/WITHDRAWAL  
DS II AND MG II FALL 1979

Cell	Beginning Enrollment (N)	Number Withdrew		Number Persisted		$\chi^2$	df	Level of Sig.**
		$f_o$	$f_e$	$f_o$	$f_e$			
DS II	53	11	13.78	42	39.22	.918	1	NS*
MG I	53	16	13.78	37	39.22			
Total	106	27	27.56	79	78.44			

\*Not Significant.

\*\*Source: Siegel (1956, p. 249).

frequency ( $f_e$ ) for both groups was 13.78. The resulting  $X^2$  was .918 for one degree of freedom. The probability (P) of that occurrence was between  $P = .50$  and  $P = .30$  and that probability exceeded the .05 level. Since (P) was not less than .05, for both groups, Hypothesis 3 failed to be rejected.

#### Spring Attrition

In the spring of 1979, 14 students withdrew from DS I and 10 withdrew from MG I. These data are listed in Table X. The expected frequency ( $f_e$ ) for both groups was 9.31. The resulting Chi-square was 2.41. For the second sample, DS II and MG II, 14 withdrew from DS II and 12 withdrew from MG II. Table XI lists a Chi-square of 1.90 for DS II and MG II. In each case (P) was not less than or equal to .05; therefore, Hypothesis 4 was not rejected.

#### Annual Attrition

The annual attrition for DS I was 28 students out of 49 compared with 23 out of 49 for MG I. These data are listed in Table XII. The expected frequency ( $f_e$ ) for DS I and MG I was 22.05. The probability of that occurrence was between  $P = .20$  and  $P = .10$ ; that is  $.20 > P > .10$  and that probability exceeded the .05 level.

For the second group, attrition for DS II was 25 students out of 53 compared with 28 out of 53 for MG II. These data are listed in Table XIII. The resulting  $X^2$  was .777 for one degree of freedom. The probability (P) of that occurrence was between  $P = .50$  and  $P = .30$  and that probability exceeded the .05 level. By percentages, the annual attrition rate was 57 percent for DS I and 47 percent for MG I. For DS

TABLE X

OBSERVED AND EXPECTED FREQUENCIES OF PERSISTENCE/WITHDRAWAL  
DS I AND MG I SPRING 1979

Cell	Beginning Enrollment (N)	Number Withdrew		Number Persisted		$\chi^2$	df	Level of Sig.**
		$f_o$	$f_e$	$f_o$	$f_e$			
DS I	35	14	9.31	21	25.69	2.41	1	NS*
MG I	36	10	9.314	26	26.66			
Total	71	24	18.62	47	52.38			

\*Not Significant.

\*\*Source: Siegel (1956, p. 249).

TABLE XI

OBSERVED AND EXPECTED FREQUENCIES OF PERSISTENCE/WITHDRAWAL  
DS II AND MG II SPRING 1980

Cell	Beginning Enrollment (N)	Number Withdrew		Number Persisted		$\chi^2$	df	Level of Sig.**
		$f_o$	$f_e$	$f_o$	$f_e$			
DS II	42	14	10.07	28	31.93	1.90	1	NS*
MG II	37	12	10.07	25	26.93			
Total	79	26	20.14	53	58.86			

\*Not Significant.

\*\*Source: Siegel (1956, p. 249).

TABLE XII  
OBSERVED AND EXPECTED FREQUENCIES OF PERSISTENCE/WITHDRAWAL  
FOR DS I AND MG I

Cell	Beginning Enrollment (N)	Number Withdrew		Number Persisted		$\chi^2$	df	Level of Sig.**
		$f_o$	$f_e$	$f_o$	$f_e$			
DS I	49	28	22.05	21	26.95	1.65	1	NS*
MG I	49	23	22.05	26	26.95			
Total	98	51	44.10	47	53.90			

\*Not Significant.

\*\*Source: Siegel (1956, p. 249).

TABLE XIII  
OBSERVED AND EXPECTED FREQUENCIES OF PERSISTENCE/WITHDRAWAL  
FOR DS I AND MG I

Cell	Beginning Enrollment (N)	Number Withdrew		Number Persisted		$\chi^2$	df	Level of Sig.**
		$f_o$	$f_e$	$f_o$	$f_e$			
DS I	53	25	23.85	28	29.15	.777	1	NS*
MG I	53	28	23.85	25	29.15			
Total	106	53	47.70	53	58.30			

\*Not Significant.

\*\*Source: Siegel (1956, p. 249).

II, the rate was 47.2 percent and 53.8 percent for MG II.

Each of the annual attrition rates in this study exceeded the expected rate of 45 percent. The analysis indicates that nonpersistence of high-risk students is a complex problem and additional factors must be considered and analyzed to reach a more complete understanding of attrition at Northeastern State University.

CHAPTER V  
SUMMARY, CONCLUSIONS, AND  
RECOMMENDATIONS

Summary of the Study

The purpose of this study was to: (1) assess the effects of a selected remedial education program on high-risk students' academic performance and persistence in college and (2) identify and describe those characteristics which appear to be related to the success or failure of the program in terms of student attitudes, persistence, and academic performance.

The Developmental Studies Program was designed as a special program for academically high-risk students. According to Roueche (1977), three components are essential if a developmental program is to succeed. It must provide students with a supportive environment, focus on relevant curricula, and provide instruction designed specifically to meet their needs.

The program implemented at Northeastern State University was designed to meet these criteria. A one-semester curriculum was organized whereby approximately two-thirds of the program consisted of three-hour courses which stressed basics in reading, mathematics, oral communication, and written communication. The remaining third of the program was dedicated to academic survival information and vocational counseling. In addition to these courses, one-hour electives were



available in physical education and library media.

The instructional delivery system, always an important facet of any program, takes on added significance in a developmental educational setting. Students were placed in this setting because traditional modes had apparently failed to provide such students with basic skills, attitudes, and knowledge essential for their success in college. Thus, it was essential that instruction be designed to incorporate those elements known to enhance student learning.

A systems model was utilized in constructing the developmental program at Northeastern State University. The type of instruction was student-centered with individualized modular instruction in all three-hour classes. Diagnostic tests were utilized in English, reading, and mathematics to determine an appropriate beginning module. Students progressed at their own pace through these modules, completing a course when a specific level of proficiency was reached, regardless of the time involved.

In the fall of 1978 and the fall of 1979, high-risk students were identified as all entering freshmen whose composite American College Test (ACT) scores were 14 or below. The experimental groups were composed of those students who scored 14 or below and who volunteered for participation in the Developmental Studies Program. In the fall of 1978, 175 letters were mailed to prospective developmental students who met the criterion, and 54 chose to enter the program. In the fall of 1979, 220 letters were mailed to prospective developmental students, and 59 entered the Developmental Studies Program. Those students who elected not to participate in the Developmental Studies Program started their college careers in the general studies curriculum of the

University and constituted the population from which the control groups were formed.

The study involved the accumulation of data for students in the experimental and control groups. Using the records in the Office of Admissions and Records, transcripts of all these students were examined, and a variety of data was collected: age, sex, GPA for their first two semesters of enrollment, and persistence.

Utilizing the data collected, the following null hypotheses were tested at the .05 level.

- Ho<sub>1</sub>: There is no significant difference between the mean grade point average for students enrolled in Developmental Studies group I (DS I) and matched group I (MG I) or between DS group II (DS II) and matched group II (MG II) at the end of the first semester.
- Ho<sub>2</sub>: There is no significant difference between the mean grade point average for students enrolled in DS group I (DS I) and matched group I (MG I) or between DS group II (DS II) and matched group II (MG II) at the end of the second semester.
- Ho<sub>3</sub>: There is no significant difference between the DS I and MG I or between DS II and MG II in attrition at the end of the second semester.
- Ho<sub>4</sub>: There is no significant difference between DS I and MG I or between DS II and MG II in attrition at the end of the second semester.

The statistical treatment of the data to test the first two hypotheses was the student's t for correlated samples. Hypotheses 3 and 4 were tested utilizing Chi-square. Also, annual attrition was listed as a percentage of the total beginning fall enrollment.

#### Summary of Findings

The statistical analysis revealed sufficient evidence in the present data to allow the rejection of one of the proposed null research

hypotheses. The hypothesis of no significant difference concerning mean grade point for Developmental Studies (DS) I and Matched Groups (MG) I and DS II and MG II was rejected. Utilizing the matched pairs technique, a significant difference was obtained at the .05 level. It was found that the GPA's of the developmental students were significantly better than the GPA's of those in the control groups, and this may be attributed to their enrollment in the Developmental Studies Program.

The second research question focused on the difference in mean grade point average for each of the experimental and control groups when both groups were dealing with the traditional university curriculum. Utilizing the matched pairs technique, no significant difference was obtained at the .05 level. Second semester GPA's for students in the control groups were identical to or above those in the DS groups. The mean GPA's for DS I and MG I were 1.66 and 1.76, respectively. For the second group, the mean was 2.10 for DS II + 2.13 for MG II. The students in DS I and DS II earned significantly higher grades during their initial enrollment; however, these gains were not evident during their transition into the general studies program of the University.

The third hypothesis focused on the difference in attrition for each of the experimental and control groups. The hypothesis of no significant difference concerning attrition for the first semester for the experimental and control groups was not rejected. The expected attrition rate for DS I and MG I was 12.74. The observed attrition was 14 for DS I and 13 for MG I. The expected attrition for both DS II and MG II was 13.78. The observed attrition for was 11 for DS II and 16 for MG II. Neither of these results was significant at the .05 level.

The hypothesis of no significant difference concerning attrition

for the second semester for DS I and MG I and for DS II and MG II was not rejected. The expected attrition rate for DS I and MG I was 9.31. The observed attrition for DS I and MG I was 14 and 10, respectively. The expected rate of attrition for DS II and MG II was 10.07. The observed attrition was 14 for DS II + 12 for MG II. Neither of these was significant at the .05 level.

By percentages, the annual attrition rate was 57 percent for DS I and 47 percent for MG I. The rate was 47.2 percent for DS II and 53.8 percent for MG II. Each of the annual attrition rates in this study exceeded the expected rate of 45 percent. Regarding the variable of persistence, there was no apparent "difference added" for students who completed the Developmental Studies Program. For the variable attrition, there was no significant difference for any of the four semesters studied.

Regarding student attitudes, over 90 percent of the developmental students surveyed indicated the program was helpful and listed the following areas as being most beneficial: (a) presentation of information on study skills, (b) assistance by student counselors in small discussion groups, and (c) instructors who really cared about the welfare of their students.

Perhaps the most significant finding of the study was that the average GPA for the first semester of the experimental groups exceeded that of the control groups. All the tests of significance for Hypotheses 2 through 4 proved to be nonsignificant.

### Conclusions

According to the findings of this study, the Developmental Studies

Program at Northeastern State University achieved a moderate degree of success. Students enrolled in the Developmental Studies Program achieved a higher GPA during their initial enrollment than students in the control groups.

A different method of instruction was employed for students in the Developmental Studies Program. Instruction was geared to the individual's needs, and lectures were kept to a minimum. Diagnostic tests were given to each student in reading, English, and mathematics, and objectives which were measurable were prescribed for each participant. A variety of instructional modes was used based on the learning styles of each student. A more traditional method of lecture was used for students in the control group. Fader (1971) stressed that curricula should be shaped to the student rather than the student to the curricula. By pointing out weaknesses and strengths and developing individual objectives for each student, the curriculum was shaped to the students. The team approach of individualizing instruction and exposing students to a wide range of learning experiences, rather than a large-group single-teacher approach, seemed to contribute to successful remediation at Northeastern.

This research seems to substantiate Roueche's (1973) contention that implementation of those factors outlined in Chapter II will improve academic performance of high-risk students. Northeastern has many of those components in its Developmental Studies Program, and it appears that a significantly high academic performance was attained by students while enrolled in the program as compared with students with similar ability not enrolled in the program.

In contrast to the first semester, students in the control groups

earned second semester GPA's almost identical to or above those in the DS groups, which suggests the program did not have a long term affect on GPA. Findings by Roueche and Kirk (1972) indicated that students experienced some difficulty and a decrease in grade point average during their transition into the regular college curriculum. This characteristic was evident for each of the developmental groups in this study since a decline in the average GPA from the fall semester to the spring semester was noted for both of the developmental studies groups. A more gradual transition from the Developmental Studies Program to the regular university curriculum might diminish this situation.

Regarding the variable of persistence, there was no apparent "value added" for students having completed the Developmental Studies Program. Persistence was studied over a period of two semesters for each group. None of the four semesters studied indicated a significant difference between the experimental and control groups.

For the five programs studied by Roueche and Kirk (1973), the average persistence rate for the first three semesters was 50 to 54 percent. Donovan (1977), writing for National Project II Associates, defined retention as survival through the initial period of enrollment or the freshmen year. Several Associates stated or inferred that a rate equivalent to the national average of 50 percent should indicate success. Using this criterion, each of the control and developmental studies groups in this study may be considered successful. Regarding persistence, the present analysis indicated that nonpersistence of high-risk students is a complex problem. Factors such as low level of parental education, poor high school record, high school size, vocational goals, pre-college expectations, and personality traits must be studied to

reach a better understanding of attrition at Northeastern State University.

It has been stated by some (Roueche, 1968; Gold, 1965, and Bergand and Axtell, 1968) that the ineffectiveness of remedial programs may be due in part to uncertainty about what the basic goals of the program are and to the inclusion of features in the program which are ineffective with respect to student achievement. The skills courses taught by the developmental faculty at Northeastern have the primary goal of "better" preparing the underprepared student to cope and compete in the regular or conventional university classroom. It appears that some of the faculty in the Development Studies Program at Northeastern have an understanding of these goals and have achieved a moderate degree of success toward their attainment.

The implications are that there appears to be a strong relationship between enrollment in the developmental courses and temporary improved academic performance at Northeastern. An inference which can be drawn is that when high-risk students are treated with respect, work at their own pace, and develop confidence, performance is improved.

In summary, DS students achieved a high GPA during their initial enrollment, and this might have been attributed to their enrollment in the Developmental Studies Program. However, the fact that students in the control groups had second semester GPA's identical or above those in the DS groups suggested that the program did not have a long term affect on GPA. Regarding program evaluation, only one of the four null hypotheses was rejected, which led to a general conclusion that the Developmental Studies approach was no more effective or ineffective than the traditional approach.

## Recommendations

A number of questions should be answered before a developmental program is designed. What needs would a new program meet that are not already being met? Programs based on the results of a thorough evaluation of needs are more likely to generate the level of administrative and faculty commitment necessary for their survival and growth. Without a clear assessment, support is often soft, especially in time of diminishing funds for higher education. Proper analysis of information gathered can provide decision makers with important guidance for the planning, design, and evaluation of an effective developmental program.

The most appropriate teaching system for the high-risk student--students who enter a college program with an array of deficiencies--is a learning and control-oriented instructional system. The keys to its success are several. They include systematic levels of entry into carefully ordered instructional sequences. These sequences range from very simple ones to those which meet the performance standards or entry-level requirements of a given vocation or four-year institution. Another essential is a detailed analysis of the relationship between students' learning or work needs and the objectives of the instructional program.

Whether or not any program is effective can be ascertained only if there is institutional research on an on-going basis. Not all of the needs of high-risk students are being met by the existing Developmental Program. This is not particularly surprising since the program planning for DS has been predominately faculty-centered with little student input and with little institutional research to support it. Additional collection of data, by institutional research, about high-risk students at Northeastern is needed. With the large number of high-risk students



enrolling at Northeastern each semester, surely there is sufficient cause for further investigation and analysis of the program.

Topics touched upon in this study suggest questions that should be raised in planning future instructional assistance for high-risk students. Do all high-risk students need the same kind of assistance? Research to date does not identify an effective means for evaluating all the needs of high-risk students. The results of this study tend to support the following recommendations for future research:

1. In the review of literature, many of the institutions utilized SAT and ACT scores for program placement; however, no one has demonstrated that these scores are good predictors of academic performance for high-risk students. Further research is needed which will include additional variables such as: (1) pre-college expectations, (2) vocational or career goals, (3) reasons for attending college, (4) high-school size and type, and (5) peer or parental influence. A more complete profile for high-risk students is needed for program placement.
2. Additional research is needed for programs which are organized as a separate administrative unit. A key factor in the success or failure of this unit is the program administrator. This individual is obviously vital to the success of the program because he/she gives day-to-day supervision to the program's faculty and staff. The better program typically gives complete authority and responsibility to the program administrator and holds them accountable for the results.
3. The present study suggests the need for further investigation concerning adequate staff development for individuals employed

in developmental education. In the review of literature, the more successful programs were staffed with developmental specialists.

4. For future studies, a research design should be employed which will include a more precise measure of control for individual difference than the technique of "pairing". Precise pairing is often difficult to obtain and individual differences may exist due to ineffective pairing. Future researchers might consider the analysis of covariance as a more appropriate statistical technique.
5. Longitudinal studies should be conducted for programs which are designed as follows: (1) a separate administrative unit, (2) employs a qualified director, (3) staffed by qualified developmental specialists, and (4) conducted over a five-year interval.
6. Future program design should be more student oriented. It is important to design the curriculum around the interest of students if future programs are to overcome the negative feelings and attitudes that most high-risk students bring with them to the University. Future developmental curricula should be determined by current student or societal needs rather than by tradition.

#### Discussion

Should Northeastern State University attempt to provide some special assistance for high-risk students? Based on the results of this study, special assistance does not appear to be justified. Students in

the Developmental Studies Program achieved a higher GPA during their initial enrollment; however, these gains were not evident during the second semester. There was no difference in attrition for students who completed the Developmental Studies Program. A more gradual transition from the Developmental Studies Program to the regular University curriculum might diminish this situation. It is possible that the developmental student has not (in one semester) developed enough confidence or the necessary mechanical skills, to succeed in the traditional University curriculum.

The existing Developmental Program has been a high-cost program. The classes were small with faculty loads set on the basis of contact rather than credit hours; however, income from tuition and state funds were based on credit hours. If Northeastern decides to continue offering some type of special assistance to high-risk students, cost will certainly be a factor in that decision.

The fact remains; however, that Northeastern is enrolling students with lower admission test scores than it has in the past. In the fall of 1980, 54 percent of beginning freshmen had ACT composite scores between 1 and 15. The research to date indicates that these beginning students need more help in learning the basic skills of mathematics and of verbal and written communication than students whose composite scores are above 15. The questions to be answered are these:

1. Does the University want to decrease the attrition rate of these students?
2. Will a revision of the present Developmental Studies Program decrease the existing attrition rate? Is the projected decrease that can be expected worth the cost in terms of the

resources that are required?

There are certain alternatives to these questions:

1. The existing program may be continued with the same limited commitment of resources, resulting in the continuation of the same expected attrition rates of these students.
2. Admission may be denied those students with minimal academic capabilities, which will reduce the attrition rate but deny academic opportunities to this group of students.
3. A more effective program may be developed.

The review of literature for this study suggested that programs are needed to serve both the regular college student and the high-risk enrollee. Cross (1973) believes the problem for the future is not so much in producing new technology and new products as in creating better distribution systems, broader-based knowledge, and greater concern for individual development. "The way to raise the standard of living for everyone is no longer to train leaders but rather to educate the masses to their full humanity" (p. 31).

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APPENDIXES

APPENDIX A

EVALUATION FORM AND REPRESENTATIVE  
COMMENTS FROM DEVELOPMENTAL  
STUDENTS

EVALUATION OF HUMAN DEVELOPMENT PROGRAM AT  
NORTHEASTERN STATE UNIVERSITY

During your first semester at Northeastern State University (NSU), you were enrolled in courses that were a part of the Human Development Program.

Since the Human Development Program was designed to assist beginning students, we are attempting to evaluate this program in order to provide better services for future students.

We would appreciate your assistance in filling out the following questionnaire.

I. If you are not presently enrolled at NSU:

Was the Human Development Program helpful to you during your first semester? Why or why not?

What was (were) the reason(s) for your not returning to NSU?

Do you plan to return to NSU or to another institution?

II. If you are presently enrolled at NSU:

Was the Human Development Program helpful to you during your first semester? Why or why not?

Would you recommend this program to other beginning freshmen?

III. Are there any changes that you feel should be made to improve this program?

Your help and assistance with this evaluation is very much appreciated.

THANK YOU

REPRESENTATIVE COMMENTS FROM DEVELOPMENTAL  
STUDENTS ON THE EVALUATION FORM

I. If you are not presently enrolled at NSU:

Was the human Development Program helpful to you during your first semester? Why or why not?

"The tutors go to classes, take notes in the class and if your notes aren't too good they show you how and why your notes aren't too good."

"I did not have enough money to continue school at this time. I plan to work until I can save enough money to return full-time."

II. If you are presently enrolled at NSU:

Was the Human Development Program helpful to you during your first semester? Why or why not?

"Orientation class has been beneficial to me so far. The divided classes are better I think than big classes because in smaller classes most people feel more relaxed. Also the study skills were helpful for most of my classes."

"The subjects presented were very informative and I think the small groups really helped to break the ice. The counselors did a good job getting the point across and tried for a lot of class participation."

"I think the group discussions were good. With a smaller amount of people in the class, it was more personalized and the information was clearer. The hints on note-taking, lecture listening, and exam taking were interesting and gave me quite a few helpful hints. Having a fellow student teaching the course also helped--he knew, first hand. I approve of this method--I think it works well. Do continue with your future classes."

"You don't have to go for help; it comes to you."

III. Are there any changes that you feel should be made to improve this program?

"Change the name. It sound like 1C for dummies in the first grade."

"Improve the math class. Too many students dropped the class."

"Extend the reading program. Make it at least two semesters long."

"Change the name. It sounds too much like a high school program."

APPENDIX B

LETTER OF INVITATION



NORTHEASTERN STATE UNIVERSITY  
Tahlequah, Oklahoma

UNIVERSITY RELATIONS  
Administration Building, Room 205

Dear

We have been notified that you have expressed interest in attending Northeastern State University this fall; due to this, we have already sent you a letter about the enrollment services we provide through the Summer Pre-enrollment Clinics.

Along with regular enrollment help, we have developed a program to offer additional assistance to students who may feel uncertain about the first semester in college. Any number of things--erratic high school record, unimpressive standardized test scores, lengthy time since completion of high school, general lack of self-confidence--may cause you to feel some anxiety about your ability to succeed in college. You may have questions concerning what classes to take, what kind of studying will be required in college classes, and what are my chances of succeeding in a college program.

The freshmen advisors in our office recognize that the first steps toward completing a college program or degree are not easy and have developed a program with a first semester schedule that will ease one's transition into college courses. In past planning and advisement with freshmen, we have found that there are some basic courses that are very helpful to an uncertain student and which may alleviate some of the anxiety of college.

The accompanying sheet will give you the schedule of classes and a description of the course contents. If you feel this program can help you, you will need only to indicate this to the advisor who helps you with your class scheduling. If you are planning to attend a Pre-enrollment Clinic, we will provide special instructions for you.

If you would like more information about the program, please contact the Office of University Relations.

Sincerely,

Alven C. Nunley

VITA <sup>2</sup>

Alven Corneleus Nunley

Candidate for the Degree of

Doctor of Education

**Thesis:** AN EVALUATION OF THE DEVELOPMENTAL STUDIES PROGRAM DESIGNED TO INCREASE PERSISTENCE AND ACADEMIC PERFORMANCE OF HIGH-RISK STUDENTS AT NORTHEASTERN STATE UNIVERSITY

**Major Field:** Higher Education

**Biographical:**

**Personal Data:** Born in Muskogee, Oklahoma, February 20, 1936, the son of Mr. and Mrs. Alven C. Nunley, Sr.

**Education:** Graduated from Muskogee Central High School, Muskogee, Oklahoma, in 1954; received the Associate of Science degree in mathematics from Muskogee Junior College, Muskogee, Oklahoma, 1959; received the Bachelor of Science in Education degree from Northeastern Oklahoma State College, Tahlequah, Oklahoma, with a major in mathematics, in 1961; received the Master of Natural Science degree from the University of Oklahoma, Norman, Oklahoma, with a major in mathematics, in 1965; attended the University of Tulsa, Tulsa, Oklahoma, summer, 1969 and 1970; completed requirements for the Doctor of Education degree at Oklahoma State University, Stillwater, Oklahoma, in December, 1981.

**Professional Experience:** Teacher of mathematics at Alice Robertson Junior High School, Muskogee, Oklahoma, 1961-1963; Mathematics teacher at Muskogee Central High School, Muskogee, Oklahoma, 1963-1964; Instructor of Mathematics at Oklahoma Military Academy, Claremore, Oklahoma, 1965-1968; Instructor of Mathematics at Northeastern State University, Tahlequah, Oklahoma, 1968-1974; Director of New Student Advisement, Northeastern State University, Tahlequah, Oklahoma, 1974-1977; Graduate Assistant in the Office of Affirmative Action, Oklahoma State University, Stillwater, Oklahoma, 1977-1978; Assistant Professor of Mathematics at Northeastern State University, Tahlequah, Oklahoma, from 1978 until present.