Winter 1986

A Study of the Effectiveness of Developmental Reading and Writing Courses at Old Dominion University

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A STUDY OF THE EFFECTIVENESS OF DEVELOPMENTAL READING AND WRITING COURSES AT OLD DOMINION UNIVERSITY

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A Dissertation Submitted to the Faculty of
Old Dominion University in Partial Fulfillment of the
Requirements for the Degree of

DOCTOR OF PHILOSOPHY

URBAN SERVICES

OLD DOMINION UNIVERSITY
December, 1986

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ABSTRACT

A STUDY OF THE EFFECTIVENESS OF DEVELOPMENTAL READING AND WRITING COURSES AT OLD DOMINION UNIVERSITY

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The purpose of this study was to examine the effectiveness of the reading and writing developmental programs at Old Dominion University. The study sought to (1) identify the number and demographic characteristics of students served by the remedial programs, (2) determine academic achievement and persistence of these students, (3) assess the performance of developmental reading and writing students in regular college English and regular college history classes, (4) identify components and characteristics used in the developmental programs which are associated with the success rate of developmental students and (5) assess the effectiveness of developmental education programs based on the evaluation of the number of students completing degree programs. The academic years under consideration are 1980 through 1985.

The study employed two approaches: (1) a descriptive analysis of the variables of age, sex and race, (2) a statistical analysis utilizing the Chi Square,

analysis of variance and the two sample t-test to determine relationships between (a) developmental courses and demographic variables, (b) grades received in developmental courses and persistence, (c) success in regular college English and history classes and successful completion of developmental writing and reading classes, (d) graduation rates for developmental and nondevelopmental reading and writing programs and the Special Services Program.

The descriptive analysis revealed that (1) 29 percent of the entering freshman class were deficient in reading and writing skills, (2) 62 percent of the observed group were 18 years of age, (3) 54 percent of the observed group were female and 46 percent were male, (4) 75 percent of the skills deficient students were white and 25 percent were nonwhite.

Analysis of variance of the demographic variables of age, sex and race revealed that the only significant demographic variable was race. A Sheffe's Test for comparison revealed that the nonwhite group had a higher mean level of success.

The Chi Square Test produced the following results (1) There is a difference between success in developmental reading and the number of semesters enrolled. (2) Success in developmental writing and the number of semesters enrolled approached significance. (3) No significant association between success in regular English classes and successful completion of developmental writing courses was

found. (4) A significant association was shown between success in regular history classes and successful completion of developmental reading classes. (5) The developmental students graduated at a significantly higher rate than the nondevelopmental students. The t-test revealed no significant difference emerged between success in developmental reading and writing programs and participation in the Special Services Program.

DEDICATION

This body of work is dedicated to my Savior, the Lord Jesus Christ, to whom all the praise, glory, and honor is given for His inspiring me to achieve to the maximum of my potential.

I can do all things through Christ which strengtheneth me. Philippians 4:13.

ACKNOWLEDGEMENTS

To accomplish this body of work required gifts of instruction and encouragement from many individuals, only a few of whom space will permit me the privilege of an expression of gratitude.

I shall forever be grateful to Dr. Franklin Ross Jones, eminent Professor of Educational Foundations and Special Programs at Old Dominion University and Chairman of my advisory committee, for his advice and guidance in this study. His dedication to the causes of education as well as the educational process has made him a wonderful mentor and example of the vitality and energy that people of any age can generate when they have a clear purpose in life. He is forever loyal to his causes and his friends. I am grateful to the other members of my committee, Dr. Ray Morgan and Dr. Robert MacDonald for their participation in this study.

Deep appreciation is extended to William Luther Peek and Laxman Hedge for their advice and help in organizing this study. Appreciation is extended to Dr. Clare Silva for her words of kindness and encouragement during critical moments in the writing of this study.

I should like to acknowledge the contributions of Wren Costigan and Debbie LaMori who typed this paper and

whose competence, professional skills, and supportive attitude eased considerably the demands of perparing this paper. In addition, appreciation is expressed to Betty Forbes, Janet Keim, Gwen Murphy, Sherry Abrami, Sally Dillon, Jim Sidebottom and Sandy Bennett for their prayers, encouragement and support to the completion of this work.

I should like to express a warm appreciation to John Muskovac for his faith in my ability and his financial backing without which this paper would not have been possible. Finally, this expression would not be complete without acknowledging the patience, support and understanding of my daughter, Stephanie, from the genesis to the completion of this work.

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CHAPTER I

INTRODUCTION

It is not known with certainty whether developmental education programs are effective. Results of prior studies have produced mixed findings. Consequently, these programs operate without the complete confidence of those responsible for their support. It is the intent of this study to determine the effectiveness of the reading and writing developmental programs at Old Dominion University.

The concept of developmental education and its importance in educational institutions has received much attention in recent years. In the past decade, organized classes in developmental education of all academic areas have become an accepted entity in the framework of American education. Few, if any, would quarrel with the concept that the general obligation of a state-supported institution is to deal as effectively as possible with the diverse groups of students entering college. The implementation of the "open-admissions" concept has made it possible for many to attend college who may not otherwise have even thought about going.[1] These nontraditional students are described using synonyms such as: remedial, disadvantaged, developmental,

basic, underprepared, low achieving, academically deficient and new.[2]

In his article, "Academic Remediation in Higher Education: Problems and Prospect," William Moore outlined the problem associated with academically deficient students,

> Equal educational opportunity acts were defined to simply mean that all persons, regardless of race, sex, and age should have an equal chance for an education. They went further and prescribed that those who were academically deficient, poor and who had previously been excluded from American colleges and universities should be provided with programs, resources, and access to higher education to compensate for this previous condition.[3]

As a result, developmental education has become an important part of higher education on the college and university level. The rapid growth in enrollment has created a highly diverse student body. Minority, ethnic and racial groups, the poor, the handicapped and women are now making up a larger segment of the college population.[4]

As pointed out by Cross, the majority of basic skills students are the white sons and daughters of blue-collar workers, although ethnic minorities continue to be overrepresented. Cross further states that most basic skills students have not been especially happy or successful in school. Typically, they have been identifiable as early as the fourth or fifth grade, and the gap between high achievers and low achievers widens as students progress through the American school system. Young people who graduate from high school in the lowest third of the

class look on education differently from those who have more success in school. Cross suggests that these students derive little personal satisfaction from their studies, and they are twice as likely as top-third students to say that they feel tense, nervous, or shy in class. They rate themselves "below average" on almost any characteristic related to school work, and many perceive themselves to be "below average" people.[5]

As a result of the changing fertility patterns of Americans, there have been significant shifts in the age structure of the total population, and each of these shifts has impacted very heavily on educational institutions. Following a long period of increasing college enrollment (1950-1980), the data show that by 1970 a decline in the population under age ten had begun, predicting a drop in the number of college-age youth by the end of the seventies. By 1980, the percentage of Americans under 19 years of age had declined to the 1950 level. These enrollment trends impact directly on colleges and universities, particularly public institutions where resource allocations are driven by enrollment.[6]

As a result of the decline in student enrollment, colleges and universities are pursuing more aggressive marketing programs. One marketing strategy has been the recruitment of students requiring remedial education prior to their attempting regular college-level work. This is reflected in a national survey of all colleges and univer-

sities in the United States. Eighty-five percent of the responding institutions perceived poor academic preparation of incoming freshmen to be very much of a problem.[7]

A 1981 survey conducted by The Chronicle of Higher Education found that the number of remedial courses offered in colleges increased 22 percent from the fall of 1979 to the fall of 1980. However, the total number of courses offered grew only 15 percent during the same period.[8]

Statement of the Problem

The problem is the inability to demonstrate the success of the developmental programs in cost-effectiveness terms. The growth of the remedial sector within higher education has prompted recent doubts about the competencies demonstrated by students at all levels of education and the difficulty of achieving both equity and excellence in higher education. The Governor of Virginia has encouraged the state's public colleges to raise admission requirements so that the elementary and secondary schools, rather than the colleges, will gradually assume responsibility for the problem. Virginia's colleges spent an estimated $13 million on remedial education in 1980-81.[9] In 1981-82, Virginia's state-supported colleges and universities' expenditures exceeded $16 million.[10]

Old Dominion University has responded to the dilemma of underprepared students by creating a developmental program called the Academic Opportunity Program, established

in 1974.[11] The Academic Opportunity Program was initiated to allow flexibility in admitting minority and other students whose standardized test scores did not meet the University's general level of expectation, but who otherwise demonstrated promise of success. The developmental courses and the Academic Opportunity Program are designed essentially to prepare low-achieving and underprepared students to enter regular college curricular programs. Students are admitted to college, and after being screened according to placement criteria, are required to enroll in a combination of noncredit courses in English, reading and mathematics before they are admitted to a regular program of study.

The major assumption reflected in developmental course programming is that the causes of low academic achievement before college enrollment can be remediated.[12] Research concerning the effectiveness of developmental education in preparing these students for college success range from "no meaningful difference produced," to "very successful in preparing high-risk students for successful performance in their college-level courses."[13] The New Jersey Basic Skills Assessment Program, 1979, along with The Task Force on Remedial Education in Virginia, criticizes unclear goals and objectives and vague organizational structure as contributing to the failure of many remedial programs.[14]

Many programs are fragmented and classified as special or supportive. They often operate in a climate of hostility or indifference from the academic departments. College administrators generally do not consider remedial instruction an effective way to use faculty resources. Faculty members are rarely experienced, skilled, or interested in teaching remedial students.[15]

Enrolling high percentages of skills-deficient students presents major problems for many colleges. Adjustment of instructional capacity may mean hiring new instructors and developing new curricula. Such adjustments must be made at the same time that the financial resources of colleges are shrinking. But even colleges that allocate considerable financial resources for remediation may have ineffective remedial programs. Remediation is an uncertain undertaking in any educational setting.[16] In order to understand the various pertinent terms, the following operational definitions have been assigned.

Academic Opportunity Program. An educational program designed to prepare low-achieving and underprepared students to enter regular college curricular programs.

Age. The chronological age expressed in years at the time the study was made.

Basic Skills. Those skills a student needs to embark on a college education. Among them are skills in reading, mathematics and English composition; and students

arrive at college without them are usually considered in need of compensatory education.[17]

Developmental Studies Student. A student enrolled during the fall semester, 1980, who attempts at least one writing or reading course defined by Old Dominion University as developmental; elsewhere used interchangeably with remedial student, new student, high-risk student, basic skills student, marginal student.

Grades and Quality Point Average (GPA and QPA respectively). QPA is the average obtained by dividing total grade points by the number of credits attempted and is compared by using these values: A, 4 quality points/course hour; B, 3 quality points/course hour; C, 2 quality points/course hour; D, 1 quality point/course hour; F, 0 quality points/course hour.

Nondevelopmental Studies Student. Any student enrolled for credit during the fall semester, 1980, excluding those in remediation.

Persistence. The number of semesters completed during ten semesters encompassed by the study (fall, 1980-spring, 1985).

Race. Indicates a student that is white or nonwhite.

Remedial Student. Indicates those students enrolled in noncredit developmental courses.

Developmental Course. A course designed to remedy academic deficiencies.

Sex. Indicates a student that is male or female.

Special Services Program. An academic support program to retain and graduate low-income, first generation college students and physically disabled students.

Success. Achievement in developmental reading or writing courses that resulted in a satisfactory grade followed by achievement in a regular English course or history course that resulted in a letter grade of "A," "B," or "C."

Purpose

The purpose of this study is to evaluate the effectiveness of the reading and writing developmental programs at Old Dominion University. For such an assessment, the planned study seeks to (1) identify the number and demographic characteristics of students served by the remedial programs, (2) determine academic achievement and persistence of these students, (3) assess the performance of developmental reading and writing students in regular college English and regular college history classes, (4) identify characteristics used in the developmental programs which are associated with the success rate of developmental students, (5) assess the effectiveness of the Remedial Education Program based on the evaluation of the number of students completing a degree program, (6) render statistical analyses of the degree of validity of results as assessed from the program's salient characteristics. The academic years under consideration are 1980 through 1985.

Research Procedures

The objective of this study is to evaluate the effectiveness of the reading and writing developmental programs. The evaluation will be accomplished by use of statistical instruments utilizing data which yield information on relationships among characteristics in the study and their ultimate significance.

Source of Data

Descriptive data is the foundation to be utilized for research application. The data come from the University Office of the Registrar and Student Records. The data were transferred from raw data to a study data file.

Collection of Data

The following sources comprise the data upon which the study is based:

1. Number of students enrolled in the fall semester of 1980 at Old Dominion University scheduled in developmental reading and writing courses.

2. The characteristics of students in one or both developmental program courses in comparison to other students on the variables of age, sex and race.

3. Age, sex and race variables of students enrolled in developmental studies courses associated with success as defined by grades received.

4. The grades of students in developmental courses and persistence at the University.

5. The level of success in developmental reading and writing courses and subsequent performance in English 101 and college-level history.

6. The baccalaureate degree graduation rate among developmental and nondevelopmental students.

7. QPA data of participants in the Special Services Program.

Presentation of Data

The results of the data and its treatment will be presented in Chapter IV by tabular, chart and graph renderings.

Statistical Procedures

The analysis of data will utilize the three-way factorial analysis, the Scheffe's test for comparison, the Chi Square and the t Test. These instruments are best designed to (1) analyze variance between groups and variance within groups for demographic variables, (2) test whether or not a systematic relationship exists between two variables, and (3) test for differences in the mean levels of grades.

The following are hypotheses, stated in null form:

Hypothesis 1. There is no statistically significant difference between success as defined by grades received in developmental courses and the demographic variables age, sex and race.

Hypothesis 2 a. There is no statistically significant association between success as defined by grades

received in developmental reading courses and persistence in number of semesters at Old Dominion University.

Hypothesis 2 b. There is no statistically significant association between success as defined by grades received in developmental writing courses and persistence in number of semesters at Old Dominion University.

Hypothesis 3 a. There is no statistically significant association between success in regular English classes as evidenced by grade awarded and successful completion of writing courses.

Hypothesis 3 b. There is no statistically significant association between success in regular history classes as evidenced by grade awarded and successful completion of reading classes.

Hypothesis 4. There is no statistically significant association between baccalaureate degree graduation rates for developmental and nondevelopmental students.

Hypothesis 5. There is no statistically significant association between success in the developmental reading and writing programs and participation in the Special Services Program.

Justification for the Study

Continuation or growth of remedial education programs is threatened by diminishing support due to lack of institutional information on the success of remedial education. In order for these programs to survive, it is mandatory that those factors which contribute to their effective-

ness be identified. Such information is needed to evaluate the quality of services being offered and to decide whether the investment in remedial education is yielding an acceptable return.[18] Without meaningful evaluation, it will not be possible to convince policy and decision makers to provide adequate financial support.

Many programs for underprepared students are not evaluated, and for those that are, the evaluations often produce little evidence to identify the effectiveness of the programs. Unevaluated remedial programs support critics who proclaim that much of the money going into programs for underprepared students is wasted. This criticism is reinforced by the fact that lack of evaluation makes it impossible to prove whether these programs have succeeded.[19]

The Council of Higher Education appointed The Task Force on Remedial Education in Virginia, 1983, to assess remedial education programs in Virginia state-supported colleges and universities. Questions concerning how to reduce remediation and how to limit the extent of the state's responsibility to help students overcome deficiencies needed to be addressed. Based on its review, The Task Force found that:

1. Remedial students are likely to have poor high school grades in basic skill subjects, little or no advanced work in high school, poor achievement as measured by high school rank, less likelihood of having received a

high school diploma, poor reading skills, poor scores on college entrance or placement examinations; a history of educational disadvantages, relatively poor socioeconomic backgrounds; or less sustained involvement in higher education.

2. Testing and placement procedures at most Virginia public colleges and universities need revision. In many cases, large numbers of students enrolling in college courses are not tested. A majority of institutions do not require remediation for all students identified as lacking in basic skills.

3. Institutions vary in their definition of the minimum competencies required for entry into college-level courses. At times, remedial work is conducted in college credit courses, confusing the boundary between remedial and college work. Lowering standards to accommodate ill-prepared students erodes the college curriculum.

4. Each institution determines whether admitting students who lack needed skills is consistent with its mission.

5. Virginia's public colleges and universities together should define more clearly what constitutes the minimum competencies necessary to preserve excellence in higher education.

6. Institutions should administer mandatory placement examinations in English grammar and composition, reading, and mathematics to all students not presenting

evidence other than high school graduation of having attained the fundamental competencies.

7. Students who need remedial work should be required to take remediation and demonstrate success through proficiency examinations which certify readiness for college-level courses.

8. Remedial students' enrollment in college courses should be restricted, with no college credit awarded for remediation.

9. Limits should be placed on the time and opportunities for remediation.

10. A common basic skills floor should be identified below which colleges will not remediate.[20]

These findings reflect The Task Force's concerns regarding state institutions which have undertaken more remediation without comprehensive evaluation and emphasizes the importance of student achievement following access to college. The Task Force believes that evaluation of remedial education has been less than adequate.[21]

Fadale, Wonter and Gene headed a Task Force Report on the Assessment of Developmental Programs in New York from a statewide perspective. The Task Force discovered from the data that program criteria were often identifiable, but the degree of success was more difficult to quantify. A majority of respondents, however, indicated that a success standard does exist for the college (80.6 percent), and specifically for basic skills, developmental or remedial programs (67.7 percent).[22]

The notion that institutions should, in fact, establish success standards on a college-wide basis which would then serve as a framework from which to evaluate specific programs was supported by over half of the respondents. Over 60 percent of the institutions responding believed that some general standards or guidelines for assessing the effectiveness of developmental programs at different colleges could be compiled even with variability of student needs.[23] The necessity of evaluating remedial programs is apparent. The underprepared students and the funding sources are both shortchanged unless there is evidence of significant benefits at a reasonable cost. With evaluation, effective programs for underprepared students can be identified and recognized; ineffective programs can be terminated or replaced.

The above demonstrates the need for developmental program evaluation. Although many community and junior colleges invested considerable time, money and energy in their basic skills and developmental programs, some postsecondary institutions have not posttested students systematically to assess whether they made any discernible academic gains. Without some form of follow-up evaluation, community and junior colleges have no way of assessing the effectiveness of the intervention programs. To be accountable to both students and funding sources, college administrators and faculties should evaluate basic skills and developmental studies programs to identify the most cost-effective and efficient testing techniques, diagnostic

procedures, teaching methods, and organizational configurations.[24]

The assessment of the developmental studies programs in reading and writing at Old Dominion University will aid in creating a program for evaluation. A statistical validation of the developmental studies programs which will clearly identify student achievement and effective characteristics of such programs is being sought. This ongoing review, along with future research, serves to guarantee improved programs of developmental studies.

Limitations of the Study

This investigation is a program evaluation study that is ex post facto in nature. Kerlinger defines ex post facto research as systematic, empirical inquiry in which the scientist does not have direct control of the independent variables because the manifestations have already occurred or because they are inherently not manipulatable.[25] Inferences about relations among variables are made, without direct intervention, from concomitant variation of independent and dependent variables.

The term ex post facto implies some type of subsequent action. The researcher studies the variables in retrospect, in search of possible relationships or effects. Conscientious researchers prefer to speak of functional rather than causal relationships. Ary and others define a functional relationship as one in which it has been demonstrated that a change in one variable is accompanied by a

change in another, but the relationship is probably based on a complex system of interactions rather than being directly causal. Ex post facto research is generally conducted in an actual setting, with multiple variables interacting simultaneously. However, these studies can be carefully designed to enhance not only completion of the research, but to enhance the interpretation of the results.[26]

Because this is an ex post facto study, subjects and treatments were not assigned randomly, and variables were not manipulated; cause and effect relationships cannot be determined and may not be inferred. Also, the information available is limited to the amount and types available in student records. Another limitation is that the application of generalizations derived must be limited to populations of students similar to the populations of this study and to those variables upon which this study is based.

Summary of the Introduction

Developmental programs in higher education have experienced increasing growth since the early 1970's. This increased enrollment of academically deficient students began with the advent of the open admissions philosophy in the United States. Open admissions became rooted in national policy which stressed equal access for all. The literature documents the concern of colleges and universities over the demonstrated lack of success of developmental

students. This concern notwithstanding, colleges and universities now find it necessary to recruit developmental students to compensate for decreasing enrollments.

Due to the proliferation of costly developmental programs, public officials have become increasingly aware of the need for evaluation and policy direction of these programs. In addition, public officials are demanding that administrators of these programs produce effective, efficient results. Increasing concerns over budget reductions make it imperative that every dollar spent for developmental education yields the expected returns. Everyone responsible for developing and implementing developmental programs must be held accountable for delivering on their promise of success to their students.

One of the reasons that continuation or growth of developmental education programs is threatened by diminishing support is the lack of institutional information on the success of developmental education. For these programs to survive, it is mandatory that those factors which contribute to their effectiveness be known. Furthermore, institutional evaluation procedures are required if planning and management data are to be used successfully by the system and the state. Within such a framework lies the justification for the evaluation of the developmental reading and writing programs at Old Dominion University.

The purpose of this study is to evaluate the effectiveness of the reading and writing developmental programs

at Old Dominion University. This study seeks to (1) identify the number and demographic characteristics of students served by the developmental programs, (2) determine academic achievement and persistence of these students, (3) assess the performance of developmental reading and writing students in regular college English and regular college history classes, (4) identify characteristics used in the developmental program which are associated with the success rate of developmental students, and (5) assess the effectiveness of developmental education programs based on the evaluation of the number of students completing degree programs.

Chapter two will present a review of the literature of developmental education in five areas: (1) Policy Context (2) Characteristics of the College Students (3) Program Features Enhancing Success (4) Evaluation of Developmental Education. Following individual summaries there will be a general summary.

FOOTNOTES

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[5]S. Patricia Cross, "Impact of Changing Student Population on Community Colleges," Community College Review 10 (Spring, 1983):31.

[6]Herman J. Blake, Demographic Change and Curriculum: "New Students" in Higher Education (Arlington, Va. ERIC Document Reproduction Service, Ed 239 706, 1984), p. 5.

[7]Marie Jean Lederman and Others, Assessment and Improvement of the Academic Skills of Entering Freshmen: A National Survey (Arlington, Va., ERIC Document Reproduction Service, Ed 238 973, 1983), p. 2.

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[9]Michael M. Myers, Remedial Education in College: The Problem of Underprepared Students (Arlington, Va.: ERIC Document Reproduction Service, Ed 230118, 1983), p. 1.

[10]The Task Force on Remedial Education, An Assessment of Remedial Education Programs in Virginia (1983), p. 42.

[11]The Task Force on Remedial Education, An Assessment of Remedial Education Programs in Virginia, pp. 171-73.

[12]Dorothy H. Whittle, Success in Freshman English Preceded by Developmental English: Predicting Success Through Persistence and Selected Demographic Variables (Ann Arbor Michigan: University Microfilms, 8022945, 1980), pp. 6, 23.

[13]Patricia S. Biddar, Developmental English and Achievement in Subsequent English Course (Arlington, Va., ERIC Document Reproduction Service (1984), p. 1; Martha Thompson, "Developmental Education at Vincennes University," Community and Junior College Journal 5 (May 1979): 45.

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[15]Bushnell, Organizing for Change: New Priorities for Community Colleges, p. 120.

[16]Myers, Remedial Education in College: The Problem of Underprepared Students, p. 2.

[17]Wesley Brown, "College Learning Assistance: A Developmental Concept," Journal of College Student Personnel 23 (September 1982):395.

[18]Myers, Remedial Education in College: The Problem of Underprepared Students, p. 4.

[19]Ibid., p. 4.

[20]The Task Force on Remedial Education, An Assessment of Remedial Education Programs in Virginia, pp. 29-36.

[21]Ibid., p. 66.

[22]LaVerna M. Fadale and Gene M. Wanter, Assessment of Developmental Programs for Postsecondary Occupational Education Students (ERIC Document Reproduction Service, Ed 255275, 1984), p. 2.

[23]Ibid., p. 3.

[24]Gayla Kraetsch-Hartsought, "Managing and Evaluating Basic Skills Programs," Community College Review 10 (Winter 1983-1984):38-39.

[25]Fred N. Kerlinger, Foundations of Behavioral Research, 2nd ed. (New York: Holt, Rinehart and Winston, 1973), p. 379.

[26]Donald Ary, Lucy Jacobs, and Asghan Razavich, Introduction to Research in Education (New York, New York: Rhinehart and Winton, Inc., 1972), pp. 264-65.

CHAPTER II

REVIEW OF THE LITERATURE

This study relates to the effectiveness of developmental courses in reading and writing designed to assist in the remediation of inadequate student learning skills. The literature pertinent to this thesis is organized under five categories. The categories of literature review are as follows: (1) to place the college and university program of developmental education in its policy context, (2) to examine the characteristics of the college students in developmental education, (3) to isolate the program features, (4) to delineate the effectiveness of the kinds of developmental programs, and (5) to summarize the relevant research which specifically focuses upon the variables being considered.

First, in order to more adequately place the college and university program of developmental education in its policy context, it is necessary to look at the concept of universal opportunity in a broader setting. The policy context is drawn from the following sources: Berube, Kerr, the Carnegie Commissions, Gardner, the National Commission on Excellence in Education, Myers, Lederman, and Cross.

Second, the major characteristics of the college students in developmental education such as poor reading skills, poor scores on college entrance or placement examinations, poor study habits and minority and/or sex discrimination are examined by the study. The following works provided a background for understanding the features of this group; the Task Force on Remedial Education in Virginia, Barton and Cross.

Third, to isolate the program features that enhance the effectiveness of developmental programs, a review of the following works identified the salient characteristics of successful programs: Roueche, Greenbaum, Christ, Roueche and Snow, Friedlander, Jorgensen, Gruenberg, Gordon and Glippo. Some of the program features were identified as learning centers, strong leadership, effective assessment and highly trained teachers. The key to program success has been linked to teacher attitude, quality and behavior.

Fourth, the effectiveness of certain kinds of developmental programs, developed within the last fifteen years, was delineated. This section investigates the first presence of underprepared students in American colleges. It further reviews studies which document ineffective developmental education programs as well as others that make valuable contribution. Works reviewed in this area are Brier, Losak, Hamil, Craig, Biddar, Thompson, New Jersey Basic Skills Assessment Program, Lesnick, Smith and Sally.

The principal feature included in this section is the Model Program from New Jersey.

Fifth, to summarize the relevant research gathered which focuses on the variables under investigation (student population, age, sex, race, persistence and grades), the following works were surveyed to provide research question direction and subsequent interpretation clarity: Myers, Barton, The Task Force on Remedial Education in Virginia, Clarke, Blake, Hamil, Reap, Mentkowski, Astip, Cicco, Rabianski-Carriuolo, Knoell, Christie, Starkie, and Whittle. The review of the literature will begin by focusing on policy context.

Policy Context

American higher education has struggled with the question of who should go to college. Equality has never been clearly defined in America. Consequently, two traditions of equality affecting higher education developed: one emphasizing meritocracy and equality of opportunity for those most intellectually able, and another emphasizing opportunity for all, regardless of intellectual merit.[1] In The Uses of the University, Kerr identified the conflicting claims of two models in American higher education. The first claim was the needs/access model epitomized by public community colleges. The conflicting claim was the quality/excellence model epitomized by flagship state universities and the private research university.[2]

The GI Bill, originally named the Servicemen's Readjustment Act of 1944, is often regarded as the first guarantee of higher education. This bill was designed to enable veterans to attend college and technical schools.[3] The admission standards were relaxed for these veterans, but they received other preferential treatment in being admitted. The development of universal opportunity for postsecondary education became a national goal beginning with the administration of President Truman. The Truman Commission on Higher Education, 1946-47, supported the first national policy advocating equal educational opportunities for all persons.[4] In 1970, the Carnegie Commission recommended that as a matter of public policy, every high school graduate or otherwise qualified person should have unrestricted access to some kind of higher education.[5] In 1973, the Carnegie Commission on Higher Education further heightened their commitment to universal education to include not only access, but attendance. The Commission stated:

> Three periods of basic transformation potentially confront the development of any system of higher education. The first such period comes with the movement from (1) elite (or restricted) to mass higher education, from service for the few to service for the many. This transition in the United States began with the land-grant movement after the Civil War and reached its climax with the GI rush after World War II. Shortly on its heels came the transition from (2) mass higher education in the 1960s and continuing into the 1970s. The universal-access stage, in turn, has two sub-periods: first, universal access for members of the "college-age" population, and second, universal access for persons of all ages. The third transformation, if it ever comes, which we hope it will not,

> would take the form of (3) universal or nearly universal attendance in college, rather than univeral access. The current transition to universal access to college involves the guarantee of a place for every high school student who wishes to enter higher education, the introduction of more remedial work, the adaptation to the interests of new groups of students regardless of age, the substantial increase in total costs, and the augmentation of public interest and control. it is a transformation of fundamental, historic proportions.[6]

As a result of these policies and actions, coupled with the rapid enrollment of students of the 1960s, an increasing number of underprepared, academically-deficient students appeared in higher education. The twin goals of equal opportunity for everyone and excellence in education may appear in some ways contradictory, but it is thought by some that institutions who admit underprepared students can maintain creditable graduation requirements. John Gardner relates his view:

> It is no sin to let average as well as brilliant youngsters into college. It <u>is</u> to let any substantial portion of them--average or brilliant--drift through college without effort, without growth, and without a goal. That is the real scandal in many of our institutions. Though we must make enormous concessions to individual differences in aptitude, we may properly expect that every form of education be such as to stretch the individual to the utmost of his potentialities. And we must expect each student to strive for excellence in terms of the kind of excellence that is within his reach.[7]

Myers describes the admissions policies of colleges to be determined largely by the need for remediation among incoming students. He states that "open-door" institutions admit all high school graduates without review of conventional academic qualifications. "Selective" institutions admit a majority of applicants who meet some specified

level of academic achievement or have other qualifications above and beyond high school graduation--many of these students are well prepared for college and quite a few are not. "Competitive" institutions admit only those applicants who meet a specified level of academic achievement or have other qualifications above and beyond high school graduation. Students admitted to competitive institutions generally are well prepared, highly motivated and achievement oriented. Many selective and competitive colleges have "special admissions" programs for disadvantaged and minority students who do not have the academic qualifications expected of other applicants. These students who are deficient in basic skill work often experience difficulty adapting to the college environment.[8]

Community colleges, with their open-door admissions policies, have been the advocates of equal access to all. Senior colleges, on the other hand, have remained mostly meritocratic or even elitist institutions. With the competitive market for students due to decreases in student enrollment, combined with concern over the quality of high school graduates, senior colleges are resorting to various remediation tools of their own. These tools are designed to foster the development of a higher level of performance based upon remedial mathematics, English and reading programs. Numerous studies have proven the existence of a prevailing need for remedial education.

In one such study made by the National Commission on Excellence in Education reported by Secretary Terrel Bell

to President Reagan, 23 million adults do not have minimal literacy or computational skills. Thirty-four percent of the adults who have functionally minimum skills lack proficiency. Among seventeen year olds nationally, 13 percent are functionally illiterate, including up to 40 percent of minority youth. Nearly 40 percent of seventeen year-olds are unable to draw inferences from reading material, only 20 percent are able to write a persuasive paragraph, and only one-third can solve a mathematics problem involving more than one step. Within the nation's high schools, the proportion of students taking the "general track" rather than college preparatory courses increased from 14 to 42 percent between 1969 and 1980. From 1963 to 1980, the average Scholastic Aptitude Test (SAT) score dropped over 50 points for verbal and nearly 40 points for mathematics skills. During the same period, the percentage of those attaining the highest SAT scores declined 15 percent, while the proportion of scores in the lowest category increased 38 percent.[9]

On the basis of a survey of all colleges and universities in the country of which 1,269 institutions responded, Lederman and others found that:

1. A full 85 percent of the responding institutions perceive poor academic preparation of incoming freshmen to be either very much of a problem or somewhat of a problem. Only three percent of the institutions do not perceive poor academic preparation to be a problem.

2. A substantial percentage of entering freshmen are viewed as requiring assistance in the basic skills areas--28 percent in reading, 31 percent in basic writing, and 32 percent in basic mathematics.

3. Ninety-seven percent of the responding institutions assess the skills levels of entering freshmen, and only two percent of the institutions believe that assessment is unnecessary.

4. The overwhelming majority of institutions offer courses in the basic skills areas. More than eight out of ten of the institutions offer reading and basic mathematics courses; more than nine out of ten institutions offer basic writing courses.

5. While tests are the most common method for placement into basic skills courses, there is little agreement on specific tests. The most common method of placement into basic writing and basic mathematics courses is through locally developed tests.

6. Although institutions use tests to assess skills levels of students and to place them in courses, in the vast majority of institutions, decisions concerning exit from basic skills courses are left to the academic judgment of individual faculty members.[10]

According to Cross, the following changes in educational practices illustrate the response of higher education to student learning problems:

1. Most colleges and universities, 81 percent according to Carnegie surveys, now have remedial programs in

reading, writing, arithmetic, and other basic skills. Furthermore, such programs are almost as prevalent in selective universities as in community colleges.

2. Some form of individualization of instruction is now offered in almost all (89 percent) institutions of higher education. Most colleges and universities, regardless of their admissions selectivity, have learning laboratories and learning specialists to help students at all levels of ability improve academic skills.

3. Diagnostic testing and placement are seen as increasingly important, and there is much less hesitancy to require students to take tests or remedial work than there was a decade ago. The permissive rhetoric of the 1960s that "students have a right to fail" has given way to the accountability rhetoric of the 1980s that "schools have an obligation to succeed."

4. Faculty are more articulate in defining needed competencies and more creative in using a greater variety of teaching methods.

5. Colleges are less easily intimidated by students who are unwilling to do the necessary work. Miami-Dade Community College, for example, is systematically raising expectations for remedial students, with reported increases in both student and faculty morale.[11]

Summary of Policy Context

Since the early 1900s, American higher education has labored under two conflicting philosophies. One has

maintained that students in need of higher education should have access to it. The other philosophy contends that access should be based on merit. Various national policies, including the open-door policy and GI Bill, have contributed to a growing enrollment of underprepared students in colleges and universities. Underprepared students lack academic skills, knowledge, and the ability of most students in the college or course of study in which they enrolled. With the competitive market for students due to decreases in student enrollment combined with concern over the quality of high school graduates, senior colleges are adopting various survival tools. Consequently, American colleges and universities have had to develop remedial education programs to accommodate the influx of underprepared students.

Characteristics of College Students in Developmental/Remedial Education

Open access to higher education and the Academic Opportunity Programs have contributed to the formation of a student body with the most diverse ability ever encountered. Nevertheless, The Task Force on Remedial Education in Virginia found that remedial students typically have one or more of the following characteristics: (1) poor high school grades in basic subjects, (2) little or no advanced work in high school, (3) poor achievement as measured by high school rank, (4) less likelihood of having received a high school diploma, (5) poor reading skills, (6) poor scores on college entrance or placement examinations, (7) a history of

educational disadvantages, and (8) relatively poor socioeconomic backgrounds.[12]

Kraetsch, as cited by Barton, found that basic skills students may be characterized by one or more of the following: (1) poor study habits, (2) inadequate mastery of basic academic skills, (3) low academic ability or low I.Q., (4) psychological, motivational blocks to learning, (5) socio-cultural factors relating to deprived family and school background, (6) lack of parental encouragement, (7) minority and/or sex discrimination, (8) occupational rather than academic preparation in high school, (9) lack of motivation, (10) poor self-image and (11) sense of powerlessness over themselves and their environment.[13]

A thorough discussion of the disadvantaged student is provided by Cross in Beyond the Open Door. Cross labels the disadvantaged student as a "new student" in higher education. She believes the college has failed to serve this student. Her definition of the new students are those ranking in the lowest third of their high school graduating classes on test and academic ability. She describes most of the new students to be Caucasians whose fathers work at blue-collar jobs. A substantial number, however, are members of minority ethnic groups. Most of the parents have never attended college, and the appreciation of college is new to the family.[14]

Regardless of the descriptive words utilized in categorizing these students, once enrolled, they represent a

problem to the college. Old Dominion University is an example of an institution committed to the philosophy of providing formal education training for every student it enrolls, regardless of their lack of previous academic success. The Academic Opportunity Program has provided for the admission of minority and other students whose standardized test scores did not meet the university's general level of expectation but who have otherwise demonstrated promise of success. These students are provisionally admitted and provided remedial courses and support services to ensure academic success.[15]

Summary of Characteristics of College Students in Developmental/Remedial Education

The major characteristics of developmental program students have been identified as possessing poor high school grades, falling in the lowest third of high school graduating classes on tests and in academic ability, possessing poor reading skills, showing poor scores on college entrance and placement examinations, sociocultural factors relating to deprived family and school background, minority and/or sex discrimination and finally a history of educational disadvantages. These students pose a problem to the colleges and universities. In response to this problem, Old Dominion University has established the Academic Opportunity Program to provide support services to ensure academic success. Old Dominion University is committed to providing educational training to every student it enrolls.

Program Features Enhancing Success

There are no simple solutions to what is the most appropriate way of adequately helping high-risk students. Added to this complex issue is the view that many educators hold about the efficacy of remedial programs themselves. A number of studies in the late 1960s and early 1970s voiced serious concerns about these programs. In the early stages of the developmental education programs, common weaknesses were identified as ineffectively designed programs, unsatisfactory implementation and lack of accountability. In 1968, Roueche identified reasons why many college remedial classes were ineffectual: (1) questionable placement procedures, (2) oversized classes and overworked teachers, (3) inadequately trained teachers and unenthusiastic teachers, (4) outdated and superficial course outlines, (5) lack of agreement about what should be taught in the courses, (6) lack of suitable instructional materials, (7) confusion about proper methodology, (8) insufficient experimentation.[16] No doubt reflected in these lacunae, only a little more than ten percent of all such students persisted to a second semester. Contributing to the problem were numbers of poorly trained and unenthusiastic instructors who often had been drafted into remedial teaching because they were the newest hired or because they were part-timers.[17] A most appropriate aspect of the expansion of the educationally underprepared has been an increase in the quality

and quantity of research being conducted, and a more detailed analysis of which characteristics of programs are more effective. During the mid-1970s, learning assistance programs emerged on many college campuses.[18] The common feature of these programs was a focus on individualized instruction. Today, however, learning centers represent the most common structure to assist and retain students.

Christ describes the Learning Assistance Center Program at California State University-Long Beach as being successful because of its four unique features. (1) It incorporated concepts and strategies from human development, the psychology of learning, educational technology, and corporate management into an operational rationale specific to higher education; (2) as a campus-wide support system, it cuts across traditional university division lines in its emphasis on a centralized operational facility, coordinated by one administrator, that would house a reading laboratory, writing center, math laboratory, study skills service, test preparation service, independent self-paced learning center, staff training center, foreign students conversation laboratory, and a tutorial clearinghouse. This combination was aimed at producing increased program visibility, intercampus communications, and cost-effectiveness; (3) the center was not created primarily for the inadequately prepared, the provisionally admitted, or the probationary student. It was not to be stigmatized as a remedial center, since it would

serve not only students but also faculty, staff, and senior or administrators as learners; and (4) learning assistance was planned with a strong emphasis on management by objectives and a cybernetic subsystem to elicit and use feedback from its users; so its programs and services would constantly reflect the needs, expectations, and concerns of the institution. In addition, research done by Christ during the past fifteen years revealed that successful programs were characterized by strong leadership as well as effective assessment and placement systems.[19]

By contrast, a study by Roueche and Snow revealed that successful college programs for students with learning problems are characterized by the following qualities: (1) as much effort is devoted to improving students' self-concepts as is made to improving reading and writing skills, (2) English, reading, and math courses are taught so as to reinforce the students' verbal and quantitative abilities in other courses (for instance, students in nursing are given reading, writing and math assignments that would be required in the nursing profession), (3) teachers believe their students have talents and can learn with proper instruction, (4) teachers accept some of the responsibility for increasing their students' desire to learn, (5) teachers are open to their own growth and development, that is, they are looking for better ways to assist their students.[20] Successful developmental education programs build on content that students see as useful and interesting, employ instructional

techniques that truly accommodate individual student differences, and take place in learning environments where teachers are endeavoring to help students grow and develop as worthwhile human beings.

A noteworthy educational program designed to improve quality has been established at Florida's Miami-Dade Community College. Miami-Dade's "Standards of Academic Progress" is an inclusive system for classifying academic standing so that students experiencing difficulties can be identified and helped. This program motivates the students to higher achievement by alerting them immediately when their performance is unsatisfactory. In addition, students choosing to use this support service receive a tuition refund. Support services are then provided to help them overcome difficulties. Students who continue to perform below standards despite additional support and academic probation, are suspended or dismissed. Student progress is monitored with performance tests; a computerized information system called the Academic Alert and Advisement System provides mid-term RSVP (Response System with Variable Prescriptions) reports to about 46,000 students.[21]

Jorgensen gives the following as being qualities which best contribute to successful remedial programs. (1) The program should be centered around the student. That is, he/she should be able to progress at his level and at his own rate of learning. (2) There should exist reasonable time periods for the student to finish the necessary work.

(3) The program should be adequately funded. (4) All the faculty should be involved so that each member of the faculty is aware of the difficulty and the complex nature of the problem involved with this type of student. (5) The counselors should be aware of diagnostic techniques employed, and the general principles of remediation. (6) There must be a reasonable student-teacher ratio. The personal interaction between student and teacher is essential for ". . . without maximum human contact, the student's learning is hampered." (7) It is essential to have a good organization and effective administration of the program. (8) The program should be a separate department. (9) It helps to have the remediation course integrated with the college-level courses. (10) There must be innovative techniques employed in remediation.[22]

The examination of reports and publications dealing with the subject reveals a consensus among investigators that the key to the success of the developmental program is the teacher. Another factor in the success of college basic skills programs is highly related to its teachers' attitudes, qualities, and behavior. The training, attitude, and genuine concern and cooperation of the faculty outside the remedial program are of utmost importance.[23]

The type of program, whether it is a formal course or a laboratory situation or a combination of some innovative techniques, is not the crucial aspect in the long run, but that the program be student centered. If not, the program

will probably fail eventually. An understanding of the type of student involved, a faculty that cares, and enough funds to function are ingredients for successfully helping under-educated college students.[24]

Gordon and Flippo found from studies in the 1970s that reading teachers require training specific to the teaching of postsecondary reading, that tests are often used inappropriately, and that most teaching follows a diagnostic-prescriptive model.[25] In their update study conducted on persons teaching college reading improvement in the southeastern United States, the researchers found that postsecondary reading improvement courses are no longer limited to junior and community colleges, but are offered at all types of institutions. College reading teachers are not new to the field; half the respondents had been teaching these particular courses five years or more. The respondents held advanced degrees, but were not necessarily highly trained as college reading teachers. Few had completed any postsecondary-level supervised teaching as part of their graduate training, and a full 40 percent were teaching outside their primary area of training. Programs generally continue to follow a diagnostic-prescriptive model and there was a suggestion that instruction is no longer exclusively laboratory oriented. Although successful instructional practices and program characteristics have been recognized, insufficient formative and summative evaluation of courses and programs and lack of follow-up on students' attainment

of long-range goals have contributed to doubts about the effectiveness of basic skills programs.[26]

Summary of Features Enhancing Success

In the late 1960s to the mid-1970s, developmental/ remedial programs to assist academically deficient college students were poorly conceived, poorly planned and poorly implemented and rarely evaluated. Since the mid-1970s, these programs have become more effective as a result of an increase in the number and quality of studies which analyzed effective programs' characteristics. Effective characteristics were identified as learning centers, strong leadership, effective assessment and placement systems, progress standards, student-centered programs and highly-trained teachers. The key to program success has been identified as teacher attitude, quality and behavior. One successful educational program designed to improve quality has been established at Florida's Miami-Dade Community College. Miami-Dade's "Standards of Academic Progress" is an inclusive system for classifying academic standing so that students experiencing difficulties can be identified and helped. This program attempts to motivate the students to higher achievement by alerting them immediately when their performance is unsatisfactory. In addition, students choosing to enroll in the program receive a tuition refund. Support services are then provided to the students to help them overcome their difficulties. Students who continue to perform below standards, despite additional support and academic probation, are suspended or dismissed.

Evaluation of Developmental Programs

College programs and courses that assist students' development of entry-level skills in reading, writing, English and math are not new to higher education. The issues involving underprepared college students and higher education's responsibility to provide appropriate educational opportunities for their students have been an integral part of the development of higher education in the United States. Brier established the first presence of underprepared students in American colleges during the nineteenth century. As early as 1828, the Yale Report called for an end to the admission of students with defective preparation.[27] Harvard University began its freshman composition course in 1874 after the faculty voiced a dissatisfaction with writing of upperclassmen. In 1890, the College Entrance Examination Board was established in hopes of achieving uniform admission standards for all American colleges. Nevertheless, by 1907, one-half the entering classes at Harvard, Yale and Columbia Universities failed to meet the colleges' admission standards.[28]

Unsuccessful Developmental Programs

The studies examined presented accounts of both success and failure of developmental education programs in higher education. Losak, Hamil, Craig, and Biddar pointed out that little evidence is shown supporting the contention that such programs helped the student to achieve

academic success. The general ineffectiveness of such efforts in remediation was well documented.

Based on his research at Miami-Dade Junior College, Losak found that one semester of remediation in an English course had little effect in raising the quality point average during the next semester and did not produce any meaningful difference in student attrition. He also noted that the experimental group did not earn a significantly higher proportion of passing grades than did students in the control group.[29] This emphasized that developmental programs should not be limited to an intensified program during a single semester of a single year.

Hamil conducted an in-depth study of the developmental program at Guilford Technical Institute in Jamestown, North Carolina. Performance data were secured for students who had attended the institute during the period 1971-1976. The performance of three groups of students was examined: (1) those who required and took developmental courses, (2) those who did not need nor take developmental courses, and (3) those who needed, but did not take developmental courses.[30] The findings of this study indicated that the performance of students in developmental courses could be used as a predictor of their performance on curriculum courses. This developmental program produced only marginal benefits. The GPA of group three students was only fractionally better (two percent) than that of those in group one. Performance in communications courses was found to be

more useful as a predictor than was that in computational courses.[31] The relationships between developmental communications courses and curriculum communications courses were significant ($P < .05$). The relationships between developmental computational courses and curriculum computational courses were significant ($P < .10$).[32] The findings emphasized the inability of the developmental program to offer the students with high levels of deficiency a truly open door for postsecondary education.

Craig conducted an assessment of developmental education programs in selected urban community colleges in Virginia. The study was carved out within the framework of three variables: academic performance, persistence and expressed attitude toward instructor and instruction, counselor and counseling, and the total program. The major findings of the study showed that the developmental programs studied did not make a significant difference on the academic achievement of developmental students when compared with high-risk students who chose not to enter developmental programs. Students in developmental programs did not earn significantly higher grades than did high-risk students in non-developmental programs. The difference in the mean grade point averages of the two groups was not statistically significant. A pattern of successive improvement of mean GPA's for each of the groups within the colleges studied could not be established.[33]

Biddar directed a study at Union County College in New Jersey to compare students who successfully completed a developmental writing course with those who did not in terms of their achievement in college-level English courses. The population was defined as those students tested with the New Jersey Basic Skills Placement Tests who enrolled in a suburban New Jersey community college in the Fall of 1980.[34] The groups consisted of students who enrolled and successfully completed a developmental writing course, students identified as needing developmental writing but who did not enroll in the course, and students identified as not needing the developmental writing experience. The study conclusions indicated that remedial instruction had no significant effect on subsequent academic performance.

Students not enrolled in developmental programs persisted in college to a greater extent than did developmental program students, although there was no statistically significant difference.[35] There was no significant difference in attitudes toward instructors and instruction, counselors and counseling, and the total program.[36]

Successful Developmental Programs

On the other hand, evidence has been amassed that reaffirms the conclusion that remediation can and does make a valuable contribution. Studies support the idea that students who complete needed remedial courses tend to persist in school at a higher rate, achieve higher grade point

averages, and complete more of their nonremedial courses than do those students who do not complete or do not enroll in needed remedial programs. Further, those students who complete remedial courses tend to improve on posttests and perform about as well in subsequent college-level courses as do those students not needing remediation.[37]

Thompson attributes the success of freshman students at Vincennes University to the developmental programs. Mandatory enrollment in developmental courses is supported by faculty and administration because they believe it is unfair to permit a student to undertake a course for which he or she is not prepared. The axiom is that students are to succeed, not fail. Sixty-five percent of Vincennes University's full-time freshman students graduate, according to the registrar's records.[38] The university enrolls approximately 1,800 full-time freshman students each fall. Another six to eight percent transfer after two years without meeting graduation requirements, and many occupational students accept job offers without graduating. Vincennes University is an "open-door" institution and 60 to 70 percent of the freshmen come from the lower half of their high school classes.[39]

The high percentage of students who graduated from Vincennes is one measure of evidence of success. Other measures of success are equally as significant. For example, the occupational graduates of 1976 were all, except for 4.2 percent, employed within two months of graduation.

Students who enroll in developmental reading have as high or higher rate of success (completing an educational goal) as do students not required to enroll in developmental reading. In the fall of 1978, 1,649 students transferred to 95 colleges and universities, winning scholarships to such institutions as Massachusetts Institute of Technology, Yale and Harvard-Radcliff.[40]

New Jersey Offers Model Program

The State of New Jersey has responded uniquely to inadequate basic skills levels of entering college freshmen. While many colleges in the United States have established testing programs and offered remediation for those who need it, New Jersey has the only coordinated, statewide higher education effort of mandatory testing, remediation, and evaluation. The New Jersey Basic Skills Council, formed in 1977, translated the test results of 47,725 students entering higher education in the Fall of 1979.[41] Performance was categorized into one of the three groups: appears proficient in basic skills tested; demonstrates proficiency in some areas tested; and demonstrates a lack of proficiency serious enough to indicate a clear need for remediation. Data were presented for the total state and types of institutions (two-year colleges, state colleges, New Jersey Institute of Technology, and Rutgers University) for the following tests: reading comprehension, sentence structure, logical relationships, essay, composition, total English, computation and elementary algebra. The following con-

clusions were reached: a substantial proportion of New Jersey students entering college are not proficient in the basic verbal and mathematical skills necessary to perform college-level work; deficiencies are present at both two-year and four-year institutions. The council developed an annual questionnaire to be completed by the colleges. It requires information on the number of students tested, identified as needing remediation and enrolled in remedial courses, and college policies regarding remedial/developmental education (e.g., whether graduation credit was given for remedial courses). This questionnaire, which collects data on the character of remedial programs, is due to the Basic Skills Council in March of each year. It reports on the cohort of freshmen who entered the previous fall.[42]

In 1980, the council formed an Assessment Advisory Committee to coordinate the process of gathering data and reporting on remedial program effectiveness. The committee was composed of institutional researchers, basic skills coordinators, faculty members, and Department of Higher Education staff. After reviewing and refining the annual questionnaire, the committee prepared "The Guidelines for Preparation of Institutional Report on Remedial Program Effectiveness." Complete with definitions and sample tables, these guidelines request information on both process and outcome. The six outcome variables include: (1) passing grades on remedial courses, (2) attrition rates, (3) grade point averages, (4) ratio of credits earned versus credits attempted, (5) pre and posttesting, and (6) performance in

subsequent nonremedial college-level courses. Among the council's findings on the character of remedial programs for the Fall, 1982, among entering full-time freshmen, the percentages of students needing remediation are as follows: thirty-four percent in reading; thirty percent in writing; thirty percent in computation, and thirty-one percent in elementary algebra. Eighty-one percent of the full-time students who were identified by the colleges as needing remediation were enrolled in appropriate remedial courses within two semesters. The following percentages by subject matter are presented: eighty-four percent in reading; ninety-one percent in writing; seventy-nine percent in computation, and seventy-one percent in algebra.

The basic skills policies and practices at some institutions were cited by the Basic Skills Council. These included low placement criteria and allowing skills-deficient students to enroll in college-level courses. In response to the Basic Skills Council report, the Department of Higher Education contacted each college regarding the specific issues raised. Most of the colleges then provided the department with plans to improve testing and enrollment data by changing registration and tracking systems, establishing new offices responsible for testing, or implementing more stringent policies in the areas of testing and subsequent enrollment of skills-deficient students in remedial courses. In addition, several colleges raised their

placement criteria to levels similar to those recommended by the Basic Skills Council.[44]

After continuous updates and developmental program changes, data were presented to show that remediation can and does help students. In comparison to those students who needed remediation, but did not complete it or did not enroll in remediation class, students completing remediation were much less likely to drop out of college after one semester and much more likely to complete college-level courses for credit and receive higher grade point averages.[45]

Lesnick undertook a study to determine the effectiveness of three developmental reading course options at the Annandale Campus of Northern Virginia Community College. The options were a course in reading improvement, a verbal studies laboratory, and simultaneous enrollment in both. Reading comprehension improvement, as measured by postcourse scores on a Cloze-type test, adjusted for precourse scores, was the dependent variable; student status and sex, and the courses options selected, were used as primary independent variables and were studied by an analysis of covariance with interactions tested. By use of the analysis of covariance, no significance was found at the .05 level between the mutually exclusive course options with respect to reading comprehension improvement; however, t-tests performed upon the unadjusted means of the pre and posttreatment Cloze scores for each of the three groups showed that each of the course options did have a significant effect at the .05

level in improving the reading comprehension of the students in the sample.[46]

Smith, in his study at Jacksonville State University, revealed that of the different sequences of enrollment in remedial mathematics and college algebra, the sequence in which students earned, on the average, higher college algebra grades was the one in which students who needed mathematics remediation took remedial mathematics before they attempted college algebra. The results of the study further indicated that those students who needed and took remedial mathematics stayed enrolled almost as long as those who did not need remediation.[47]

Sally conducted a study to assess the overall effectiveness of the program of academic support services provided by the Special Programs Department at California University of Pennsylvania.[48] He found that academically underprepared students who participated in a program of academic support services achieved statistically significant higher GPA's only during their first semester of enrollment than underprepared students who did not participate in the program. During the second and all subsequent semesters through the tenth semester, there was no statistically significant difference between the GPA's of program students and nonprogram students.[49]

Also, underprepared students who participated in a program of academic support services experienced significantly less attrition five years after their initial

enrollment than underprepared students who did not participate in the program. The five graduation rates were based on the number of students who entered California University during the five-year period 1978-1982.[50]

Summary of Evaluation of Developmental Programs

Remedial education is not a new concept. As early as 1874, Harvard University offered freshman composition to remediate writing deficiencies of upperclassmen.[51] Numerous studies document the general ineffectiveness of developmental programs in higher education. In fact, one study by Craig found (1) not only that the developmental programs studied did not make a significant difference in academic achievement of developmental students compared with deficient students who chose not to enter developmental programs, but (2) deficient students not enrolled in developmental programs persisted in college to a greater extent than did developmental program students.[52] Another study by Biddar concluded that remedial instruction had no significant effect on subsequent academic performance.[53]

However, there is a considerable body of evidence which reaffirms the conclusion that remediation can and does make a valuable contribution. Five studies cited in this chapter support the idea that students who complete needed remedial courses tend to persist in school at a higher rate, achieve a higher grade point average, and complete more of their nonremedial courses than do those students who do not

complete or do not enroll in needed remedial programs. Another study by Thompson attributes the success of freshmen students at Vincennes University to the developmental program.[54] It appears the degree of success of these programs is largely dependent upon the commitment and quality of specific program characteristics.

Demographic Groupings and Remediation

The demographic groupings include the number of students enrolled in developmental courses; age, sex and race variables; and persistence and grades.

Number of Students Enrolled in Developmental Courses

High percentages of freshmen student enrollment in remedial course work has been reported in the literature. In a report to the Louisiana Board of Regents, Myers found that about 40 percent of Louisiana's college-bound high school students are not fully prepared for college-level work. The Board estimates that, with remedial work, approximately 65 percent of these underprepared students can increase their academic skills to the level required for success in college-level work. Likewise, in Mississippi, the Board of Trustees of State Institutions of Higher Learning has found that about one-third of the freshmen enrolled in Mississippi's eight public universities take remedial courses.[55] Barton, in his study of the effectiveness of developmental programs at the Tidewater Community Colleges

in Virginia, found that of 5,735 students, 1,555 or 27.1 percent enrolled in at least one developmental course.[56]

The Task Force on Remedial Education in Virginia reported that at the community colleges, remedial enrollments averaged 16 percent of total enrollments, with a range from five percent at Virginia Highlands and Southwest Virginia Community Colleges to 35 percent at Dabney S. Lancaster Community College. Seven senior colleges and universities report no remedial activity. Remedial enrollments at the other senior institutions range from one percent at George Mason University to 29 percent at Virginia State University. The two traditionally black universities have the highest proportion of students in remedial education among the senior institutions in Virginia, reflecting their mission of providing educational opportunities for students historically excluded from higher education.[57] Old Dominion University reported 886 remedial students which represented six percent of the total student population.[58]

Age, Sex, Race Variables

The Task Force on Remedial Education in Virginia found that remedial courses serve students at all ages. At the community colleges one-third of all remedial students are twenty-five years or older, returning to higher education or starting college work for the first time. The majority of remedial students are from the traditional college-age population. With the exception of Northern

Virginia Community College, the proportion of remedial students ages seventeen through twenty-one exceeded the percentage of all students from this age range enrolled at each college and university. Remedial students enrolled in mathematics tend to be older than those in English; the percentage of seventeen through twenty-one year-olds enrolled in remedial English was greater than the proportion for mathematics in all but four institutions. The disproportionate representation of remedial students ages seventeen through twenty-one emphasizes the strong relationship between recent educational experiences in secondary schools and the lack of skills needed for college-level work.[59]

Clarke investigated the effectiveness of remediation in reducing the risk among skills-deficient college freshmen of different ages. Twenty-five percent of the entering class of the University of Massachusetts, Boston, were identified as skills-deficient, based on scores on the Clarke Self Assessment Survey and a written diagnostic test. Of the 258 students, 148 were eighteen or nineteen years of age, while 110 were twenty years or older.[60] During their first semester, students' participation in voluntary remediation programs was monitored, along with first semester persistence rates and grade point averages. For older students, but not for younger students, participation in remediation was associated with high rates of persistence in academic courses. In addition, older students with high

rates of hourly contact with remedial activity, and younger students with moderate hourly contact, received higher GPAs than students of all ages participating at low rates.[61] The findings suggest that older skills-deficient students may be distinguished from similarly deficient younger students by differences in purpose or motivation. Clarke suggests that by virtue of their determination to forward their education, older students may bring to college study qualities of motivation that counter-balance the effect of their inadequate preparation.[62]

Descriptors by sex continue to show a steady enrollment decline of men and an increase in women.[63] However, evidence indicates there is a higher percentage of men participating in remedial programs than women.[64] Barton found that of 5,735 entering freshmen in Fall, 1980, 41.5 percent were male and 58.5 percent were female. However, of those students receiving remedial courses, 51 percent were male and 49 percent were female. So, while females predominate in the total group of entering freshmen, within the developmental group there is a considerably higher proportion of males.[65]

Black and other minority representation is dependent on regional variables, but generally these groups are proportionally overrepresented. Whites constitute the large majority of developmental students.[66] Barton found college-wide that 69 percent of entering students were white and 31 percent were nonwhite. In terms of developmental

studies enrollment, a significant association with race was found. Forty-four percent of nonwhites were developmental enrollees compared with 23 percent of whites.[67]

Hamil found age, sex and race to have a significant effect on the student's performance. In terms of significant occurrences and levels of persistence, race had the strongest relationship. Whites achieved a significantly higher performance level in developmental and curriculum courses than nonwhites.[68]

As cited earlier by Blake, changing fertility patterns have resulted in shifts in the age structure of the total population. In 1960 and 1970, approximately 38 percent of all Americans were under nineteen years of age. By 1980, this had dropped to 32 percent, almost back to the 1950 level.[69]

The demographic changes have had different impacts on the racial groups. The decline in college-age youth has been proportionately greater for whites than it has been for minorities, thus changing the composition of the pool of college-age youth. Among white youth, the proportion of the population under nineteen years of age rose from 33 percent in 1950 to 38 percent in 1960, then declined to 30 percent by 1980. While the black youth under nineteen years of age have shown a similar pattern of growth and decline, the changes have been very different. Blacks had 40 percent of their youth under nineteen years of age in 1950. This increased to 45 percent in 1960, 46 percent in 1970, and

then declined to 40 percent by 1980.[70]

Blake points out that throughout the country, the racial composition of school-age population is changing significantly. Although whites comprise an overwhelming majority of school-age youth, the proportion of minority youth is growing.[71] Given these trends, we can expect to see these changes eventually impact on colleges and universities, particularly in the public institutions where resources allocations are so frequently driven by enrollment.

Persistence Variable

Student attrition rates have concerned educators, psychologists, sociologists, economists, students and parents for many years. Interest in the college dropout rate is one of the great contemporary issues of higher education because of its nationwide implications. Relevant studies provide the following data concerning persistence.

Mentkowski reports that institutions see persistence as the result of an involvement in learning that is strong enough to withstand other environmental and personal pressures on a student, be he or she full or part-time, traditional age or adult. And even more, they recognize that it is the quality and intensity of involvement in a student's first experiences in an institution that make the greatest difference in terms of retention. Retention is about tactics to develop academic work skills and workplace attitudes.[72] Retention research findings suggest that the reasons for dropping out of college are complex, overlapping,

and involve interaction between the student and the institution along academic and social dimensions. Reasons range from poor grades and loss of interest to illness and financial difficulty.

During the 1980s, more than fifteen million men and women will enter nearly three thousand colleges and universities. Because most of the evidence from national retention studies conducted over more than four decades yields consistent results, it is expected that five or six million of these students will never earn degrees. About 40 percent of entering freshmen in baccalaureate-granting institutions never achieve a degree; about 40 percent will graduate in the normal four years and the remaining 20 percent will delay their baccalaureate. Rates of retention at community colleges are considerably lower than at four-year institutions.[73]

Rabianski-Carriuolo contends the national rate of persistence to graduation for students in general is around 50 percent, but only about 20 percent for developmental students.[74] This supports the evidence that suggests that while it is not only the academically underprepared students who drop out, remedial programs have reflected disproportionately high attrition rates. Retention of students is the primary concern of developmental programs. Several studies across the nation have been conducted to ascertain student dropout correctable patterns and measure the

effectiveness of remediation on the knowledge and skill of developmental students. Cicco described a four-year study done at Westmoreland Community College in Pennsylvania which found that underprepared students who completed the prescribed remedial courses had significantly higher college grade point averages and completed 30 percent more credits (over and above the remedial courses) than the high-risk students who had avoided or only partly completed the developmental program.[75] In addition, 32 percent more graduated. An important aspect of this program is that it accrued a profit generating $387,220 in revenue, while incurring $241,499 in direct expenses, thus providing a 60.4 percent net return.[76]

At the University of New Haven, Rabianski-Carriuolo conducted a study on the effects of systematic intervention on developmental students. Forty students were randomly chosen as the experimental group. The students were generally representative of the freshman developmental students, with two exceptions: (1) all of the forty students were enrolled in a developmental composition class, and (2) the students had elected to register during the final three weeks of August, 1981.[77]

Two composition instructors conducted this study and acted not only as teachers but also as informal counselors or mentors who tried to see that the effective and academic needs of the students in the experimental group were met. Comparisons drawn between the experimental group and the

control group seem to indicate a trend toward improved grade point average and lower attrition when students receive special treatment such as that given by the mentors in this study. Pre and posttest comparisons drawn within the experimental group also showed trends toward lessened writing anxiety and a stable educational attitude. In addition, following mid-term intervention, 81 percent of the students' grades either remained the same or rose by the end of the semester. The use of a mentor program seems to be successful in aiding developmental students.78

Grade Variable

Academic progress is measured by point average, improvement in particular subject areas such as reading, math and English; success in higher level courses, and graduation rate.[79] Encouraging results of the effectiveness of remedial programs using grades as a measure of success have been reported by a cross-section of studies.

Christie (1979), at Dalton Junior College in Georgia, compared two groups of freshman students for purposes of grade point average differences after completion of courses. The first group consisted of one-third of students who had been assigned to the remedial learning program at the college. These students are referred to as special studies students. The second group, also numbering 173, were never enrolled in any remedial courses and they are called non-special studies students. The two groups were compared at fifteen-hour intervals during their first academic year in

regular college courses. The researcher expected special studies students would drop in grade point average after leaving the remedial program and entering regular college courses. Also, the researcher assumed that after this initial drop there would be a rise in GPA toward the non-special studies students. Results of the comparison show two parallel lines on a graph, separated by approximately one-half of a grade point. No major peaks or valleys surfaced, only parallel lines separated by the initial GPA difference. These results negate the original assumption that there would be a drop in GPA.[80]

Starkie (1982) described the strategical implementation and supportive assistance of the developmental reading improvement courses at C. W. Post Center of Long Island University. Pre and posttest scores of the Nelson Denny Reading Test reflect the growth in comprehension and vocabulary for the semester. Significant percentile increases in both areas are reflected by consistent mean average gains in 80 percent of all classes for the last three years.[81] Starkie charges that success in a developmental reading program is dependent on a variety of factors including the philosophy of the program, the organization and structure, the goals and evaluative measures utilized, the commitment by faculty and students and the support of the administration.[82]

Whittle produced positive findings from a study at Piedmont Virginia Community College. The performance of 560

students enrolled in developmental and credit English was tracked over eleven quarters, from fall, 1974 to winter, 1977.[83] Fifty-nine percent of students who initially enrolled in developmental English attempted a credit English course. Seventy-one percent passed and 65 percent did so with at least a "C" grade. In addition, her study revealed that highest grades in English were received by persons who had part-time enrollment patterns, had taken fewer quarters of developmental English, were older and were female.[84]

Summary of Demographic Groupings and Remediation

A review of the literature provided data concerning the following variables:

Enrollment. From 16 percent to 40 percent of college-bound high school students are not fully prepared for college-level work.

Age. There is a disproportionate representation of remedial students ages seventeen to twenty-one which points out the strong relationship between recent educational experience in secondary schools and lack of skills needed for college-level work.

Sex. Evidence indicates there is a higher percentage of men participating in remedial programs than women.

Race. Black and other minority representation is dependent on regional variables, but generally these groups are proportionally overrepresented. However, whites constitute the large majority of developmental students.[85]

Persistence. The national rate of persistence to graduation for students in general is around 40 percent but only about 20 percent for developmental students.[86]

Grades. Encouraging results of effective remedial programs using grades as a measure of success have been identified by a cross-section of studies.

This investigation will attempt to determine the degree to which the effects of each variable relate to the degree of success in developmental programs and college work.

Summary of the Review of the Literature

The American educational system embraces two conflicting philosophies. As a result of the philosophy that has been adopted, the presence of large numbers of underprepared students have required the development of remedial education programs. The major characteristics of developmental program students has been identified as poor high school grades, lowest third of high school graduating classes on tests and in academic ability, poor reading skills, poor scores on college entrance and placement examinations and a history of educational disadvantages.

Early remedial education programs were poorly conceived, poorly planned and poorly implemented and rarely evaluated. An increase in the quality and number of studies analyzing effective program characteristics has contributed to more effective remedial programs. The most effective characteristic has been identified as student-centered

programs with highly trained, committed teachers. Although some success was found utilizing these features, little success was found in developmental programs which did not build on content that students conceived as useful and interesting.

Other studies, however, contend that developmental programs on the college level had been generally ineffective. In fact, some researchers have concluded that remedial instruction has no significant effect on subsequent academic performance. These findings notwithstanding, there is a considerable body of evidence which reaffirms the conclusion that remedial programs can and do make a valuable contribution. It appears that the degree of success of these programs is largely dependent upon the commitment and quality of specific program characteristics.

In addition to program characteristics, a review of the literature provided data concerning six key variables in this study. These variables are enrollment, sex, age, race, persistence and grades. Research findings in the variables reveal: (1) from ten percent to 40 percent of college-bound high school students are not fully prepared for college-level work, (2) a higher percentage of men participate in remedial programs than women, (3) even though minority representation is generally overrepresented, whites constitute the large majority of developmental students,[87] and (4) the national rate of persistence to graduation for students in general is around 40 percent but only about 20 percent

for developmental students.[88] An attempt will be made to determine the degree to which the effects of each variable relate to the degree of success in developmental programs and college-level work. In the next chapter the analysis and the implications of the data will be explored.

Organization of Chapter III

In the following chapter, a review of the purpose of the study and the questions implicit in the research will be given. In addition, data collection procedures and variables under investigation are presented. Finally, hypotheses are stated, and the plan for the treatment of the data is provided.

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CHAPTER III

METHODOLOGY

The purpose of this study is to assess the effectiveness of the reading and writing developmental programs at Old Dominion University. Measures of academic success are utilized to evaluate the effectiveness of the developmental reading and writing programs. A validation of remedial courses has been established through the use of measures of academic success following the support program.

As Robinson points out, remedial instruction must necessarily stand or fall on the basis of one single criterion--measures of academic success.[1] The developmental programs evaluated exist to help students correct academic deficiencies, enabling them to complete college-level course work which ultimately leads to successful completion of a baccalaureate degree program.

In order to draw conclusions about the evident results of program participation, this study examined the academic performance of program participants as measured by grades, persistence and graduation rate. While use of only these measures represents a limited conceptualization of education attainment, it does focus on the behavioral outcomes which the programs are designed to effect. Cultural

variables of age, sex and race considered in the study were examined in regard to their relevance in explaining the student's performance. Colleges and universities have been held increasingly responsible to funding agencies and the public to provide curriculum and instruction that will enable all students, regardless of background, to succeed academically. Because of this, developmental education programs must include means of measuring the degree of success or failure. This study has engaged in extensive institutional research as the most direct means of progressing toward the realization of this goal.

The Setting

Old Dominion University had its formal beginning in 1930, as the Norfolk Division of the College of William and Mary, although afternoon and evening extension courses had been offered as early as 1919 for teachers and adult study groups in the area. But it was not until 1954 that the school was authorized to offer baccalaureate programs. In 1962, the institution gained its independence from the College of William and Mary by state legislative action. A governing board was appointed, and the school was authorized to operate as an independent state institution. Shortly thereafter, the school's Board of Visitors adopted the name Old Dominion College. In June, 1968, the Board authorized that the name of the institution be changed to Old Dominion University, effective September 1, 1969.[2]

Old Dominion University is a state-supported urban, regional university located in Norfolk, Virginia. The institution enrolls more than 15,000 students annually. Its mission as stated in the 1980-81 University Catalog is:

> A university is a place of learning. If it is truly great, it has men and women of wisdom and courage, with a vision of the future, who have mastered the path leading to the attainment of that vision. It has an exciting, imaginative, and creative faculty. It is dedicated to excellence. It lives on the frontiers of discovery, serves with distinction, and teaches with relevance and purpose. It is especially concerned with its students. It offers them the opportunity and encouragement to acquire to their fullest capability the knowledge and understanding to meet the problems and secure the advantages of life.
>
> Old Dominion University, committed to this ideal, is an urban university with the primary mission of meeting the educational and professional needs of its students and the region through excellence in teaching, scholarly research, and leadership in community service.[3]

Old Dominion University is a selective institution. Myers defines a selective institution as one which admits a majority of the applicants who meet some specified level of academic achievement or other qualifications above and beyond high school graduation. Many of these students are well prepared for college and quite a few are not.[4] Old Dominion University admits students with combined SAT scores of 850 who are in the top half of their high school classes. In addition, students must have a minimum "C" average in secondary school course work. Admission standards are designed to allow the recruitment of a heterogeneous student population.

Student Grading

Grades at the end of each term are assigned according to the following letter systems:

Grade	Quality Points	Undergraduate
A	4	Superior
B	3	Good
C	2	Satisfactory
D	1	Passing
F	0	Failing
P	None	Pass
F	None	Fail
I	None	Incomplete
U	None	Unofficial withdrawal
W	None	Official withdrawal

The quality point average is calculated by dividing the accumulated number of quality points earned by the accumulated number of credit hours attempted. Grades of F and repeats are included, but withdrawals and grades on noncredit courses, nondegree credit courses, and pass-fail degree credit courses are not included.[5]

The Old Dominion University Writing Program

In response to a growing concern for the quality of students' writing, a comprehensive writing skills program was initiated at Old Dominion University in 1978.[6] The program is implemented not only by the instructional staff of the Writing Center, but by all University faculty, since the University recognizes that an effective writing program is an ongoing process that forms an integral part of the student's overall academic perparation.

As part of the effort to upgrade students' writing ability, the University has established procedures for an

initial writing assessment (Writing Sample Placement Test), whereby writing samples of students are analyzed to determine the appropriate writing course assignment for each student. Those students whose writing proficiency is not at the level expected of college students are required to take instruction in basic writing skills (Writing 050) before entering the traditional English composition classes.[7]

The grading policy in 1980 for the remedial course work is as follows:

P	Satisfactory. Assigned when a student completes all objectives of the course.
Q	Re-enroll. Assigned when a student has not completed all objectives but has worked diligently throughout the semester. The student is not yet proficient to move into English Composition 110.
F	Unsatisfactory. Assigned when the student has made unsatisfactory progress.
U	Unofficial withdrawal from class.
W	Official withdrawal from class.

Students may re-enroll as many times as necessary to complete the instructional objectives of the course. Less than ten percent of the 050 students find it necessary to re-enroll in basic writing.[8]

In addition to Basic Writing 050, several developmental workshops are offered to prepare students for credit English composition. Students' test scores in the core course of 050 and curricular English requirements determine the need to enroll in one or more of the following courses.

Satisfactory completion of Basic Writing 050 is considered prerequisite to readiness for success in credit English 110.[9]

A description of writing courses in General Studies taken from the 1980-1981 Old Dominion University Catalog follows:

050. Basic Writing. Three nondegree credits. This course is designed for students who do not meet the standards for the University's regular composition course. It affords extensive instruction and practice in basic writing, essay models and patterns of development, and a review of the fundamentals of grammar, usage, and mechanics.

051. Basic Composition. One nondegree credit. This course is designed as a support system for students who, on the basis of review of their diagnostic writing tests, are weak in some aspects of basic writing but who otherwise qualify for English 110. It is to be taken in conjunction with English 110.

052. Punctuation. One nondegree credit. This is a course designed to help the writer develop strategies for using conventional punctuation in expository writing. The student examines the functions, forms, and styles of punctuation, and develops skill through exercise drills as well as writing and editing practice.

053. Spelling. One nondegree credit. This course helps the writer overcome spelling difficulties. The

student analyzes his/her own needs with the aid of diagnostic tests, and follows a program of exercises designed to develop strategies for coping with spelling problems.

054. Word Usage. One nondegree credit. This is a course designed to help the writer in his/her choice of words in writing. Particular attention is given to developing strategies for simple and effective expression. This is not a course designed to increase vocabulary, but rather one that helps the student use effectively the vocabulary already acquired.

055. Vocabulary. One nondegree credit. This course is designed to increase the writer's vocabulary. The student learns lexicalization rules and reviews morphological structure, and has ample opportunity to practice using the "new words" discovered by him/her in reading and listening exercises.

056. Writing Process. One nondegree credit. This is a course designed to help the writer write more easily and quickly. Students who hate to write or who suffer from writer's block learn to write with ease. The psychological processes that accompany the composing process are examined, and strategies are developed to cope with stress and anxiety while writing.

057. Syntax. One nondegree credit. This course is designed to increase the writer's ability to understand and use complex sentence structures. Sentence-building and

sentence-combining exercises help the student develop the ability to make effective use of English syntax.

058. Organizing the Essay. One nondegree credit. In this course the student examines the conventional ways of organizing the content of expository writing. Particular attention is given to logical sequence and coherence, and the writer acquires skill through practice in structuring written material.

059. Writing the Academic Paper. One nondegree credit. Student writers in this module investigate the forms of documentation, the audience perspective and other conventions that apply to academic writing.

060. Writing Practice. One nondegree credit. Students who need writing practice to correct a variety of minor problems of writing mechanics are given the opportunity to write on a range of topics and to share ideas regarding strategies for overcoming particular problems.

061. Written Forms. One nondegree credit. This course is designed to aid in overcoming problems related to perceptual difficulties in recognizing and producing written forms.

062. Revising and Proofreading. One nondegree credit. The different strategies available to the writer who needs to be able to revise and proofread quickly and effectively are discussed and practiced in this workshop.[10]

The Old Dominion University Reading Program

The College Reading Improvement Program at Old Dominion University consists of four courses: ECI 062, 063, 064, and 065. The program is designed to aid those freshmen whose reading skills (comprehension, vocabulary, study skills and reading rate) warrant improvement in order to facilitate academic success at the college level. The majority of the freshmen enrolled in this course have college board verbal scores below 425. Seventy-five percent have been accepted with probationary status in what is known as the Academic Opportunity Program (AOP). One condition for admittance is enrollment in College Reading Improvement class. Students are administered the McGraw-Hill Basic Skills Systems Tests (Comprehension and Vocabulary Subtests during the Freshman Preview).[11]

A score below the 70th percentile of the national norms on the Vocabulary Subtest warrants taking 064 and possibly 065; the Reading Comprehension Subtest scores for this group are at or above the 70th percentile. If the Reading Comprehension Subtest scores are below the 70th percentile, but the Vocabulary Subtest results are above the 70th percentile, 063 and possibly 065 are recommended for the student. However, the majority of those people tested during the Freshman Previews score below the 70th percentile on both subtests and are advised to enroll in the 062 class.[12]

Academic Opportunity Program students are required to pass the Reading Improvement class. If they fail or receive an incomplete grade without rectifying this status, they are not qualified to be a sophomore at Old Dominion University.

While most of the students enrolled in the Reading Improvement courses are AOP, non-AOP freshmen whose verbal scores on the Scholastic Aptitude Test are below admission standards are advised by academic counselors to take a Reading Improvement course.[13]

Grades in the Reading Improvement Program are designated as "Pass"--"Fail." The following description of the developmental reading courses was taken from the 1980-1981 Old Dominion University Catalog:

062. Reading Improvement. Lectures three hours; three nondegree credits. The course is designed to develop and enhance higher-level reading skills. Emphasis is upon vocabulary development, reading comprehension, and rate. The course is open to all students. Lectures, demonstrations, and individual skill practice are provided.

063. Rate Development and Flexibility. Lecture/laboratory one hour; one nondegree credit. A twenty-hour laboratory course designed to develop flexibility in approaches to different reading tasks. Four purposes for reading are identified: reading for general information, study-type reading, skimming, and scanning. The program is designed to improve the rate of reading comprehension.

064. Vocabulary Development and Spelling. Lecture/laboratory one hour; one nondegree credit. A laboratory course designed to improve vocabulary and spelling skills. Diagnostic tests are administered to determine instructional needs, and an individualized program of material is utilized to improve students' skills.

065. Systems for Study: Developing Study Skills. Lecture/laboratory one hour; one nondegree credit. A laboratory course designed to improve study skills. Study strategies include problem solving, listening, note taking, underlining, and referencing. Diagnostic tests will determine areas of student weakness.[14]

The Old Dominion University Academic Opportunity Program

The Academic Opportunity Program (AOP) established in 1974, was initiated to allow flexibility in admitting minority and other students whose standardized test scores did not meet the University's general level of expectation, but who otherwise demonstrated promise of success.[15] Students in AOP are provisionally admitted and provided remedial courses and support services to ensure academic success. Other students with deficiencies also take remedial courses.[16]

Regular and AOP students with deficiencies are identified by having SAT and placement test scores below a minimum standard established by the university. Regular students are recommended for remedial reading if their

verbal SAT scores are below 420 and scores on the reading test are below University standards. AOP students with SAT scores below 300 on the verbal SAT and test scores below specified standards are required to take remedial reading. For English, all students must complete a writing sample, and those judged inadequate must take remedial work. A mathematics diagnostic test is administered to all AOP students, and those scoring poorly are required to remediate. Other students with SAT scores below 370 on the verbal section must complete the diagnostic test but are not required to take a remedial course.[17]

The School of Education administered the remedial reading and mathematics programs through the Department of Education Curriculum and Instruction. The Director of the Writing Center is responsible for the remedial English program and reports to the Dean of the School of General Studies.

The Old Dominion University Special Services Program

Special Services, initiated at Old Dominion University on September 1, 1980, is an academic support program funded by the United States Department of Education. The program's purpose is to retain and graduate low-income, first generation college, and physically disabled students. Further, the program assists its participants in the realization and development of their potential, interests, and the achievement of their educational and career goals.[18]

To assist program participants in succeeding academically and graduating with a degree in the career field of their choice, the following support services and activities are provided at no cost to program participants:

1. Counseling . . . to assist in meeting academic, personal/social, career, and/or financial needs;

2. Free Peer-Tutoring . . . offered in various subject areas specifically in math, science, engineering, and business;

3. Individualized and small group instruction . . . for improvement of reading, writing, and math skills;

4. Study skills seminars . . . for improvement of study habits, test-taking skills, and learning how to manage time wisely;

5. Seminars relevant to participants' needs . . . on such topics as financial aid and career planning;

6. Educational and cultural enrichment activities . . . which include field trips to graduate schools, plays, ballet performances, concerts, and historical sites.[19]

Special Services' fact sheet states the following as its philosophy:

> The Special Services staff believes that non-traditional students admitted to Old Dominion University have the potential for academic success. During the daily routine of working and studying, these students encounter many negative factors that are associated with academic failure. These negative factors include: (1) deficient academic skills, (2) a low self-esteem, (3) a feeling of loneliness and isolation, (4) family problems, and (5) confusion regarding career choice and inability to pursue long-range goals under adverse circumstances.

> Unfortunately, many nontraditional students are unable to cope or resolve these problems. The frustration that they experience many times leads to academic probation, suspension, or withdrawal from the university. The staff believes that through the program's support services, students will be retained by and graduate from Old Dominion University.[20]

Special Services is designed to fit the University in a way that it is not perceived as an "add-on", but an integral part of the University experience. It has access and uses the resources of every office on campus that has a student affairs responsibility, including academic departments.[21]

Organization of Data, Hypotheses, and Utilization of the Statistical Procedure

The research population for this study consists of all new, full-time and academically underprepared students enrolled in the reading and writing programs at Old Dominion University. The time span extends ten semesters from fall, 1980 to winter, 1985. The overall population consists of 1,526 first-time, full-time freshmen entering in the fall of 1980. From this total population, the investigation focuses on 240 histories of students enrolled in developmental writing and regular English and 259 histories of students enrolled in reading improvement and regular history classes.

Data Collection Procedures

After permission was granted by University authorities, a computer search of student records was completed.

The information needed (grades, age, sex, race and graduation date) to analyze the performance of the research population was then obtained.

A search of the entire population (748 developmental reading and writing studies students) was completed in preparation for this study. While reviewing the collected data, 437 student histories containing evidence to be included in the study were selected for tabulation and analysis. Selection was based on the following criteria:

1. All students enrolled in developmental writing;
2. All students enrolled in developmental reading;
3. All students participating in the Old Dominion University Special Services Program who were enrolled in developmental reading and/or writing.

The data were transferred from raw data to a study data file. There were 437 records in the file. The computer terminal facilities at the Arts and Letters Building at Old Dominion Univeristy were used for transferring data into a research account. The analysis was performed using the statistical package, the Statistical Analysis System (SAS), under the IBM 4381 computer.

Variables Under Investigation

Variables in this research study were operationalized in the following way:

Age. Chronological age expressed in years at the time the study was made; four groups were categorized as

follows: seventeen through twenty-one; twenty-two through twenty-six; twenty-seven through thirty-one; over thirty-one.

Grades and Quality Point Average. Compared by using these values: A, 4 quality points/course hour; B, 3 quality points/course hour; C, 2 quality points/course hour; D, 1 quality point/course hour; F, 0 quality points/course hour.

Persistence. Number of semesters of enrollment.

Race. Categorized as white and nonwhite.

Sex. Identified as male or female.

Success. Achievement in developmental writing or reading classes that resulted in a satisfactory grade followed by achievement in a regular college English course or regular college history course that resulted in a letter grade of "A," "B," or "C."

Design of the Study

This study was conducted to provide answers to research questions pertaining to student grades and persistence in developmental reading and writing classes and regular college English and history classes. The graduation rate was obtained for the group. Additionally, the study serves to determine whether or not a significant relationship (.05 level) exists between achievement and certain demographic variables. Finally, the study attempts to identify successful program characteristics that enhance

student achievement. The investigation seeks to answer the following questions:

1. How many students who were entered in the fall semester of 1980 were scheduled in reading and/or writing developmental education classes?

2. What are the characteristics of students in one or both developmental courses in comparison to other students on the variables of age, sex and race?

3. Are these variables of age, sex and race in developmental studies courses associated with success as defined by grades received?

4. Is there an association between student development course grades and persistence at the University?

5. Is there an association between the level of success in developmental reading and writing courses and subsequent performance in English 110 and college-level history?

6. Is there an association between success in developmental program courses and graduation rate?

7. Is participation in the Special Services Program associated with success rates of developmental students?

Assumption. A majority of students enrolled at Old Dominion University are not academically deficient.

Null Hypotheses Tested

Hypothesis 1. There is no statistically significant difference between success as defined by grades received in

developmental courses and the demographic variables age, sex and race.

Hypothesis 2 a. There is no statistically significant association between success as defined by grades received in developmental reading courses and persistence in number of semesters at Old Dominion University.

Hypothesis 2 b. There is no statistically significant association between success as defined by grades received in developmental writing courses and persistence in number of semesters at Old Dominion University.

Hypothesis 3 a. There is no statistically significant association between success in regular English classes as evidenced by grade awarded and successful completion of writing courses.

Hypothesis 3 b. There is no statistically significant association between success in regular history classes as evidenced by grade awarded and successful completion of reading classes.

Hypothesis 4. There is no statistically significant association between baccalaureate degree graduation rates for developmental and nondevelopmental students.

Hypothesis 5. There is no statistically significant difference between success in the developmental reading and writing programs and participation in the Special Services Program.

Statistical Vehicles Utilized

The analysis of the data utilized the following

techniques:

Assumption was tested using descriptive statistics; specifically percentages. Descriptive statistics allowed for stratification of the population.

Hypothesis 1 was tested using a three-way factorial analysis of variance. The three-way factorial analysis of variance tested for the variance between groups and variance within groups for demographic variables.

Hypothesis 2 a & b was tested using Chi Square statistics. The Chi Square tested whether or not a systematic relationship existed between the two variables of grades and persistence.

Hypothesis 3 a & b was tested using Chi Square statistics. Use of a nonparametric, inferential statistical method tested for significant relationships between the selected variables in the reading and writing programs.

Hypothesis 4 was tested using Chi Square statistics. The one-way Chi Square tested for differences in success between two variable groups.

Hypothesis 5 was tested using a two-sample T test which tested for differences in the mean levels of GPA.

In an attempt to categorically attest to the validity of the evaluation of the remedial programs and relative aspects, the hypotheses were constructed using the .05 level as the criterion for statistical significance. Kerlinger has pointed out that the level of statistical

significance used in research is to some extent "chosen arbitrarily."[22] Tabachnick,1983, has indicated that in social science and educational research, the five percent of significance (.05) is often accepted as a standard for rejection of the null hypothesis.[23] The null hypothesis asserts that there is no statistically significant relationship between two measurements. Use of the .05 level of significance means that an obtained result that is significant at the .05 level will probably occur by chance about five times in one hundred trials. As statisticians point out, the .05 level is neither too high nor too low for most social science researchers. The .05 level was originally chosen and has persisted with researchers because it is considered a reasonably good gamble.[24] The summary of this chapter concludes the information presented here.

Summary of Methodology

This chapter presented a discussion of the background, structure and the development of the study. The study recognizes that remedial instruction must stand or fall on the basis of a single criterion: academic success. The three measures of academic success used were grades, persistence and graduation rate.

The establishment and growth of Old Dominion University was reviewed from its formal beginning in 1930 until 1985.[25] In addition, the admission requirements

for incoming freshmen were shown to be a combined SAT score of 850, top half of high school class and a minimum "C" average in secondary school.[26] Also covered was a discussion of the grading system used by Old Dominion University in 1980.

A comprehensive Writing Skills Program was initiated at Old Dominion University in 1978.[27] Those freshmen students whose writing proficiency is not at the level expected of college students are required to take instruction in basic writing skills courses before entering the traditional English composition classes. The writing program consists of several developmental workshops administered on a pass, re-enroll or fail basis.

The Old Dominion University Developmental Reading Program was designed to aid those freshmen whose reading skills are deficient for college-level work.[28] One condition for admittance of Academic Opportunity Program students was enrollment in the college reading improvement class. Also any other freshmen scoring below the 70th percentile in the nation on the McGraw-Hill Basic Skills Systems Tests were advised to enroll in the reading improvement course.[29] Grades in the reading program are designated as "Pass"--"Fail."

The Academic Opportunity Program was established in 1974 to allow flexibility in admitting underprepared, minority and other students who otherwise demonstrated promise of success.[30] The Special Services Program was

established in 1980 to retain and graduate low-income, first generation college and physically disabled students.[31] Participants in the Special Services Program are provided no-cost counseling, peer tutoring, individualized instruction, seminars, and cultural enrichment activities.

The remainder of the chapter described the research population, data collection procedures, variables under consideration, hypotheses and utilization of the statistical procedure. The research population consisted of all new, full-time and academically underprepared students enrolled in the reading and writing programs at Old Dominion University in Norfolk, Virginia, over a ten semester period. The data were analyzed using the Statistical Analysis System (SAS) for the Social Sciences Computer Program under the IBM 4381 computer. The following chapter will present the statistical refinement of the analyzed results and conclusions.

FOOTNOTES

[1]H. A. Robinson, "A Note on the Evaluation of College Remedial Reading Courses," The Journal of Educational Psychology 41 (1950:84.

[2]Old Dominion University, "Old Dominion University General Catalog, 1980," (Norfolk, Virginia, 1980-81), pp. 13-14.

[3]Ibid., p. 11.

[4]Michael Myers, "Preparing Students for College: The Need for Quality," Issues in Higher Education 19 (1983):4.

[5]Old Dominion University, "Old Dominion University Catalog," p. 56.

[6]Old Dominion University, "The Old Dominion University Writing Program," (Norfolk, Va., 1985), p. 1.

[7]Ibid., p. 1.

[8]Old Dominion University, "The Old Dominion University Writing Program," p. 4.

[9]Ibid., p. 6.

[10]Old Dominion University, "The Old Dominion University Reading Program," (Norfolk, Va., 1983), pp. 1-4.

[11]Old Dominion University, "The Old Dominion University Reading Program," (Norfolk, Va., 1983), pp. 1-4.

[12]Ibid., p. 3.

[13]Ibid., p. 2.

[14]Old Dominion University, "Old Dominion University Reading Program," (Norfolk, Va., 1983), p. 177.

[15]Old Dominion University, "The Academic Opportunity Program," (Norfolk, Va., 1985), p. 1.

[16]Ibid., pp. 1-2.

[17]Old Dominion University, "Old Dominion University Reading Program," p. 3.

[18]Old Dominion University, "The Old Dominion University Special Services Program, The School of General Studies," 1980; p. 1.

[19]Ibid., p. 1.

[20]Ibid., p. 2.

[21]Ibid., p. 3.

[22]Fred Kerlinger, Foundations of Behavioral Research, (New York: Hold, Rinehart and Winston, 1973), p. 168-70.

[23]Barbara G. Tabachnick and Linda S. Fidell, Using Multivariate Statistics, (New York: Harper and Row, 1983), p. 4.

[24]Kerlinger, Foundations of Behavioral Research, p. 170.

[25]Old Dominion University, "Old Dominion University Catalog," p. 13.

[26]Ibid., p. 33.

[27]Old Dominion University, "Old Dominion University Writing Program," p. 1.

[28]Old Dominion University, "Old Dominion University Reading Program," p. 1.

[29]Ibid., p. 3.

[30]Old Dominion University, "Old Dominion Opportunity Program," p. 1.

[31]Old Dominion University, "Old Dominion University Special Services Program," p. 1.

CHAPTER IV

PRESENTATION OF THE DATA

The purpose of this study is to examine the effectiveness of the reading and writing developmental programs at Old Dominion University. Chapter four contains the results of the analysis of the data of the study as stated in Chapter three. By way of introduction, a description of the population and assumption of the study is presented. A restatement of the null hypotheses follows, accompanied by corresponding findings. Tables are included to report results where visual display was believed necessary by the examiner in order to provide clarification.

Population Description

Using the Old Dominion Admission Office's computerized files, the admissions records of 1,526 new, full-time freshmen entering Old Dominion University in the fall of 1980 were examined. Of these 1,526 students, a total of 437 were found who met this study's criteria for academic underpreparedness in reading and writing. One hundred ninety-seven students were found to be deficient in reading, 178 students were found to be deficient in writing and sixty-two students were found to be deficient in both

reading and writing. Fifty-two percent of the freshmen taking developmental courses during the fall of 1980 were those admitted to the University under the Academic Opportunity Program. Student rosters from the Special Services Program were used to determine that 21 or 4.8 percent of these 437 underprepared students were Special Services Program students. A cumulative grade report was obtained from Old Dominion University Office of Academic Records for each of the 437 skills deficient students. These reports provided the information necessary to determine mean semester cumulative grade point averages, semester letter grades received, yearly persistence rates and a five-year graduation rate.

An examination of the data found 437 underprepared, full-time freshman students to be deficient in reading and writing skills. This number represents 29 percent of the total freshman class population. The remaining 71 percent not deficient in reading or writing skills represents a majority of the population. Therefore, the assumption that the majority of freshman students enrolled at Old Dominion University are not academically deficient in reading and writing was found to be correct.

Table 1 presents a complete description of the vital variables utilized in the population examined.

TABLE 1

DESCRIPTIVE STATISTICS FOR SUCCESS IN DEVELOPMENTAL COURSES AT OLD DOMINION UNIVERSITY BY DEMOGRAPHIC CLASSIFICATION

Classification		Number	Mean	Standard Deviation
Race	Nonwhite	107	3.70	00.98
	White	330	3.39	1.36
Sex	Female	233	3.58	1.18
	Male	196	3.34	1.38
Age	17	150	3.51	1.22
	18	269	3.44	1.32
	19	17	3.50	1.15

Testing of the Null Hypotheses

Null Hypothesis 1

There is no statistically significant difference between success as defined by grades received in developmental courses and the demographic variables age, sex and race.

Results

Null Hypothesis 1. The hypothesis was tested by computing the three-way factorial analysis of variance. Table 2 presents the comparison between the dependent variable, grades, and the independent variables of age, sex and race. Grades originally in letter form were converted

into numerical variables as follows: P = 4.0; Q = 2.0; F = 0. Students receiving a grade of "Q" or re-enroll, were given a 2.0 numerical value because they were not equipped with the same strengths as the "P" students.

TABLE 2

3-WAY ANOVA OF SUCCESS IN DEVELOPMENTAL COURSES AT OLD DOMINION UNIVERSITY BY RACE, SEX, AND AGE

Source	Degrees of Freedom	Sum of Squares	Mean Square	F Ratio	P Value
General Linear Model	4	11.27	2.81	1.73	0.14
Race	1	7.70	7.70	4.72	0.03
Sex	1	3.33	3.33	2.04	0.15
Age	2	.24	.12	.07	0.93
Standard Error	424	691.55	1.63		
Total	428	702.82			

According to the PR>F, the probability level equaled 0.143. On the basis of these findings, the null hypothesis was not rejected. The linear model was found to be insignificant. The examination of the age factor appeared to be the redundant factor as related to the other variables. The computed P value of the age factor equaled to .93 which was highly insignificant. Age was suspected to be the cause of the insignificance of the model. It was recognized that age levels were predominantly seventeen and eighteen years, which

for all practical purposes was the same level.

Age was dropped from the linear equation and a two-way factorial analysis of variance was computed with sex and race as the independent variables. On the basis of these findings, the null hypothesis was rejected. Table 3 presents the findings between success as defined by grades received in the developmental program and the demographic variables of sex and race. The linear model was significant, as evidenced by the P value equal to .034. Race with a P value equal to .030 was responsible for the variation in the data. Sex was not found to impact on variance.

TABLE 3

2-WAY ANOVA OF SUCCESS IN DEVELOPMENTAL COURSES AT OLD DOMINION UNIVERSITY BY RACE AND SEX

Source	Degrees of Freedom	Sum of Squares	Mean Square	F Ratio	P Value
General Linear Model	2	11.03	5.51	3.40	.034
Race	1	7.70	7.70	4.74	.030
Sex	1	3.33	3.33	2.05	.153
Standard Error	426	691.798	1.624		
Total	428	702.828			

The Scheffe's test for comparison of the

levels of the main factors, sex and race, was performed. The computation in Table 4 revealed that the nonwhite group had a higher mean level (significant difference) of 3.7 from the white mean level of 3.4. In comparing sex levels, it was revealed that the mean grade levels were not statistically significant.

TABLE 4

SCHEFFE'S TEST FOR RACE

Scheffe Grouping	Mean	N	Race
A	3.7	107	Nonwhite
B	3.3	322	White

Means with the same letter are not significantly different.

Null Hypothesis 2 a

There is no statistically significant association between success as defined by grades received in developmental reading courses and persistence in number of semesters at Old Dominion University.

Results

Null Hypothesis 2 a. The Chi Square was 37.75 (DF = 11, $P<.05$). As a result of this finding, the null hypothesis was rejected. There is a statistically significant difference between success in developmental reading and the number of semesters enrolled.

Observed frequencies in Table 5 indicated that 234 or 90.4 percent of all students enrolled in developmental reading received a grade of Pass. Of those, nine students or 3.9 percent enrolled one semester only, 25 or 10.7 percent enrolled two semesters only, 24 or 10.3 percent enrolled three semesters only, and 27 or 11.5 percent enrolled four semesters only. By the end of the first year, 85.4 percent persisted to the second year. By the end of the second year, 63.6 percent of the total "P" or Pass recipients persisted into the third year or into the fifth semester. All percentages were calculated with respect to corresponding row totals.

TABLE 5

DEVELOPMENTAL READING PERFORMANCE AND PERSISTENCE IN ACTIVE ENROLLMENT AT OLD DOMINION UNIVERSITY

	Semesters Investigated (F=Fall; SP=Spring)												
Grades	F 80	SP 81	F 81	SP 82	F 82	SP 83	F 83	SP 84	F 84	SP 84	F 84	SP 85	Total
Pass	9	25	24	27	3	1	1	54	28	39	16	7	234
Fail	7	8	1	0	0	0	0	3	2	1	2	1	25
Total	16	33	25	27	3	1	1	57	30	40	18	8	259

Number in body of table represents students. Summer session included with preceding spring semester due to small cell number.

$X^2 = 37.75$, 11 DF, $P<.05$

Of the twenty-five or 9.7 percent who received "F" or fail grades, seven were enrolled one semester only, eight for two semesters only, and one enrolled for a third semester. These findings show that only 36 percent persisted beyond the third semester.

An examination of the combined persistence rate revealed that 6.2 percent enrolled one semester only, 12.7 percent enrolled two semesters only, 9.7 percent enrolled three semesters only, and 10.4 percent enrolled four semesters only. At the end of four semesters or following two academic school years, 39.7 percent of the 259 had dropped out of school, while 60.3 percent persisted into a fifth semester.

Table 5 indicated if a student persisted through four semesters, he/she had a significant probability of achieving success to graduation. Also indicated is the significantly higher persistence rate of students successfully completing the developmental reading course; note that 85.4 percent of the students passing the reading course persisted into the third semester.

An examination of the combined persistence rate revealed that 6.2 percent enrolled one semester only, 12.7 percent enrolled two semesters only, 9.7 percent enrolled three semesters only, and 10.4 percent enrolled four semesters only. At the end of four semesters or following two academic school years, 39.7 percent of the 259 had dropped out of school, while 60.3 percent persisted into a

fifth semester.

Table 5 indicated if a student persisted through four semesters, he/she had a significant probability of achieving success to graduation. Also indicated is the significantly higher persistence rate of students successfully completing the developmental reading course; note that 85.4 percent of the students passing the reading course persisted into the third semester.

By comparison, only 36 percent of the students receiving an "F" grade persisted into the third semester. Therefore, it is concluded that passing the developmental reading course is a reliable predictor of persistence.

Null Hypothesis 2 b

There is no statistically significant difference between success as defined by grades received in developmental writing courses and persistence in number of semesters at Old Dominion University.

Results

Null Hypothesis 2 b. The Chi Square test did not reveal evidence that supports a significant difference between success in writing courses and the number of semesters of enrollment (Chi Square = 30.94, DF = 22, $P<.097$). The null hypothesis was retained.

Observed frequencies in Table 6 indicated that 186 or 80.2 percent of all students enrolled in developmental writing received a grade of "P" for the fall of 1980. Of

those students, six or 3.2 percent enrolled one semester only, 29 or 15.6 percent enrolled two semesters only, 12 or 6.5 percent enrolled three semesters only and 19 or 10.2 percent enrolled four semesters only. By the end of the first year or spring, 1981, 81.2 percent persisted to a second year or into the fall session of 1981. By the end of the second year or spring, 1982, 64.5 percent of the total Pass students persisted into the third year or fifth semester. All percentages were calculated with respect to corresponding row totals.

TABLE 6

DEVELOPMENTAL WRITING PERFORMANCE BY SEMESTER OF ENROLLMENT AT OLD DOMINION UNIVERSITY BY PASS, FAIL AND RE-ENROLL

	Semesters Investigated (F - Fall; SP - Spring)												
Grades	F 80	SP 81	F 81	SP 82	F 82	SP 83	F 83	SP 84	F 84	SP 85	F 85	SP 86	Total
Pass	6	29	12	19	4	9	3	46	13	25	16	4	186
Fail	4	6	4	0	0	0	0	2	3	3	2	0	24
Re-enroll	0	3	3	4	2	0	0	4	1	3	2	0	22
Totals	10	38	19	23	6	9	3	52	17	31	20	4	232

Number in body of the table represents students. Summer sessions are included with the preceding spring semester due to limited cell counts.

$X^2 = 30.94$, 22 DF, $P<.097$.

Of the twenty-four students who received a failing grade, four were enrolled one semester only, six for two semesters, four for three semesters and none for four semesters. These findings show that 58.3 percent persisted through the first year (spring, 1981). By the end of the second year (spring, 1982), 41.6 percent of the total "F" students persisted into the third year or fifth semester (fall, 1982).

Of the 22 students receiving a "Q" or re-enroll grade, none were enrolled one semester only, three enrolled two semesters only, three for three semesters, and four for four semesters. Table 6 indicated that 96.4 percent persisted through the first year. By the end of the second year, 54.6 percent of total "Q" students persisted into the third year or fifth semester.

Even though a comparison of the frequencies appeared to indicate relative significance, the high number of degrees of freedom (22) drives the required critical Chi Square value to an unusually high number. The P value of .097 was not highly insignificant and at the .10 level of significance, the null hypothesis may be rejected.

Null Hypothesis 3 a

There is no statistically significant association between success in regular English classes as evidenced by grade awarded and successful completion of writing courses.

Results

Null Hypothesis 3 a. The Chi Square was 16.21 (DF = 4, P<.003). As a result of this finding, the null hypothesis was rejected. There is a significant association between success in regular English classes as evidenced by grades awarded and successful completion of writing courses. As seen in Table 7, the grade performance among the developmental and nondevelopmental student was significantly different. The nondevelopmental students performed significantly better. The grade "C" was the most frequently occurring grade for both groups. The grade "A," most predominantly observed among the nondevelopmental group, possibly insured the rejection of the hypothesis. Selection for nondevelopmental students was done at random. Each student in the nondevelopmental category had an equal and independent chance of being chosen. The selection was based on the four-digited random number table.

As noted in Table 7, for each grade level, developmental students significantly outperformed the nondevelopmental students, with the exception of the "B" level. The "B" level figures are identical in percentages with 28 percent each, as to cancel each other out.

TABLE 7

BACKGROUND BY GRADES RECEIVED IN COLLEGE-LEVEL ENGLISH BY DEVELOPMENTAL AND NONDEVELOPMENTAL STUDENTS

	Grades					
Classification	A	B	C	D	F	Totals
Developmental	4	61	104	16	30	215
Nondevelopmental	22	57	87	13	19	198
Totals	26	118	191	29	49	413

$X^2 = 16.21$ with 4 DF; $P<.003$

Null Hypothesis 3 b

There is no statistically significant association between success in regular history classes as evidenced by grade awarded and successful completion of reading classes.

Results

Null Hypothesis 3 b. The Chi Square test did not reveal evidence that supports a significant association between success in regular history classes as evidenced by grade awarded and successful completion of reading classes (Chi Square = 2.15, DF = 4, P<.71). As the findings in Table 8 reveal, the developmental student performed at about the same success rate in history classes as the non-

developmental student. The null hypothesis was not rejected. Selection of the nondevelopmental students was based on the four-digited random number table.

TABLE 8

BACKGROUND BY GRADES RECEIVED IN COLLEGE-LEVEL HISTORY BY DEVELOPMENTAL AND NONDEVELOPMENTAL STUDENTS

Classification	A	B	C	D	F	Totals
Developmental	13	41	67	34	41	196
Nondevelopmental	9	45	76	36	34	200
Totals	22	86	143	70	75	396

$X^2 = 2.15$; DF = 4; P<.708

It is interesting to note that 6.6 percent of the nondevelopmental students received "A's" while only 4.5 percent of the developmental students received "A's." The nondevelopmental students performed only slightly better than the developmental students with only a 1.6 percent differential on the "B" level. The developmental students out performed the nondevelopmental students in both the "C" and "D" grade levels. Developmental students received the largest number of "F"s."

Null Hypothesis 4

There is no statistically significant association

between the baccalaureate degree graduation rates for developmental and nondevelopmental students.

Results

Null Hypothesis 4. The hypothesis was tested by computing Chi Square. Table 9 presents the comparison between the baccalaureate degree graduation rates for developmental and nondevelopmental students. On the basis of these findings, the null hypothesis was rejected. Computation revealed the Chi Square value of 9.47 with two degrees of freedom, $P<.009$. The graduation rates among the developmental and nondevelopmental students was significantly different.

TABLE 9

GRADUATION RATE BETWEEN DEVELOPMENTAL AND NONDEVELOPMENTAL STUDENTS AT OLD DOMINION UNIVERSITY

Years	3	4	5	Total
Developmental	1	107	94	202
Nondevelopmental	16	172	208	396
Total	17	279	302	598

An inspection of the observed frequencies revealed 202 or 33.8 percent of the total number of graduates were developmental students. One or 17 percent graduated at the end of the third year, 107 or 17.9 percent graduated at the

end of the fourth year, and ninety-four or 15.7 percent graduated at the end of the fifth year.

Further analysis of Table 9 indicated that 396 or 66.2 percent of the total graduation population were non-developmental students. Sixteen or 2.7 percent graduated at the end of the third year, 172 or 28.8 percent graduated at the end of the fourth year, and 208 or 34.8 percent graduated at the end of the fifth year.

Graph 1 depicts the results of the two graduation groups in diagram form. The developmental group graduated at a significantly higher rate than the nondevelopmental students. This result was not expected.

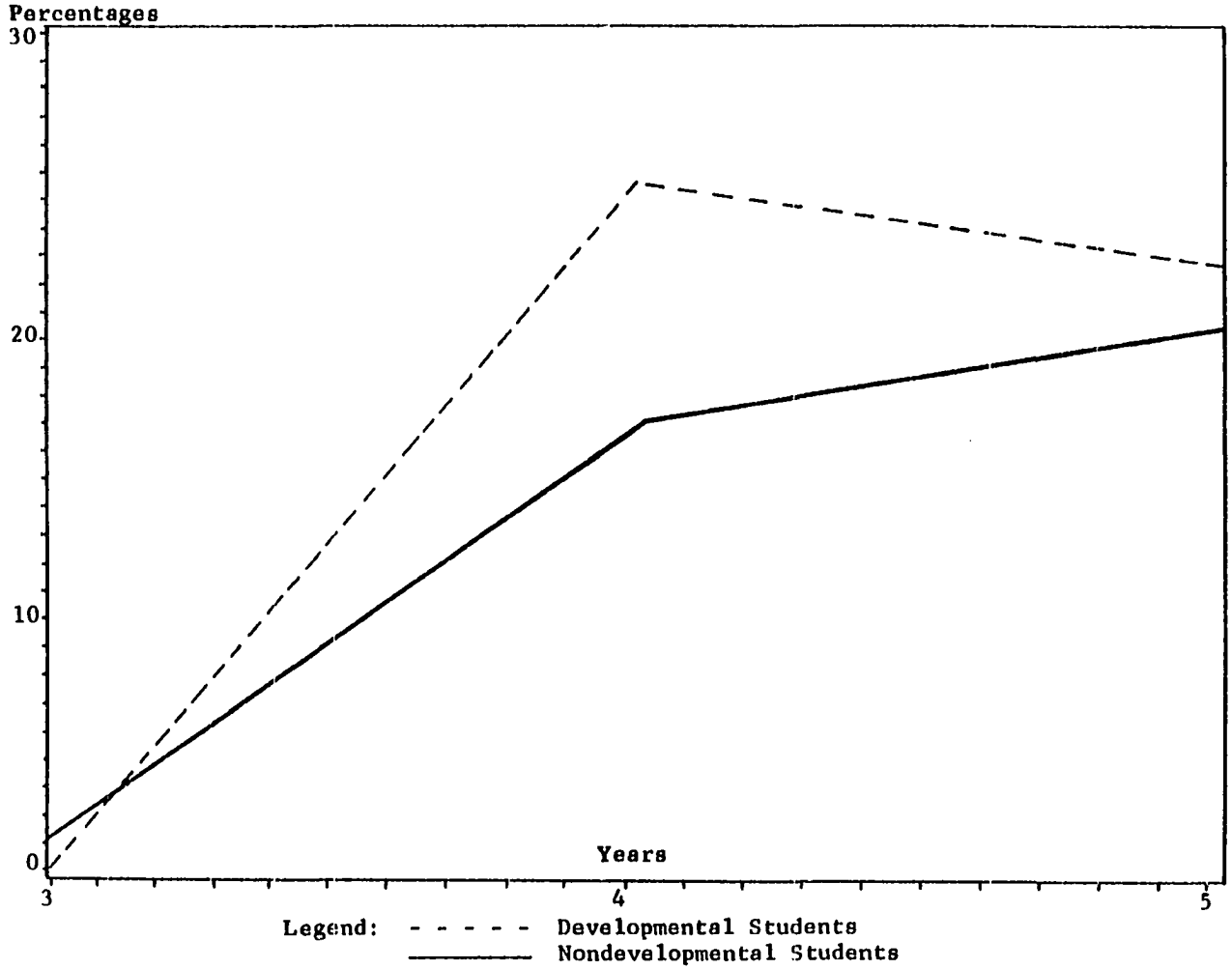
The graph was based on the percent of students that graduated in their respective groups. The percent for the developmental students was arrived at by comparing the graduation number, 202, with respect to the total number of people in the groups, 437. Similarly, the nondevelopmental percent was arrived by at comparing 396 of the graduates with the total number of nondevelopmental students, 1,089. Calculation of these percentages shows that 46 percent of the students in the developmental group graduated within the five-year or ten-semester span. On the other hand, only 36 percent of the students in the nondevelopmental group graduated during the same period.

Null Hypothesis 5

There is no statistically significant difference between success in the developmental reading and writing

GRAPH 1.

Graduation Rates of Developmental and Nondevelopmental Students



programs and participation in the Special Services Program.

Results

Null Hypothesis 5. The hypothesis was tested by using a two-sample t-test. As a result of the findings, P>T = 0.62, the null hypothesis was not rejected.

Twenty Nonspecial Services students were randomly selected from the group of developmental students. The GPA of 16 Special Services students was tested using a two-sample t-test. The t-test required equality of variance of GPA in each group, hence, before testing mean levels of GPA, equality of variance was tested. The variance was found to be equal with a P value of 0.26.

As presented in Table 10, the t test under equality of variance revealed a P value equal to .026. This meant that the null hypothesis of no difference in mean levels of GPA between Special and Nonspecial Services Program students was accepted. The 16 Special Services participants consisted of the following breakdown: 80 percent nonwhite; 20 percent white; 50 percent male; 50 percent female; 85 percent enrolled in the reading program and 15 percent enrolled in the writing program. Graph 2 depicts the GPA of Special and Nonspecial Services developmental students.

TABLE 10

A TWO-SAMPLE T-TEST WITH
EQUALITY OF VARIANCE

Variable: GPA

Group	Number	Mean GPA	Standard Deviation	Standard Error	t-Value	Probability Level
NS	20	2.29	0.71	0.16	-.50	.62
S	16	2.33	0.53	0.13		

For HO = Variances are Equal, F' = 1.77 with 19 and 15 DF.

T value is 0.62.

Legend: NS = Nonspecial Students
S = Special Students

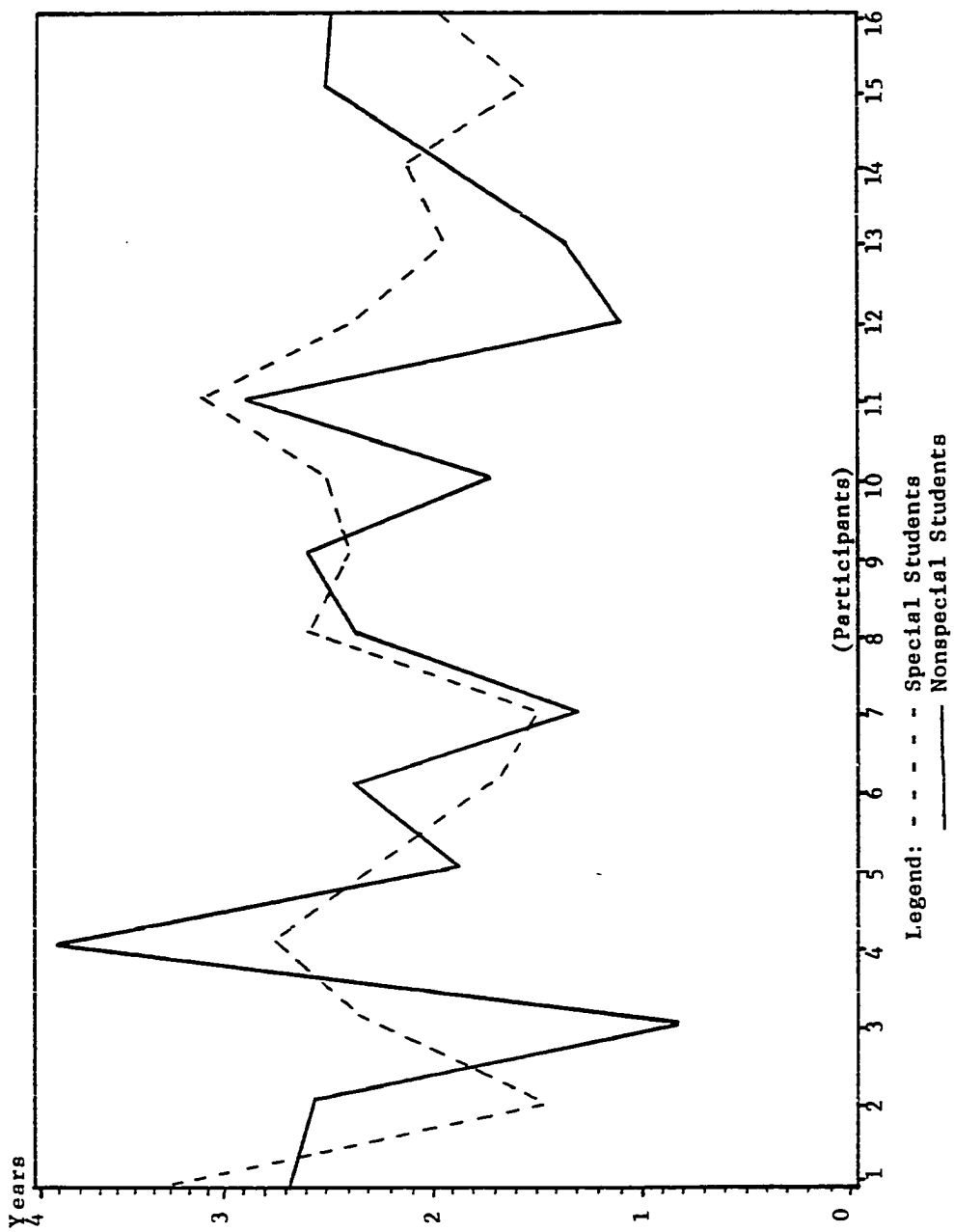
Summary of Presentation of the Data

The purpose of Chapter four was to present the data collected as a result of this research. The collected data consisted of age, sex and race factors; college persistence rates; college-level work success rates; and baccalaureate graduation rates. The reading and writing developmental programs were analyzed using the Analysis of Variance, the Chi Square, and the t-test. The following results for the five hypotheses were presented:

1. The cultural factors of age and sex were not found to have a significant effect on the performance of

GRAPH 2.

GPA of Special and Nonspecial Developmental Students



students in course work. The probability level equaled 0.143. The null hypothesis was not rejected. When age was dropped from the linear model, race was found to have a significant effect on academic performance (PR>F' = .034).

2. The performance of the students in the developmental courses was found to be significant enough to be used as a predictor of performance on curriculum. Passing the developmental reading course was a reliable predictor of persistence (PR>F' = .05). Passing the developmental writing course was not a reliable predictor of persistence (PR>F' = .097).

3. The value of the developmental writing course in preparing the student to meet the requirements of English 110 was not conclusively established, but the utility of the developmental reading course in preparing the student to meet the requirement of subsequent regular history classes was conclusively established. The nondevelopmental students performed significantly better in English than the developmental; however, the developmental students performed at about the same rate in history classes as the nondevelopmental students.

4. The major findings of this study indicated that developmental students demonstrated a higher graduation rate than the nondevelopmental students. Comparison between the baccalaureate degree graduation rates for developmental and nondevelopmental students revealed the Chi Square value of 9.47 with two degrees of freedom, P<.009. Forty-six percent

P<.009. Forty-six percent of the students in the developmental group graduated within the five-year, or ten-semester span. On the other hand, only 36 percent of the students in the nondevelopmental group graduated during the same period.

5. Participation in the Special Services Program had no significant bearing upon success in the developmental programs. The mean level of the two groups was found to be equal with a P value of 0.62.

Chapter five will present a discussion of the findings, conclusions, and recommendations for future study.

CHAPTER V

SUMMARY, DISCUSSION, CONCLUSION

This study lends itself to be categorized under two headings: (1) the literature review, and (2) the examination of the Old Dominion University program and its assessment.

Summary of the Literature

Developmental programs in higher education have experienced increasing growth since the early 1970's. Today, programs that assist students in acquiring the academic skills needed to pursue college course work are considered necessary in 94 percent of our nation's post-secondary institutions.[1] A considerable body of evidence concluded that remediation can and does make a valuable contribution, nationwide. The degree of success of these programs was largely dependent upon the commitment and quality of specific program characteristics. Due to the proliferation of costly developmental programs, public officials have become increasingly aware of the need for evaluation and policy direction of these programs. The basic premise for this study was recognition of a need to determine the effectiveness of the use of the developmental reading and writing programs at Old Dominion University.

This study examined research questions focusing on student success in developmental and college-level course work as that success was related to selected demographic variables, persistence, and graduation rates of the underprepared students at Old Dominion University. Research questions were designed to develop quantitative and qualitative parameters to be used in conducting statistical analyses. Statistical analyses were performed to determine if selected variables were statistically significant predictors of success. Variables analyzed were age, sex, race, completion of developmental program courses in reading and writing and participation in the Special Services Program. In this chapter some tentative conclusions are drawn based upon the results of the data analysis of the study. The first section discusses the theoretical implications of the findings and the second section addresses the conclusion of the study.

Summary of the Findings

1. Four hundred thirty-seven subjects of the entering full-time freshman class were enrolled in either developmental reading or writing courses or both. Two hundred fifty-nine of 17 percent of the subjects were deficient in reading. Two hundred forty or 16 percent of the subjects were deficient in writing.

2. No statistical significance was found between age and the grade received in developmental reading and writing courses. It was recognized that the age levels

were predominantly seventeen and eighteen years, which for all practical purposes was the same level. Sixty-two percent in the observed group were eighteen years of age and 34 percent were seventeen years of age.

It was revealed that no stastical significance was found between sex and the mean grade level received. However, the females had a slightly higher average. Fifty-four percent of the academically deficient students in reading and writing were female and 46 percent were male.

In this research, a statistically significant difference was found between race and the grades received in the developmental program. The computations revealed that the nonwhite group had a mean level higher than the white mean level.

3. A statistical significance was found between success in developmental reading and the number of semesters enrolled ($P<.05$). Although no association was found between success in the developmental writing course and the number of semesters enrolled, it was found that it approached significance ($P<.097$).

4. The research found that there was no significant difference between success in regular English classes of developmental students completing the writing course and the nondevelopmental students never enrolled in the writing course. The nondevelopmental students performed significantly better.

5. A statistically significant difference was found

between the baccalaureate graduation rate of developmental and nondevelopmental students. The developmental group graduated at a significantly higher rate than the nondevelopmental students.

6. No statistically significant difference between success in the developmental reading and writing programs and participation in the Special Services Program was found. Those participants in the Special Services Program performed equally as well in the GPA as the nonparticipants in the Special Services Program.

Discussion

An initial question posed by this study inquired: How many students who were enrolled in the fall semester of 1980 at Old Dominion University were scheduled in reading and/or writing developmental studies courses?

Four hundred thirty-seven subjects of the entering full-time freshman class were enrolled in either developmental reading or writing courses or both. One hundred ninety-seven students were found to be deficient in reading, one hundred seventy-eight were found to be deficient in writing and sixty-two students were found to be deficient in both reading and writing. These students represent 29 percent of the total freshman class population. This number is considerably below the participation rate indicated in other reports. Even with the inclusion of the remedial math students of whom 75 percent

were enrolled in other remedial reading or writing, the number of all remedial students enrolled at Old Dominion University was below average.

Perhaps the comparatively smaller percentage of developmental students at Old Dominion University can be accounted for by the admission standards. As a selective institution, the specified level of academic achievement at Old Dominion University requires a combined SAT score of 850 and rank in the top half of high school classes. The Academic Opportunity Program which admitted minority and regular students who may fall below 400 on some section of the SAT test are not cases of severe learning disabilities.[2] Admissions requirements effectively dissuade the severe cases from even applying.

A second inquiry of the study was concerned with whether the characteristics of students enrolled in developmental reading and writing had an association with success. The demographic variables chosen were age, sex and race. Conclusions were as follows:

Age. No statistical significance was found between age and the grade received in developmental reading and writing courses. It was recognized that the age levels were predominantly seventeen and eighteen years, which for all practical purposes was the same level. Sixty-two percent were seventeen years of age. These numbers revealed no difference from overall institutional enrollment patterns.

It is reasonable to expect that since the emphasis in the present study was on first-time students, most of whom would have just graduated from high school, seventeen and eighteen year-olds were a majority in the youngest age intervals. The disproportionate representation of remedial students ages seventeen through twenty-one emphasizes the strong relationship between recent educational experiences in secondary schools and the lack of skills needed for college-level work. Also, the tendency to youth in developmental studies invites the view that these students are not the typically more experienced persons who return to school to obtain refresher work.

Sex. No statistical significance was found between sex and the mean grade level received. However, the females had a slightly higher average. Fifty-four percent of the reading and writing skills-deficient students were female and 46 percent were male. This is consistent with other findings that show a steady enrollment decline of men and an increase in women. However, the findings of this study were contrary to other studies that indicated a higher percentage of men participating in remedial programs than women.

The findings concluded that no evidence existed to associate maleness or femaleness with the variable of success in isolation. The literature was supportive of this view in that an increasing awareness of differentiating sex roles is emerging. The fact that females

received slightly higher mean averages may be due to the interpretation that women have stronger verbal abilities than men. This phenomenon would apply for English and reading.

Race. In this research, a statistically significant difference was found between race and the grades received in the developmental program. The computations revealed that the nonwhite group had a mean level higher than the white mean level. These results are in sharp contrast to other studies. Historically, the factor of race has been a valid predictor of performance of students on both developmental and regular curriculum courses.

Further, this study showed 76 percent of the underprepared participants to be white and 24 percent to be of the nonwhite origin. Black and other minority representation were not proportionally overrepresented. The inconsistency may be due to the strict academic screening procedure done by the Director of the Academic Opportunity Program. The program was designed to admit minorities and other students whose standardized test scores did not meet the university's general level of expectation, but who otherwise demonstrated promise of success. Promise of success was demonstrated by the level of motivation of the student and grades received in high school. The high rate of success in the mean level grade for minorities could possibly be a result of individual motivation.

A third inquiry was concerned with whether there was a statistically significant difference between success as defined by grades received in developmental reading and writing courses and persistence in number of semesters at Old Dominion University. A statistical significance was found between success in developmental reading and the number of semesters enrolled ($P<.05$). Although no association was found between success in the developmental writing course and the number of semesters enrolled, it was found that it approached significance ($P<.09$).

In contrast to early literature reports which indicated comparatively high attrition rates among developmental students, developmental students in the present study were found to be significantly persistent. This finding is consistent with results obtained in more recent studies that suggest a general maturation of developmental programs. Of the students receiving a passing grade in the reading program 95 percent persisted to a second year. By the end of the second year, 64 percent persisted into the third year. Persistence to graduation reached statistical significance supporting the conclusion that passing the developmental reading course was a reliable predictor.

Of the students receiving a passing grade in the writing program, 82 percent persisted to a second year and 64 percent persisted into the third year. Of those receiving a "Q" grade, re-enroll, 96 percent persisted through the first year. By the end of the second year, 55

percent persisted into a third year. Persistence to graduation reached a statistical significance, indicating a conclusion that passing in the developmental writing enhanced opportunity for persistence. Several studies concerned with persistence and success supported the conclusion that increased persistence can and does lead to the opportunity for success for those students who persist and that the added dimensions of institutional and counseling support can enhance that opportunity.

A fourth inquiry of this research was concerned with the letter grade received by developmental reading and writing students in subsequent college-level work. The college-level work chosen for comparison and analysis was the subsequent history class for developmental reading students and subsequent English 110 for developmental writing students. The analysis of grade performance contrasted the distribution of the developmental students' grades with those for nondevelopmental students.

The research found that there was a significant difference between success in regular English classes of developmental students completing the writing course and the nondevelopmental students never enrolled in the writing course. The nondevelopmental students performed significantly better while nondevelopmental students earned a higher percentage of "A's," the "B" level figures were identical in percentages, 28 percent. However, it is important to note that a substantial majority of

developmental students did receive "C's" or better.

An analysis of the developmental reading students' grades in regular history course work compared with the nondevelopmental students' grades revealed no evidence to support a significant difference in performance level between the two groups. The findings revealed that developmental students performed at about the same success rate in history classes as the nondevelopmental students. While both groups received roughly the same percentages of "A's" and "B's," it is of interest to note that the developmental students outperformed the nondevelopmental students in "C's" and "D's."

In the present study, it was determined that 78 percent of the former writing developmental students passed their English course with a "C" or better. Sixty-two percent of the former developmental reading students made passing grades of "C" or better. The finding here was important because it demonstrated that developmental students did not maintain substandard letter grades. Further findings indicated that a significantly higher percentage of developmental students persisted to graduation than did nondevelopmental students. Thus it appears that as a group, the developmental students progressively "caught up" with nondevelopmental students in grades. Apparently, developmental students improve in grades as they earn more credits and not only perform as well as other students but exceed performance to graduation. The

results of this study indicated that students who initially enrolled in at least one developmental studies course can and did overcome deficits and eventually not only performed as well as other students, but significantly surpassed non-developmental student graduation rates.

A fifth question posed by the present study addressed the level of significance between the baccalaureate degree graduation rate of developmental and nondevelopmental students. The most unpredictable results were revealed in the findings. Not only were the graduation rates among the developmental and nondevelopmental students significantly different; but the developmental group graduated at a significantly higher rate than the nondevelopmental students. Calculations of the data showed that 46 percent of the students in the developmental group graduated within the five-year span. On the other hand, only 36 percent of the students in the nondevelopmental group graduated during the same time period.

One study contended the national rate of persistence to graduation for students in general is around 50 percent, but only about 20 percent for developmental students.[3] Another study documented that only about 40 percent of the nation's students graduated at the date scheduled for the class of their matriculation.[4] The findings of the present study compared quite favorably with the national rate. Old Dominion University's developmental group exceeded double the national percentages.

Graduation rate figures of this study revealed that 26 or ten percent additional developmental reading students graduated in the sixth year or 12 semester span. Similar results on longitudinal studies have been obtained. These findings have implications concerning the pattern of student enrollment. Part-time college appears to be becoming the norm. The data does substantiate a trend toward students prolonging their college education as far as the sixth and seventh year. Perhaps developmental students graduated at such a higher rate than nondevelopmental students because education has a comparatively higher value for them.

The sixth and final question posed by this study examined whether participation in the Special Services Program was associated with the success rate of developmental students. No statistically significant difference between success in the developmental reading and writing programs and participation in the Special Services Program was found. Those participants in the Special Services Program performed equally as well in the GPA as the nonparticipants in the Special Services Program.

This indication, however, was not consistent with findings reported elsewhere which described outcomes for developmental students involved in Special Services Programs. Successful programs for lesser prepared students are characterized primarily by the high degree of support they provide to their students on a systematic basis.

While developmental education had a positive impact on the academic performance of the subejcts in this study, changes may be needed at Old Dominion University to strengthen the Special Services Program as it serves to assist students with more specific needs in their adjustment to the demands of college.

One must question the small number of participants taking advantage of the services offered in the Special Services Program. Originally 16 students completed the first semester in order to establish a GPA. It appears that many students eligible for the service were not enrolled. Much evidence has been accumulated to support the idea that only a small percentage of students eligible for the Special Services Program actually take advantage of the service offered.

Conclusion

The findings in this study do suggest a rationale for remedial education on college and university levels. The theoretical question addressed in this research and related literature was whether or not academic deficiencies can be remediated at the college level. One school of thought holds the belief that the longer deficiencies exist, the less likely remediation will be to work.[5] The information developed in this study, together with the literature received, supports the point of view which assigns a positive value to the potential for remediation in basic

skills at the college level. The developmental reading and writing programs at Old Dominion University have demonstrated a positive relationship between remedial course work and satisfactory performance of college-level work.

Based upon the findings of the study, it is recommended that the data file be expanded to include information of a more qualitative nature. Additional diagnostic and instructional data would serve the dual function of providing information for research, as well as to assess student progress.

The present study was an ex post facto analysis of the variables under investigation. Such analysis, though it may deserve merit as initial research, serves a limited function. Without research comparing student progress that utilizes control and treatment groups, it is impossible to measure accurately the true impact of the developmental program as it attempts to aid students individually.

It is therefore recommended that future research related to these variables be experimental in nature, i.e., requiring both treatment and control groups. Potential subjects emerging from this study include:

1. the evaluation of effective development in building academic self-esteem, maintaining motivation for college study and encouraging goal-directed behavior;

2. the degree of success of various instructional techniques with diverse groups of students;

3. the measures of developmental student satisfaction with counseling and instruction as needed to promote the best adaptation between program goals and student experiences;

4. the identification and evaluation of alternative academic supported services documented as being effective;

5. an investigation of the factors of sex and race and how they relate to developmental students' ideas and values.

FOOTNOTES

[1]Hunter Boylan, "The Effectiveness of Developmental Education Programs," Research in Developmental Education 2 (1985):1.

[2]Old Dominion University, "The Old Dominion Academic Opportunity Program," (Norfolk, Va., 1979), 1985, p. 1.

[3]Nancy Rabianski-Carriuolo, "Improving Retention: An Intervention Program," Journal of Developmental and Remedial Education 6 (Fall 1983):8.

[4]Dorothy Knoell, People who Need College: A Report on Students We Have Yet to Serve," (Washington, D.C.: American Association of Junior Colleges, Ed. 041 573, 1970), p. 2.

[5]Aaron Wildousky, "Speaking Truth to Power: The Art and Craft of Policy Analysis," (Boston: Little, Brown and Company, 1979), p. 373.

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AUTOBIOGRAPHICAL STATEMENT

Jimi Thomas-Muskovac, the daughter of Mr. Charles Thomas and the late Mildred Hill Thomas, was born in Kinston, North Carolina on October 15, 1947. She received her elementary and secondary education in the Kinston Public School System from which she graduated in 1966.

In 1970, she received a Bachelor of Science Degree in Elementary Education from Old Dominion University, and in 1977 she received a Master of Science Degree in Elementary Education from the same university. In 1984, she received a Certified Advanced Studies Degree in Administration and Educational Leadership from Old Dominion University.

Her work experience has been mainly in the area of education, beginning as an elementary school teacher in Norfolk, Virginia from 1970 to 1976. In 1977, she was employed by Wahiawa Community School for Adults in Wahiawa, Hawaii for two years as a multi-level reading, English and math teacher. In addition to teaching, she served as Director for Developmental Studies and was responsible for the establishment of the individualized approach to classroom instruction. From 1979 to 1981, she was a multi-level math instructor for Saint Louis High School - Adult Division in Honolulu, Hawaii. In 1986 she was employed

by Dynalectron Corporation of Virginia Beach, Virginia as a consultant on two major naval contracts.

The past three years have been dedicated to the completion of the Ph.D. Program at Old Dominion University. In the past year, she designed the Single Adolescent Parent Program which addressed the needs of the unwed, adolescent mother to cope successfully with parenthood. A modified alternative of the program design was adapted and utilized by the Director of the Pro Life Organization, Mrs. Janet Keim, in conjunction with the Rock Church Organization.

She made a contribution to the comprehensive Substance Abuse Program during her four months of intense internship in Virginia Beach, Virginia. The internship served as an opportunity to learn, to participate and to respond to the needs of the clients in the Alcare Treatment Program.

During the past year, she has served as a volunteer in the Virginia Beach City Jail on a weekly basis. Volunteers serve to offer religious inspiration and comfort to female inmates. The past three years, she has served as an associate supervisor for NTF Center 2844.