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Students' Success In College Level English Composition After Completing Developmental English In An Urban Community College

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**STUDENTS' SUCCESS IN COLLEGE LEVEL ENGLISH COMPOSITION
AFTER COMPLETING DEVELOPMENTAL ENGLISH IN AN URBAN
COMMUNITY COLLEGE**

BY

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requirements of the degree of Doctor of Philosophy
Seton Hall University
2002**

Abstract

Felix A. Linfante

Students' Success in College Level English Composition after Completing Developmental English in an Urban Community College

The admission of under prepared students to collegiate level institutions each year has been a continuing problem for higher education as demands for education have resulted in the enrollment of those who lack adequate skills for academic success. Developmental education and its relationships to equity are often perceived to be in conflict with the desire to maintain high standards and cost efficiency. There has been minimal research on the effectiveness of remediation in Higher Education despite its existence dating back to 1849 at the University of Wisconsin.

The purpose of this study is to determine if students whose skill level requires them to enroll in remedial English courses can eventually succeed in English composition and if certain variables have an effect on their success. It provides information concerning programs considered essential to a post-secondary institution's mission and simultaneously unpopular with the public.

In this study, statistical analyses were conducted to analyze the relationships between success in English 101 as measured by grade and the

independent variables including student status, sex, age, ethnicity, education, initial placement test score and remediation program.

A hierarchical multiple regression approach was used to develop an equation that demonstrates the best prediction of the outcome variable from more than one continuous or dichotomous independent variables. In the first step, the demographic variables were entered including student status, sex, age, ethnicity, test score and education. This step statistically accounts for variance in English 101 grades that is related to the demographic variables. The next step included the addition of the remediation programs (no remediation, 1 level of remediation, 2 levels of remediation, ESL). The F test for change was examined when the second step was entered to determine if the entry of the program step resulted in a significant increase in the multiple correlation.

The results from this study point to four conclusions in reference to the research and subsidiary questions. First, remediation does not result in a level of English 101 performance equal to those subjects not requiring remediation. Second, the demographic variables account for more variance in English 101 grades than does remediation program differences. This includes significant relationships found with age, sex, status and ethnicity. Third, ESL programs have a lesser percentage of subjects receiving a passing grade than other programs. Finally, remedial students who score low in pre-test score categories receive lower grades in E101.

The findings from this study are designed to assist officials in making more informed and knowledgeable designs in providing developmental programs to students who are not prepared for college-level work. Implications include a review of policy in respect to open door admissions, alternatives to current remediation as it relates to instructional delivery and cost, and preparation of students in the K-12 public school system. Research replication of the research in the future should include the study of additional years, similar institutions and additional variables.

This dissertation is dedicated to my family, especially my parents, brother, sister-in-law, nephew, niece and my cousins who have taught me that when a family cares and supports one another, anything is possible. To Sue, who has been my encouragement and kept me focused on the light at the end of the tunnel. I now finally realize that she has been this light all along.

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Chapter I

INTRODUCTION

Problem Statement

America is having to make hard choices about distributing finite resources in areas such as welfare and healthcare. In the same way it is being forced to decide whether what passes for a college education today is worth the price, and whether society can afford to give degrees to all who want or think they need one.

The crunch is coming, especially for public universities because states are putting the brakes on higher education spending just as children of baby boomers are projected to swell enrollment by 2 million, to 16.4 million, by the year 2006 (Arenson, 1997).

Colleges, from the City University of New York, with 200,000 students, to the University of California with 165,000, now debate on who should go to college and why, the quality of what is offered, and academic productivity (Arenson, 1997). "For a century, this has been a growth industry," said Arthur Levine (as cited in Arenson, 1997) president of Columbia Teachers College. "Now government is saying, we have lots of priorities, like health care and prisons, and we can't afford to put another nickel into higher education, and we're going to ask lots of questions" (p.8).

Admissions of Underprepared Students

The admission of underprepared students has been a continuing problem for American higher education as demands for education have resulted in the admission of thousands of highly motivated high school graduates, high-school dropouts, adults, or recent immigrants, who lack adequate skills for academic success, being admitted to collegiate level institutions each year. The consensus is colleges should provide courses in basic skills, but this does not suggest that college credit should be allowed for remedial work nor that developmental students should enroll in courses in which they have little chance for success, thereby diluting academic standards. By providing opportunities for success against all odds, while maintaining academic integrity, developmental programs can assist students with limited educational skills to overcome their deficiencies. Developmental education and its relationship to equity are often perceived to be in conflict with the desire to maintain high standards and cost efficiency.

Developmental Programs and Models

Developmental education, alternately called remedial, compensatory, or basic skills, refers to programs and courses that prepare students to perform at college level (Haeuser, 1993). At least four types of program models are currently used: college campus tutorial/remedial, college outreach programs, campus assistance centers, and off-campus instruction (Tomlinson, 1987). Programs vary from the inclusion of basic skills classes in core areas, primarily reading, writing, and mathematics, to holistic models such as the Developmental Education

Program of Triton College, which employs specially selected faculty, counselors and tutors, and includes a large Learning Assistance Center (LAC), available to non-developmental as well as developmental students, and a Special Needs Assistance Program (SNAP) to serve the needs of disabled students (Chand, 1985). Typical program components include: identification of unprepared students, advisement, placement, courses, and academic support for remediation and retention (Weissman, Silk, & Bulakowski, 1997).

Today many 4-year institutions, such as the City University of New York (CUNY), seek to reduce their remedial course offerings by raising admission standards and requiring students needing assistance to complete remedial work at a 2-year college (Arenson, 1998b). However, the number of 4-year institutions offering some form of remedial education is actually higher than studies suggest. Although Ivy League universities acknowledge no official remedial programs, Harvard and Yale, for example, offer peer tutors and a writing center. The University of Chicago directs a number of students each year to "essential mathematics," a course comparable to the remedial courses at CUNY and other public institutions. While some colleges deny they offer remedial courses, their catalogues list courses in algebra, grammar, and other basic subjects routinely offered in high school (Arenson, 1998a).

Statistics on College Developmental Programs

In 1995, 78% of American colleges offered developmental courses, up from 73% in 1988 (Arenson, 1998a). Seventy-two percent of all four-year colleges and

virtually all public community colleges offer remedial courses. According to U.S. Department of Education figures (as cited in Lazarick, 1997) approximately 612,000 first-time freshman at post-secondary institutions enroll in developmental courses; of these, 63% attend public, 2 year colleges. In a recent survey, 55% of public community colleges reported the number of developmental courses was increasing, with only 5% reporting a decline. Philip Day, Jr., (as cited in Lazarick, 1997) president of Daytona Beach Community College, Florida, views developmental education as a process of "getting those students from where they are to where they want to go"(p. 12). To Day (as cited in Lazarick, 1997) "Remediation is what makes the open door work.... We look at ourselves as the educational safety net for our community" (p. 12). Yet, in current academic, legislative, and public forms, the question of whether remediation or developmental education should be offered at the college level is debated widely and vigorously.

Controversial Trends in Education

Divergent trends in education and the political environment influence discussions about developmental education programs. On one side, colleges must respond to accreditation agencies which require colleges to provide programs commensurate with responsible admission policies. Almost all of the nation's 1,100 2-year institutions, which almost universally endorse an open-door admission policy, offer developmental programs to make post-secondary education accessible to all segments of the community. Also, many 4-year

colleges have adopted open admissions policies changing enrollment patterns of entering freshman. This remedial effort has generated considerable controversy for the community college movement (Quinley, 1990). On the one hand, communities served by 2-year colleges' clearly need this type of compensatory education. Surveys of business and industry generally reveal that one of their greatest education/training needs is for improvement in employees' basic reading, writing, and math skills. In addition, community colleges generally have long histories of providing these services. Yet, the public and politicians often question the need for these programs, asserting that they duplicate the appropriate function of high schools.

In fact, the number of institutions offering some form of remediation may be difficult to assess because of the stigma associated with the remedial label. Psychometrician Robert Hashway (as cited in Murray, 1997) of Grambling State University, Louisiana, observes that students who have taken several remedial classes have lower self-esteem than their counterparts in regular college level courses. Hashway recommends that courses should simply be labeled "algebra" or "fundamentals of writing" in accordance with their curriculum content.

Financing Developmental Programs

Since World War II, a major aim of public policy has been to make higher education more available, and it has succeeded remarkably. But while educating the elite few was cheap, education has grown from \$2.4 billion, less than 1% of the economy 50 years ago, into a \$180 billion industry, comprising nearly 3 % of

the economy. However, as tax revenue fell in the early 1990's, legislators felt the pressure to cut higher education spending. From 1990 to 1994, it declined from 14 % of state budgets to 12.5 %, according to a study in 1996 conducted by the Center for the Study of the States at the Rockefeller Institute in Albany. To make up the difference, tuition climbed.

The current controversy over remedial college programs has a paradoxical bent: an increasing number of Americans view a college education as a necessity and a right; however, people are divided over the public cost. In a 1997 survey, (cited in Arenson, 1997) 75% of the 1,307 respondents agreed that college is needed to get ahead in life, compared with 49% in 1978. In addition, 86% said that "every capable person has a right to receive a college education, even if he or she cannot afford it" (Arenson, 1997, p.19). At the same time, 48% said the federal government was responsible for ensuring that all qualified persons receive a college education, while 47% disagreed. Similarly, 47% thought the cost of a college education is justified by what people get out of it, while 40% did not. Presently, 6 out of 10 high school students enter a 2 or 4 year college upon graduation from high school, a trend that has been accelerating since the early 1980s (Baker & Smith, 1997). Nearly 80% of these students enter public institutions (Arenson, 1997). As with health care, the growing belief that the private sector should take on more responsibility and the government less, accountability and cost-cutting are major issues.

Data in Support of Remediation

Former President Clinton envisioned a society in which 2 years of college would be universal (Arenson, 1997). An Institute for Higher Education Policy report, (Baker & Smith, 1997) concurs, citing research showing that 80% of higher salaried jobs require some education beyond high school; furthermore, better-educated workers contribute to higher tax revenues, higher productivity, and lower crime rates. The report also concluded that remedial courses in English and Mathematics are a core function of higher education, as well as a positive investment for society (Arenson, 1998b). In addition to its practical response to a technologically demanding workplace, Clinton's vision for universal access to higher education reflects the attitude toward education that has characterized American society for the past century.

Despite evidence that remedial education improves the academic performance of at risk students and increases their chances for graduation (e.g., Arenson, 1998b; Campbell & Blakey, 1996; Morante, 1985; Platt, 1986), post-secondary institutions remain under criticism. For example, data from the U.S. Department of Education (as cited in Murray, 1997) suggest that up to 10% of public college students remain in remedial education for more than a year, and 30% of students who take remedial mathematics courses never pass those courses (Murray, 1997). Along with New York, California has proposed to cut back on remedial courses, and legislatures in New Jersey, Florida, Washington, West Virginia, and Montana have reconsidered paying for them (Lazarick, 1997;

Murray, 1997). In response to reports that nearly half of all students who take remedial courses fail to finish them, Texas has instituted a policy limiting the number of remedial hours for which the state will pay, up to 18 hours at 4 year colleges and 27 hours at 2 year colleges (Murray, 1997).

Purpose of the Study

The purpose of this study is to determine if students whose skill level requires them to enroll in remedial English courses can eventually succeed in college-level English Composition and if certain variables have an effect on their success. It provides information concerning programs considered essential to a post-secondary institution's mission and simultaneously unpopular with the public. Its twofold purpose is to (a) use the literature to develop an explanatory model of academic success in introductory college-level English relating developmental performance in conjunction with other variables to academic success and (b) examine the relationship between student academic performance in an exit-level, developmental English course and subsequent academic performance in a college-level English course over a two semester period at a representative community college.

Research Questions

Do significant differences exist in the effectiveness of remediation on student success in English 101 after accounting for student background characteristics and academic preparation?

Subsidiary Questions

1. Are the variables of age, sex, status, ethnicity, education type, related to success in English 101?
2. How effective are ESL courses in preparing students to succeed in E101?
3. How effective was remediation in determining students grades in English 101?

Definition of Terms

Developmental, remedial or basic skills education. Any type of college instruction to improve basic skills deficiencies by teaching students more effective techniques, habits, skills, and approaches to college level work.

Placement test. A criterion referenced test administered to incoming students entering public and private colleges in New Jersey to determine placement level in mathematics, English, and reading.

College level English composition. An expository writing course required by all students obtaining a degree.

Open door admissions policy. A policy shared by the vast majority of American public 2-year community and junior colleges that allows any individual (generally 18 years of age or older or a high school or GED graduate) to enroll in credit courses if certain conditions are met (e.g., completion of an application for admission and, in most cases completion of an entry level assessment/placement test), including ability to benefit from instruction.

Underprepared students. Students who after entry-level achievement tests, are categorized as low ability students and underachievers needing of supplemental support before engaging in college level courses.

Junior college. Two year institutions of higher education granting associate degrees, with an open door admissions policy.

Success. Students achieving a grade of A, B, or C in developmental English or English College Composition.

Significance of the Study

There has been minimal research on the effectiveness of remediation in higher education despite its existence even before the first formal college preparatory program. A report by the Institute for Higher Education Policy in Washington (as cited by Arenson, 1998b) confirmed that such a stigma is attached to remediation that many institutions do not find in their interest to acknowledge that they enroll students who require remediation. The report stated that research on remediation is complicated by the lack of common definition over who should be included (for example, the status of immigrants learning English as a second language) and exactly what constitutes remediation. Despite the complexities, the report concluded that it is in the best interest of colleges to offer remedial course work, as it helps retain students and a substantial proportion of students who complete remedial courses go on to graduate.

Aside from studies by Porter (1988), Slark (1989), and Seybert and Soltz (1992), all of who assessed students' success in English Composition who had

previously been enrolled in remediation, most other studies measure retention and graduation rates of students whom completed remediation. This researcher's choice of English Composition was determined because the course is universal to all degree programs. Success in English Composition provides support that the student has obtained skills necessary for college level courses. It is anticipated that the study will determine if a relationship exists between success in remediation and college level English Composition and if any variables have an effect on this success.

Major issues presently discussed by the New Jersey Department of Education officials and State Legislator's center around the funding of remedial education courses to institutes of higher education. Research on the progress of students in remediation would provide necessary data to assist in the decision making progress.

Limitations of the Study

The study assumes that the professors are competent to teach English, that reference tests are valid placement instruments, and that course outlines in remedial English and College English Composition are equivalent in the chosen community college's various sections. It also assume that the students taking part in the research have no learning disabilities. The study makes no attempt to account for the specific causes of basic skills deficiency of the college student. It recognizes the fact that such deficiencies exist and will assume the fact of causation. The causal factors of the basic skills disability, however, often reach so

far back into the life history of the individual, and are so complex in their nature, as to place them entirely outside the scope of this study. The study does not attempt to determine success of a student completing a college degree.

Neither does this study attempt to evaluate any one program, or type of programs, against any other. The study is not designed to champion any one school of thought or point of view with regard to the teaching of basic skills at the college level.

Organization of the Study

This study will be presented in five chapters. Chapter I will state the introduction, statement of the problem, purpose of the study, definition of terms, significance of the study, limitations of the study, and organization of the study. Chapter II will review the related research and literature. Chapter III will describe the subjects, data retrieved, and the procedures that will be employed to solve the problem. Chapter IV will consist of the presentation of the data through statistical analysis of each phase of the study. The conclusions and recommendation for further research will be discussed in Chapter V.

Chapter II

REVIEW OF LITERATURE

Categorization of Research

The literature is categorized into three areas: historical perspective, current rationale and studies in remedial programs. The related literature dealing directly or collaterally with the problem is extensive. It includes not only research in developmental studies, but it also includes those documents and studies in several other areas of higher education germane in establishing certain relationships and the understanding of certain facts important to the central problem of the study.

Historical Perspective

“Developmental studies” programs have been in existence in the United States for well over 100 years. Despite the variety of more recent labels, programs dubbed as “college preparatory” have existed since the mid-1800’s with many of the same goals as today’s programs. Historically, college developmental programs date back to 1849, when the University of Wisconsin implemented a College Preparatory Program designed to provide basic academic skills for students who required assistance to perform successfully in more advanced college courses (Tedrow & Rust, 1994). The University of Michigan implemented a similar program in 1852, and a decade later, Iowa State College established a remedial program in reading, writing, and mathematics (Mickler & Chapel, 1989). By 1889, 80% of post-secondary institutions in the U.S. offered some form of college preparatory program (Tedrow & Rust, 1994). The need for supplementary

education was acknowledged by Yale, Harvard, Princeton, and Columbia universities by the turn of the century, when more than one half of their students failed to meet entrance requirements (Mickler & Chapel, 1989; Platt, 1986). In 1915, 350 colleges reported to the U.S. Commissioner of Education that there was a gap between high school preparation and the expectation of colleges (Platt, 1986)

During the 1920's, scholarly research supported the need for post-secondary learning assistance programs (Albright, 1927; Book, 1927; Remmers, 1928). The first instrument to measure college reading achievement was published (Haggerty & Eurich, 1929) and the first survey of remedial assistance programs was conducted (Parr, 1930).

Change in Student Population

Remedial and developmental programs were intensified during the late 1950's and early 1960's, because of an increased understanding of the nature and scope of the post World War II college enrollment expansion, due in part to the flood of veterans entering college after the war. Retrospective documentation of reading and study skills instruction is available in comprehensive research reports of the period that trace the development of materials, programs and other relevant research and reports from 1890's to the late 1950's (Blake, 1953; Leedy, 1958). Personal, demographic, and academic analyses illustrate the diverse dimensions of the new student populations. More attention was directed to psychological and socio-cultural factors of academic achievement, and remedial and developmental

programs were considered essential to reduce the educational differences among students. The results of achievement tests and other measures enabled college to distinguish between "low-ability" students and "underachievers".

In the early 20th century, the U.S. greatly expanded the public school system in response to the influx of immigrants and by mid-century, an extensive secondary school system had developed. Today, 85% of Americans aged 25 to 64 have a high school diploma or GED, probably the highest proportion in the world (Baker & Smith, 1997). The expansion of schooling has transformed American education at every level. Since World War II, a major objective of public policy has been to increase the availability of higher education (Arenson, 1997). This vision began to take shape in the 1960's and 1970's with a significant increase in college enrollment by students from ethnic and economic groups traditionally underrepresented in higher education (Mickler & Chapel, 1989). This trend was accompanied by a proliferation of remedial programs. Three decades later, advocates of developmental education, such as William Collins, head of the Comprehensive Studies Center at the University of Michigan, assert that providing opportunities for motivated minority and low income students is an essential role of education that it helps to fulfill the higher education philosophy of preparing a capable, competent and diverse group of people for the workplace of tomorrow (Murray, 1997).

Significant Changes During the 1960's

Two conjoining trends during the 1960's had a significant impact on developmental education: a decline in literacy rates among high school graduates and the adoption of an open door policy by most community colleges (Johnson, 1996). The consequence was the hasty development of remedial programs, that were often poorly planned, poorly designed, and poorly implemented (Mickler & Chapel, 1989; Roueche & Roueche, 1993). The programs were typically taught by adjunct or inexperienced faculty members and were rarely subjected to formal evaluation. As many as 90% of all students advised into or assigned to remedial courses never completed them. Reasons cited for the failure included questionable placement practices, oversized classes, inadequately trained teachers, outdated and superficial course outlines, lack of inappropriate instructional materials, confusion about proper methodologies, lack of knowledge about students reading and writing abilities and insufficient experimentation (Rounds & Anderson, 1985).

During the 1970's, many programs were redesigned by subject-matter specialists and specially trained faculty members were assigned to developmental instruction. At the same time, innovative methods such as individualized, self-paced, mastery-oriented, and programmed learning came into popular use, along with new technologies which were employed to enhance program effectiveness (Mickler & Chapel, 1989; Rounds & Anderson, 1985). In the 1980's, as the climate became more conservative, the attitude that students had the "right to fail", gave way to policies that required pre-enrollment assessment and mandatory

placement of at risk students. Students assigned to remedial courses are required to complete them before they progress to college level courses.

Changes Due to Legal Mandates

The laissez-faire approach of the 1960's changed. Colleges in Florida, for example, were legally mandated to administer admissions tests and to provide counseling for all entering freshman. Additionally, the law specified that students may be expected to perform successfully (Mickler & Chapel, 1989). The California Post-secondary Education Commission recommended that an "academic floor" be established whereby all students scoring below the success level would be denied admission to state post-secondary institutions and directed to adult education programs. New Jersey administrators tried a different approach. They established a Basic Skills Council with the legal mandate to test all entering students' basic skills and to require remedial course work for all who were deficient. A priority mission of the council was to work with the high schools to intensify their focus on basic skills instruction.

Illinois and Nevada responded to the challenge of unprepared students in post-secondary institutions by mandating that college preparatory courses be offered in high schools (Mickler & Chapel, 1989), a practice subsequently adopted by other states. Ohio implemented a statewide program "Minimum Standards for Elementary and Secondary Schools," mandating that all schools offer academic programs preparing students for entry into state public colleges. As a result, the number of students needing remediation in college declined (Bandy, 1985). Many

educators saw this approach as the most positive solution to remediation. However, Boylan (as cited in Lazarick, 1997) notes that while approximately 43% of students take college preparatory courses in high school, 62% eventually go on to college. Boylan states categorically, "It's unrealistic to expect public schools to take a diverse population and bring all of them up to college level" (p. 12). And the Institute for Higher Education, (Arenson, 1998) inspired by the decision of CUNY to cut back remediation by raising admission standards (Arenson, 1998b), declared that the economic and social costs of not providing remediation are ultimately much higher than the financial cost of remedial education, which actually falls below the cost of other course work. National estimates place the cost of remedial education at roughly \$1 billion out of a total higher education budget of \$115 billion (Arenson, 1998). In fact, the study concluded that even if the cost were double, that is a relatively modest amount to be spent. The study recommends a systematic approach at the state level instead of "stopgap solutions," and calls for the strengthening of primary and secondary education, better teacher preparation, more individualized instruction, and better advisement to ensure that students are taking the academically rigorous courses needed for college success.

Attitude of Educators

The attitude toward remediation also has changed since the early 1960's. Then, it was not all uncommon to find faculty and administrators who sincerely believed that students had the "right to fail" and, as adults, were given the option

of enrolling in remedial courses or regular courses. Mandatory remediation was uncommon until the 1980's. Now, a growing number of institutions require pre-enrollment assessment and mandatory placement of students to avoid the pitfalls of failure. If students are assigned to remedial courses, they are required to complete them successfully before being allowed to enroll in college level courses.

Many contemporary educators supported Remmers (1929) individualized approach to remedial instruction proposing that "the effect of remedial measures can be measured by the criterion of scholastic achievements" (p. 25). Remmers (1928) emphasized the importance of reliable and objective evaluation methods, as well as the influence of personal and environmental variables in a student's adjustment to college requirements and subsequent academic achievement. This approach is echoed by Hunter Boylan, director of the National Center for Developmental Education at Appalachian State University in North Carolina, and a recognized expert and consultant in the field. Boylan (as cited in Lazarick, 1997) views developmental education as a continuum of supportive services provided for students. Boylan (1986) emphasizes the need for individualized instruction with respect for students' learning styles, along with clear objectives, a mastery orientation, and supportive feedback and guidance to empower students to become successful learners.

Studies in Remedial Programs

According to Tomlinson (1987):

The evolution of academic assistance programs can be characterized as a progression from service for a small segment of the total population through the use of limited techniques and limited funds to service for a broad span of the nation's population by means of a more cohesive and comprehensive effort and the support of regularly budgeted programs.

(p. 4)

Retention Rates of Students in Developmental Programs

Haeuser (1993) found that the majority of students who arrive unprepared for college level course work at Anne Arundel Community College in Arnold, Maryland succeeded when they took developmental courses. First-time freshman who had taken developmental courses had higher retention rates than the college average. In contrast to Weissman et al. (1997) who found lower success rates among language-deficient students, most of the developmental English students in Haeuser's study (1993) successfully completed college level courses. Haeuser recommended the use of cost analysis to demonstrate the value of a developmental program.

Developmental programs frequently fail to track student retention (McDonald, 1988; Oklahoma State Regents, 1993). Morante (1985) conducted a study with the New Jersey Basic Skills Assessment program, which mandated the basic skills testing of all freshman entering public colleges and the evaluation of

the remedial programs at each institution. Of the community college students who completed remediation, 90% of the 1983 cohort was retained after one semester compared to 87% for 1982; these figures are comparable to those for non-remedial/developmental students. Overall, the study provided strong evidence that the remedial/developmental program improved the retention and academic performance of skills-deficient entering college freshman. In addition, the 2 year follow-up of the 1982 entering class demonstrates that the gains persisted over time.

Tedrow and Rust (1994) conducted a study of freshman at Middle Tennessee State University to determine the retention and graduation rates of developmental reading students. Students enrolled in remedial reading ($n = 86$) had a reading level of between 10th and 12th grade. A lower ACT 16/17 group was used as a comparison group because their ACT scores were similar to the remedial/developmental students although they did not complete the reading courses ($n = 95$). The higher ACT group comprised the rest of the freshman population ($n = 653$).

Of the students studied by Tedrow and Rust (1994), only 29% of the total cohort attained degrees in 6 years. The findings were consistent with previous national research which indicates that 28.4% of developmental students who complete remediation graduate or remain enrolled after 6 years. However, the figure is low compared to the national graduation rate of 45% reported by the U.S.

Office of Education in 1983 and the 56% reported by the National Collegiate Athletic Association (1985). The basic/developmental reading students in the study stayed in college as long as, and earned grades comparable to, their lower ACT peers. These findings are similar to those reported by the New Jersey Basic Skills Council (1994), the Tennessee Board of Regents (1994) and the Texas Higher Education Coordinating Committee (1994). Overall results indicate that remedial and developmental reading classes do assist low-achieving students; however results are not as encouraging as they might be, with definite room for improvement.

Academic Progress of Students in Developmental Programs

Slark (1989) conducted a follow-up study to analyze and evaluate the academic progress of students who had been the subjects of the fall 1987 Learning Assessment Retention Consortium (LARC) student outcome studies. The sample included 2,012 students who had completed a remedial writing course at 1 of 10 participating California community colleges in fall 1986, and 1,581 students who had completed a remedial course in fall 1987. Findings from this study were quite promising. A total of 45% of the remedial students had completed freshman composition by the end of spring 1988, a satisfactory figure for a large sample of formerly remedial students. From a writing course designed for students performing three levels below freshman composition, 40% subsequently completed freshman composition. Students who successfully completed the

remedial course were twice as likely to complete freshman composition than those who were not successful (50% compared to 21%).

Of the students in the remedial reading course, roughly half consistently had GPA's between 2.0 and 2.9, and more than one-quarter had GPA's above 2.9. Nearly three quarters of the sample stated in interviews that they were reading, and enjoying reading more, as a result of the class (Slark, 1989). This finding concurs with Valeri-Gold (1995), whose students reported far more reading activity and pleasure after being introduced to Uninterrupted Sustained Silent Reading strategy.

Porter (1988) conducted an assessment of the remedial program provided by Mercer County Community College in New Jersey. Rigorous English placement standards initially resulted in a drop in enrollment. Over a 7 year period, however, the annual passing rate in English composition improved dramatically, along with the college's improvement in evaluation techniques and the enrollment of students in need of remediation. The researcher states that, "Although it would be difficult to demonstrate direct causality...the relationship between serious application of placement standards and the improved success rate in college-level English is indisputable" (p.8). Younger students returned at a significantly higher rate than older students, and although no significant gender differences were found, distinctions uniformly favored younger students and females. In contrast to some research that reports lower mathematics performance by females (Stage & Kloosterman, 1995), algebra-remediated female students

consistently outperformed males. Porter's findings show that male students identified as needing remediation in math are at greater risk for failure than was previously believed.

Porter (1988) describes the passing rate for writing-remediated students as "impressive." Since the initiation of stringent standards for English Composition along with improved placement procedures, passing rates overall have been high. Students who complete remedial courses are competitive with those who enter college level courses in English. The grades of remediated students tend to be lower, but are nonetheless satisfactory. The passing rate of 77% for remediated students compares favorably to the 85% 4 year average of students who entered college level English directly.

Sinclair Community College (Porter, 1988) in Ohio examined the impact of developmental/remedial course participation on student retention and academic performance among first-time freshmen who enrolled by spring 1993. The highest retention rate was among students who took all of the recommended remedial or developmental courses. Similarly, students who took all of the recommended courses had a higher ratio of attempted credit hours and were more likely to succeed in English and math. These students performed at a satisfactory level in regular college level classes, although not better than those with higher placement scores.

In 1989, the Connecticut Board of Trustees for Community-Technical Colleges mandated that students entering community colleges be placed using the

New Jersey College Basic Skills Placement Test for a system wide pilot study (Sturtz & McCarroll, 1993). A subsequent study at South Central Community College (Sturtz & McCarroll, 1993) to determine whether students who followed placement recommendations had higher outcomes than those who enrolled in college level courses and the impact on the students' academic performance in regular college courses found that only 3.4% of those students who took the test placed in college level math, 71.1% placed in Basic Math I and 25.5% placed in Basic Math II. Of the students who took the English test, 45.5% placed in Basic English and 54.5% placed in English Composition. The majority of students who placed in basic courses successfully completed the courses: 63% in Basic Math I, 79.3% in Basic Math II, and 72.2% in basic English (Sturtz & McCarroll, 1993). Many students were able to successfully work at a higher level, as indicated by the fact that 60% of those recommended for Basic Math I did not take Basic Math II, 67% of those who took Basic Math II but who took College Math, and 68% of those recommended for Basic English but who took English Composition. Findings from this study support the premise of Wambach and Brothen (1990) that placement tests are not necessarily accurate predictors of remedial needs and that a substantial proportion of students recommended for placement can succeed without intervention.

Eanes (1992) explored potential differences in freshman level course grades between freshmen labeled "at risk" and placed in a linked-course developmental program ($n = 71$) and freshmen who had no developmental placement ($n = 286$) at

St. Edwards University in Texas. According to their SAT and ACT scores, the students in the developmental group were presumed to be at a distinct disadvantage compared to their peers. However, no significant differences were found in the final grades for both groups. The developmental program, consisting of developmental English and reading courses linked to the regular Humanities program, appeared to have a significant impact on the at-risk students' opportunity for academic success. Although some distinctions remained in the grades for the developmental students, a small percentage scored lower than a C. Eanes concludes that "with adequate and appropriate support," students entering college with "marginal" potential are able to succeed academically. The researchers propose this finding as positive news for institutions faced with the ethical dilemma of accepting marginally prepared students.

Seybert and Soltz (1992) examined the effectiveness of the developmental reading, English and mathematics courses offered by Johnson County Community College in Overland Park, Kansas. Findings revealed that 69.7% of the students enrolled in developmental English successfully passed the course, with an average course grade in the C range. Students who made higher grades in the basic course also tended to do well in the freshmen course. In fact, success in the basic course emerged as a predictor of success in freshmen composition, suggesting the course did a good job of preparing students for college level course. Students enrolled in developmental mathematics had a more difficult time making the transition to college level work in math-related courses. Completion rates were especially low

for chemistry, economics, and business math although students who succeeded in developmental math were able to do well in physical science, biology, and college algebra. Overall, the students achieved passing grades in college level courses related to their developmental course; however, both grades and successful completion rates for these courses were lower than the overall college averages, findings corresponding to Porter (1988).

The San Diego Community College District (1994) undertook a study to compare the success of students entering community colleges at college and basic English levels to evaluate the success of English developmental programs. Minimal difference emerged between students in basic skills (two levels below college) and college level entrants; the two groups had a successful completion rate of 41.4% and 47.2%, respectively. The highest successful completion rate was for students in composition and reading study skills (one level below college), who had a completion rate of 54.7%. Tracking the students' cumulative GPA's over four semesters, the researchers found minimal difference between the students in the two basic skills levels; however, there was a significant difference between the two developmental groups and the college level group for all four semesters existed. Regardless of term, college level entrants averaged a cumulative GPA of 2.75 as opposed to 2.5 for the developmental students.

With respect to ethnicity, the researchers noted that the non-completion rate for African American students enrolled in the developmental courses was relatively high. Asian students had somewhat more successful grades at the

developmental level, while Hispanic students had disproportionately high numbers of non-completers at the college level. However, the study did not address the bilingual status of the Asian or Hispanic students.

With respect to age, students age 20 or under tended to have lower noncompletion rates, although their grades were often low. In the basic skills group, divergent results were found for the adult learners. Entrants age 36 to 45 had the highest success rates and the lowest rates of unsuccessful grades, whereas those 26 to 30 had the lowest successful grades and the highest noncompletion rate. In the basic composition/reading study group, students over age 45 were most successful, although this group comprised only a small number of students ($n = 5$). At this level, the youngest students, those of traditional college age were the most successful; however, they had a relatively lower rate of success at the college level. The highest performing students at the college level were adults between 26 and 45. These findings give some support to those of Johnson (1996) and Tedrow and Rust (1994), who found that adult learners outperformed traditional age students, and to Culross (1996) and Lazarick (1887) who view adult students as a motivated group who may simply need developmental classes to compensate for their absence from formal education.

Moraine Valley Community College (1996) in Illinois conducted a study of patterns of course-taking, course completion, and retention for students who successfully completed one of eight remedial classes. Successful completion rates for the course ranged between 52% and 76%. Patterns of success for reading and

writing corresponded to the students' level upon entry; the group at the lowest reading level had the lowest completion rate while the highest reading group had the highest completion rate. A similar effect was found for writing. For mathematics, however, success was inversely correlated to level at entry; the highest level developmental group in mathematics had the lowest completion rate.

For students who persisted, higher level skills at entry tended to be correlated with higher academic performance on college level courses for reading, writing, and mathematics. The developmental writing students fared best; those who began at the lower levels did well, and those who began at the lower levels performed at better than average (Moraine, 1996). The lower level reading cohort performed slightly better than average in college level English composition, while the higher level reading cohort, like the writing group, were very successful in English composition. Mathematics remained a weak point. Very few students in the lowest math cohort enrolled in any college level math classes and the percentage of students entering and completing college level math increased with the level at which students entered the developmental program. For all math cohorts, students who completed their first course were very successful in the next sequential course. Overall, the first term and first year retention rates for all eight developmental groups were higher than for all students.

Assessment of Local Developmental Programs

A local model was developed to assess the freshman basic skills program at

Jersey City College (Lyons, 1994). Higher education researchers also believe local models are useful that reflect the student population and the programs offered at individual institutions. Ewell (1985) has noted that outcomes assessment programs need to be carefully tailored to their institutional and curricular settings. Further, Pace (1990) has stated that each college should clarify the clientele it is prepared to serve, and the achievements it expects of the students admits. The Jersey City State College undergraduate population was comprised of many adult, minority, financially and educationally disadvantaged students whose employment and college attendance patterns reflected the life situations of adults who live in urban areas. With respect to English, findings concluded that passing rates in Fundamentals of Communication I, the freshman-level writing course, were greater for full-time students who initially enrolled in and passed the remedial level course (98%) than for freshmen who did not need remediation in writing (69%). Roueche and Roueche (1993), who have done extensive study in the field of developmental education, state:

Our data support the contention that, with the adequate time and resources for development, at-risk students can be prepared to perform college level work. We have learned that it is not enough to help students recognize their problems; rather it is critical to guide them into attitudes and behaviors that will make solutions to their problems possible. (p.21)

Some studies suggest that mature students enrolled in developmental programs are

more likely to succeed than those younger than age 21 (Johnson, 1996; Tedrow & Rust, 1994). Culross (1996) states "Remedial education is expensive, but so is lost productivity. Moreover, our nation can scarcely afford to ignore the educational needs of its adult workers..." (p.52) This is supported by the recent report of the Institute for Higher Education Policy (Arenson, 1998b).

A Colorado study (as cited in Lazarick, 1997) found that the majority of community college students enrolled in developmental programs had either not graduated from high school or were adults returning to college after a long absence from formal education. Similarly, an Oklahoma study found that students admitted under the adult admission policy had the highest rate of remediation at both 2 year (42%) and 4 year (55%) institutions.

Neither Lazarick (1997) nor Culross (1996) appear to share the pessimistic viewpoint of Roueche and Roueche (1993) regarding the profile of adult community college students; however, both sources concede that adults entering college often require assistance before they can keep up with college level course work, and stress that college insistence that basic skills are the domain of primary and secondary institutions will do little to serve this population. Some studies suggest that mature students enrolled in developmental programs are more likely to succeed than those younger than 21 (Johnson, 1996; Tedrow & Rust, 1994). Culross (1996) states, "Remedial education is expensive, but so is lost productivity. Moreover, our nation can scarcely afford to ignore the educational

needs of its adult workers..." (p. 52). This is supported by the recent report of the Institute for Higher Education Policy (Arenson, 1998b).

Program Design and Evaluation

The services offered by colleges fall along a broad continuum in their efforts to address the needs and expectations of at-risk students (Roueche & Roueche, 1993). Although the design of developmental programs has improved tremendously since the haphazard efforts of the 1960's, program evaluation is still largely inadequate. The idea of evaluation often has a negative connotation, particularly with progressive educators; however, as the authors note, "painful as the process--and the resulting discoveries--may be, thoughtful evaluation is the only reasonable plan by which inappropriate directions, decisions, or activities, can be corrected" (p. 22). This approach is supported by Weissman et al. (1997), who state that once an institution decides to implement a developmental program, the program must be designed to ensure that it serves the needs of the target population and the school environment. To address this need, Weissman and colleagues at the College of Lake County, a community college in the northern Chicago suburbs, developed a student tracking system in order to conduct systematic in-depth analyses of the policies governing the developmental program.

Academic Performance and Assessment

Seventy years ago, Remmers (1928) advocated using academic performance as the criterion for developmental program success. However, this policy has yet to be routinely adopted. As Roueche and Roueche (1993) observe,

some colleges define success as the number of students who complete remedial courses rather than the number who complete the more important college level course. They caution that the skill levels that developmental courses are designed to achieve may not accurately meet the levels required for subsequent courses. Only through national initiatives based on the demand for accountability have evaluation practices become more commonplace, and more sophisticated.

The first stage in the developmental education process is the assessment and placement of students. Approximately 70% of community colleges and 50% of 4 year institutions use placement tests to establish the need for remediation (Lazarick, 1997). One issue which emerges in the debate over developmental education is the suitability of unprepared students for college, regardless of additional preparation. Patrick Swygert, (as cited in Arenson, 1998a) president of Howard University in Washington, believes that some individuals do lack either the intellectual skills or the initiative to complete the hard work required in college. However, Swygert states, "The great tragedy is that by removing remedial classes, that is not who is being screened out. The numbers suggest that, once students navigate the remedial classes, many go on to successful college careers" (p. 10).

In contrast, Wambach and Brothen (1990) assert that current placement procedures do not make an adequate distinction between groups of low-achieving students with different needs. They propose that a supportive content curriculum is more likely to serve all groups effectively than a stand-alone skills curriculum.

The authors divide students designated for placement into three groups: false negatives, or students who can succeed without intervention (SWI); unprepared students, or those who require skill development (RSD); and true negatives, those who are unable to succeed even with intervention (UTS). Developmental programs typically operate under the assumption that all unprepared students belong to the second group. By comparing students in open enrollment facilities, where unprepared students generally experience a variety of educational interventions, with unprepared students in selective facilities who were not exposed to academic assistance, Wambach and Brothen estimated the number of RSD students. They contend that only 30% of developmental students belong to this group, with an additional 30% in the SWI group and 40% in the UTS group.

Wambach and Brothen (1990) stress that their purpose in categorizing students, including those who are UTS, is not to eliminate developmental programs, but to design holistic models that serve the needs of a large proportion of students. They note that success in the classroom depends not only the student's skill levels, but on the amount of time and effort the student is willing to spend and how well the student can compensate for deficiencies of one type with strengths of another. This approach is actually similar to Boylan's (1986), who emphasizes on understanding the individual needs of diverse learners.

Effect of Motivation and Positive Self-Image

Boylan (1986) largely supports a behavioral model that involves clear objectives, carefully designed sequencing of the presentation of materials, mastery

of small content units before moving on to the next, immediate feedback, and emphasis on learning material as a key stimulus to learning, as opposed to emphasis on the role of instructors. Although Boylan values humanist theories, he believes that few developmental students, especially younger ones, are prepared to accept responsibility for their own learning. He agrees, however, that the development of self-discipline and self-monitoring is a major goal of developmental education. Ironically, Valeri-Gold (1995) found Uninterrupted Sustained Silent Reading (USSR), routinely used in primary and secondary education although rarely in colleges, helped students to develop reading skills and to radically improve their reading habits. By participating in a classroom environment where reading was valued, the students developed the self-discipline, self-monitoring, and motivation to become successful readers and to transfer their reading skills to other curriculum courses.

Boylan (1986) is aware that academic skills do not develop apart from social and intellectual experiences. Students often come to developmental education with a negative academic self-image. To counteract this, developmental educators need to design tasks that are both challenging and manageable, and accompanied by supportive feedback and guidance. This approach supports the contention of Mickler and Chapel (1989): "Well-designed programs that are challenging and motivating but not overwhelming produce positive results far beyond the expectations of the instructors. Students who complete these programs

acquire the skills, the background, and the motivation to pursue college level work, and many do successfully" (p. 3).

Performance of Students in Remedial Math

One area in which students frequently have a poor academic self-image is mathematics. Students take remedial courses in math more than in any other subjects. States Robert Barr (as cited in Lazarick, 1997), director of institutional research and planning at Palomar College in California, "Everybody has the ability to do math, but they tell themselves they are not going to do well. One of the biggest problems is breaking them from their self-limiting ideas" (p. 12).

Despite the prevalence of remedial mathematics courses, few studies exist of factors that relate to success in remedial math. Fewer than half the students who take these courses are successful on their first attempt, and a disproportionate number of those who fail are women and minorities (Stage & Kloosterman, 1995). Previous research in mathematics suggests that females are often socialized to believe they will not do well in math. Culross (1996) suggests this attitude may be especially prevalent among adult learners who attended high school in previous decades.

Employing the premise that beliefs have a significant impact on the behavior of students, Stage and Kloosterman (1995) examined the relationships between gender, beliefs, and achievement in remedial college-level mathematics. They found that beliefs were more important influences on achievement in mathematics for females than males. Belief in one's ability to do difficult

problems was correlated with self-confidence, which in turn, predicted academic success. Furthermore, women who viewed math problems holistically rather than as a series of steps were the highest achievers in the class. At the same time, the majority of both female and male students believed math could be reduced to a series of steps; however, little in the remedial course suggested that understanding procedures was necessary or that understanding word problems was important. This runs counter to the current pedagogical trend in the teaching of mathematics.

One significant finding was that exposure to high school mathematics was not related to beliefs or achievement for females and was not related to beliefs for males. Stage and Kloosterman (1995) note that most educators expect that greater exposure to high school mathematics leads to greater understanding of mathematics as a discipline. This has a positive implication for developmental educators: it suggesting that a weak high school background in math can be overcome by remedial college courses. The most important finding, however, was that "students' beliefs about themselves and the nature of mathematics should not be ignored in efforts to explain success in those classes" (p. 307).

Boylan (1986) believes that fostering positive social interaction is an important element of developmental education. Cooperative learning is gaining popularity at all levels of education, hailed for its ability to promote learning of subject matter as well as positive attitudes of students toward one another. Dees (1991) applied this concept to the development of problem-solving ability in a remedial mathematics course. Prior research indicates that the greatest benefit of

cooperative learning may be derived in the accomplishment of complex tasks, such as concept learning and problem solving. Dees's study was especially concerned with the higher cognitive skills involved in problem solving. The subjects were students (roughly 100) enrolled in a remedial course in algebra and geometry. About half the students were recent high school graduates, the others mature students; thus the average age was about 28. Four laboratory groups were divided into experimental groups and controls. Students in the experimental groups performed as well or better than the control group on every outcome measure. Most noteworthy is the fact that the experimental groups out-performed the control groups on measures testing higher cognitive skills. The students in the cooperative learning groups were satisfied with the intervention, reflecting that explaining a concept to another student forced them to restate it in their head (Dees, 1991). Students felt they helped themselves while they helped other students, which may promote motivation, self-efficacy, and appreciation for diversity, as well as cognitive skills.

Johnson (1996) found that performance in developmental math courses was a significant and positive predictor of academic success in entry-level college mathematics. This effect held true regardless of age, gender, ethnicity, or other variables related to work and family status. Maturity was positively correlated with mathematics success. The study found that the length of time between exiting the developmental course and enrollment in the college level course had a significant impact; in effect, the longer a student waits to continue the

mathematics sequence, the greater the risk of failure. In addition, poor performance in exit-level developmental mathematics greatly increased the risk of failure or attrition for students who progressed to entry level college mathematics.

In a survey of procedures used in developmental mathematics courses, McDonald (1988) found that developmental courses frequently fail to keep data on students, thus making it difficult to track students in subsequent mathematics courses or in their overall progress. Interestingly, the use of math in authentic situations and in solving word problems, which were minimized in the program studied by Stage and Kloosterman (1995), were found to be more common at 2-year institutions than 4-year institutions. Indeed, the three strengths most frequently cited by two-year colleges as important to success in their developmental programs are: a) concern for students, b) self-pacing, and c) small class size (tied with peer tutoring). McDonald concludes that the best programs have a written philosophy, well-defined goals, and top-down administrative support, all crucial elements in establishing an effective program for student success.

Training Requirements of Developmental Educators

Valeri-Gold (1995) found it unusual that a strategy as effective as USSR for facilitating positive reading and study skills should be employed at virtually all grade levels other than college. Similarly, Stahl, Simpson, and Hayes (1992) note that while there are rigorous training requirements for teaching reading in primary and secondary grades, few formal university programs focus on the training of

college reading specialists. The number of students enrolled in developmental reading makes it essential that there are specialized educators who can best serve their needs. McDonald (1988) advocates professional development for teachers of developmental mathematics; similarly, Stahl et al. (1992) advocate formal professional development programs for educators in developmental reading and learning.

Stahl et al. (1992) emphasize the need for students to learn to transfer specific strategies to the particular literacy demands of each course, in addition to knowing how to develop and when to employ the strategies. The authors propose that simulations be used to provide developmental students with the experiences they will be facing when they enter regular college level courses. They stress the importance of a mastery-oriented model for promoting the beliefs as well as the skills students need to become efficient and independent learners.

Stahl et al. (1992) recommend that developmental students be provided with a variety of reading materials to promote the creative use of reading.

Schumm, Haager, and Leavell (1991) emphasize that students need to be versed in interpreting "inconsiderate" as well as "considerate" text. Considerate text "possesses text-based features, such as elements of text organization, explication of ideas, control of conceptual density, use of metadiscourse, and incorporation of instructional devices, which facilitate information gathering" (p. 42).

Inconsiderate texts do not have these features. Surveying an array of college texts, the study found that college courses, including developmental courses, typically

have both considerate and inconsiderate texts. Therefore, developmental students must be provided with strategies that will enable them to read and interpret both types of texts. Developmental students are likely to ignore features such as footnotes or introductions and require assistance in selecting relevant facts and ideas.

Chandler, Munday, Tunnell, and Windham (1993) explored the use of diverse reading strategies for developmental students. The focus of their study was the Orton-Gillingham method. In this study, conducted on the Campus of Community College in Northeast Texas, 18 students used the Orton-Gillingham method while 27 developmental students were taught by conventional reading techniques and methods. Contrary to expectations, the conventional group significantly out-performed the Orton-Gillingham group, although both groups improved their reading skills. The authors recommend that several different methodologies be used to improve students' reading skills, with an emphasis on strategies that address unique reading deficiencies and meet individual needs.

Open Door Policy and Academic Standards

Roueche and Roueche (1993) observe that colleges that have adopted innovative, holistic approaches to serving at-risk students provide evidence that colleges can maintain an open door policy without compromising academic standards. The most successful programs are those that acknowledge students' personal needs as well as their academic needs. Triton College in River Grove, Illinois, has implemented a comprehensive, holistic model that serves the needs of

all students. A goal of the progress is ongoing improvement of teaching and learning across campus (Chand, 1985). Concurrent with the establishment of the program, the college revised and reinforced its placement policies and procedures to include specifications for all English and mathematics courses and for certain other courses. All faculty were informed of learning center services and encouraged to use them. Both government and institutional resources were used to develop the program.

All developmental classes include tutorial assistance, and students and faculty are encouraged to use learning center resources. Concurring with Johnson (1996), program assessment showed that students' grades in developmental courses closely predict their future grade point averages in college level courses (Chand, 1985). Initially, the mathematics courses comprised the least successful component; only 50% of students successfully completed the course. In response, the course format was changed to include team-teaching supported by an LAC tutor. Word problems were included on all tests, and passing grades rose to 80%. A counseling component was also included. With the new approach, the success rate rose above 70%. Overall program statistics show that approximately 90% of students successful in one or more developmental courses return to take college courses at Triton. Inspired by the program success, the developmental educators have dedicated themselves to reaffirming the comprehensive nature of the program within the mainstream of the institution, and continue to restructure and redesign

curriculum, incorporating new research, learning technologies, methods, and materials into the program.

Weissman et al. (1997) analyzed the developmental program at Lake County College, which was implemented in 1985 when the college instituted a new admissions policy and embarked on a program to provide comprehensive academic support to all skill-deficient students. The program had four components: assessment, advising, course work, and academic support services. The sample selected for study was the fall 1992 cohort of students, including only students who had no prior higher education. The study confirmed that unprepared students who remediated were far more successful and persisted longer than unprepared students who did not remediate. The academic performance and persistence rates of developmental students compared favorably with their college level peers. Based on their findings, the authors' state that skill-deficient students are required to remediate.

In addition, Weissman et al. (1997) found that students who began developmental education in their first term of enrollment remediated at a much higher rate than students who took only college level classes their first term. Skill-deficient students who focused exclusively on developmental education courses their first semester had the highest average earned/attempted ratio and GPA of the remedial students. When students who took both college level and developmental courses their first semester were compared to those who took only college level courses the first semester, findings clearly indicated that students who took both

types of courses remediated at a higher rate and attempted and earned more credits. The authors suggest that students referred to developmental education should be allowed to take college level courses their first term, providing they are simultaneously working on remediation.

With respect to specific areas of deficiency, students who were only deficient in mathematics remediated at a higher rate and were more successful than other skill deficient students. Language deficient students did not do as well, and students who were deficient in the three areas of reading, math, and writing had the lowest rate of remediation and the lowest rate of persistence. Weissman et al. (1997) concluded that students who are triple deficient should be strongly advised to focus on remediation before beginning college-level courses. In addition, the two-year follow-up of the 1982 entering class demonstrates that the gains persist over time.

Current Rationale

Despite higher grade point averages in high school, students' skills and competencies have dropped to extremely low levels. According to the National Center for Education Statistics, (as cited in Roueche & Roueche, 1993) more than one-third of students tested on mathematical progress performed at levels below the lowest identified level, and more than 80% are estimated to be functioning below their appropriate grade level in mathematics. A substantial disparity exists in the functioning level of white and minority students, attributed to the high

correlation among under education, poverty, and minority status. Roueche &

Roueche state: It is commonly agreed that the overwhelming majority of high school students are not presently required to demonstrate acceptable skill levels; there is little, if any reading, writing, and problem solving in our schools. Thus, many students are not aware that they have poor skills and that they will be in real difficulty in college-level courses.

(p.20)

Need for Remedial Programs

The unfortunate paradox is that skill levels decline as a growing proportion of students are expected to enter college upon high school completion. Baker and Smith (1997) note that teachers and guidance counselors were twice as likely to advise high school sophomores to attend college in 1990 as in 1980. In 1990, more than half of the lowest performing students (those in the lowest quartile of reading and mathematics achievement) were advised to go on to college.

Increases in parental encouragement for college education parallel those of school personnel.

Several significant developments have resulted from this trend. The first is the growth of 2 year institutions; by the early 1990s, 45% of first-time undergraduates were attending 2 year colleges (Baker & Smith, 1997). Baker and Smith note that the increase in college enrollment impacts on the organization of higher education by increasing the number of students who require remediation. In 1995,

3 out of 10 freshmen were enrolled in remedial reading, writing, or mathematics courses. The rate for remedial enrollment was 41% at public 2 year colleges, 22% at public 4 year colleges, and 13% in private 4 year institutions. Although remedial course work increases the amount of time students are likely to spend in college, a growing number of studies indicate it increases the likelihood of graduation and/or transfer from 2 year to 4 year colleges (Jones & Lee, 1992; Tedrow & Rust, 1994; Weissman et al., 1997).

Findings from a 1991 Southern Regional Education Board survey on remedial education illustrate that most higher learning institutions require some form of remedial program if the majority of American students are to receive a college education (Oklahoma State Regents, 1993). Among its findings, the board reported more than one-third of all first-time freshmen are not fully prepared for college course work and had to take at least one remedial course in reading, writing, or math. Remedial needs for minority students were consistently higher, although more white than black students take remedial courses. Most public and private institutions reported some increase in the number of remedial students since 1984, with the highest proportion at 2-year college.

Inadequate college preparation has real consequence for students entering college directly from high school. However, as Philip Day (as cited in Lazarick, 1997) notes, "The recent high school graduate is only about 25% of the pie" in developmental education (p. 12). The profile of higher education has changed dramatically in recent years. Today 45% of all college students are age 25 or over.

Only about 22% of college students are full-time and under 22 years of age (Culross, 1996). The common distinctions between traditional and non-traditional students are diminishing. Some mature students may have been honor students in high school; however, upon entering college years later, they often require some degree of remediation (Lazarick, 1997). Other adults attended high school at a time before universities instituted admission requirements or were not motivated to take college preparatory courses when in high school (Culross, 1996). Many are foreign-born and may have limited English and most have family and financial responsibilities. With the inclusion of adult learners, Roueche and Roueche (1993) state succinctly, "More than one-third to one-half of all newly enrolling students entering college each year fit the standard definition of the at-risk student" (p. 20).

Effectiveness of Developmental Programs

Unfortunately, few developmental programs have been able to adequately document their effectiveness in preparing students for college-level work. A review of the few investigations of developmental program evaluation conducted over the past 15 years shows clearly that little improvement in documenting program effectiveness has taken place over that time. Despite the fact that numerous authors; Roueche & Roueche, 1993 have strongly recommended that institutions collect and analyze developmental program completion rates and perform follow-up studies of grades in subsequent courses, the data provided by these studies show that a disturbing by large number of institutions simply do not

know if their developmental programs are effective in preparing students for success in later coursework.

In spite of these recommendations, course retention figures and the proportion of successful course completions constitute the most commonly used evidence of a successful program (Roueche, Baker & Roueche, 1985). Because of this, the largest study of developmental programs undertaken to date had little choice but to use retention figures as the primary determining factor for classification as a successful program (Roueche, Baker, & Roueche, 1985). Nonetheless, the study called for community colleges to use a more systematic approach in defining and analyzing program success, including techniques such as analyzing course completion rates, comparing performance of developmental students and mainstreaming students in core courses, and tracking studies in which developmental students' performance was followed beyond the basic skills courses into subsequent college level courses.

CUNY has recently been in the headlines because of its policy of decreasing remedial education by raising admission standards. In the early 1980's, in keeping with the school's traditional policy of providing an education for academically and economically disadvantaged students, CUNY officials surveyed post-secondary educators to assess the extent of the problem of educating unprepared students (Lederman, Ribaud, & Ryzewic, 1985). A representative sample of 1,269 colleges and universities across the nation responded to the survey questionnaire. The researchers found that 85% of the

institutions perceived poor academic preparation among entering freshman as a more or less serious problem. This was true of 90% of community colleges, 45% of the private universities, and 62% of the 4-year selective colleges. Only 3% of respondents overall reported no problem with under prepared students. A substantial proportion of all entering freshman were viewed as requiring assistance in basic skills area: 28% in reading, 31% in writing, and 32% in basic mathematics. The institutions that perceived a greater need were more likely to make the courses mandatory.

In addition to courses, the institutions reported a variety of strategies, to prepare students for academic success. These included tutoring, counseling, summer programs, computer-assisted learning, and laboratories. Most strategies appeared to employ a combination of services. Besides providing basic skills courses, tutoring and counseling were the most common methods used (Lederman et al., 1985). Two basic evaluation methods were used to determine when students demonstrated adequate skills improvement: teacher judgement or more standardized criteria. The researchers noted that institutions that perceived greater problems with poor academic preparation were more likely to favor uniformity for evaluation.

The conclusion of Lederman et al. (1985) is somewhat ironic. The researchers envisioned an educational direction for education in which students at all grade levels were given learning opportunities and challenges, new

methodologies and techniques were employed, and “skills redefined and taught in a curriculum both rigorous and stimulating (p.25).” Then:

...when this study is replicated a decade hence, we may look forward to results based on larger numbers of students entering higher education who possess the range of skills and interests they will need to carry them successfully through education and life in the twenty-first century. (p. 13)

Despite the use of new technologies and the systematic school reform efforts, the optimistic prediction of Lederman et al. (1985) has not come to pass. Conversely, the proportion of post-secondary institutions offering remedial courses has risen steadily. According to a Department of Education spokesman, (as cited in Arenson, 1998a) nearly half of all college students take at least one class to prepare them for college level course work. An Ohio study (Bandy, 1985) a decade ago disclosed a number of reasons for inadequate college preparation, including lack of motivation, poor study skills, misunderstanding of college requirements, and late decisions to enter college. Ohio implemented a rigorous statewide program for addressing these problems; however, the poor college preparation persists nationwide. Studies confirm that students are leaving high school no better prepared than they were in the 1960s, when fewer students went on to college (Roueche & Roueche, 1993). Education is concerned with whether or not community colleges actually provide access to bachelor's degrees. The University of California, for example, has a cooperative transfer plan with the California community colleges. Successful transfer students include many adult

and minority students and many who began their academic careers in developmental programs (Jones & Lee, 1992). Nationwide, however, only one-fifth of freshman who begin in 2 year colleges actually transfer to 4 year colleges, and 2 year students who begin college with the goal of attaining a bachelor's degree are less likely to do so than their peers who enter 4 year colleges (Baker & Smith, 1997). Indeed, 5 years after beginning a 2 year college, 63% have achieved an associate's degree, vocational certificate, or bachelor's degree. This is partly due to "stopping out" as well as dropping out, and to frequent part-time enrollment due to financial demands (Culross, 1996). Overall, most students at 2 year colleges enroll for a substantial period of time. In contrast, 72% of students who begin at 4 year colleges have either earned a bachelor's degree in 5 1/2 years or are still working on one (Baker & Smith, 1997). However, a significant gap exists between enrolling college and completing college; roughly half freshman enrollments complete Bachelor's degrees.

Role of Community Colleges in Developmental Programs

Community colleges typically attract a large proportion of adult learners. According to Roueche and Roueche (1993), this population includes "a new generation of adult learners who are characterized by economic, social, personal, and academic insecurities that threaten their chances for success almost anywhere, and especially in college" (p. 20). Much research has also been conducted to assess performance levels of the national urban students comprised of mainly adult, minority, financially and educationally disadvantaged students whose

employment and college attendance patterns reflect an "urban" life situation. This unique set of characteristics is evident at the national level.

Many higher education researchers have described the challenges confronted by urban students in their academic transition to college (Terenzini, 1993; Tinto, 1987). These challenges often have a negative impact on initial academic performance and course completion rates. Particularly in view of these trends, local course outcomes may be viewed as favorable, and the quality indicator levels attained by the majority of freshmen, may be viewed as acceptable.

Proponents of the idea that developmental programs are best suited to the "junior" college are, no doubt, inclined to see a definite link between the mission of the 2 year school and the purpose of developmental course work. The 2-year institution emerged in the early 1900s with an open door policy and the purpose of providing the disadvantaged high school graduate and the minority student an opportunity to improve their socioeconomic status by improving their skills, thereby gaining access to meaningful career opportunities (Bass, 1982). Many of the courses taught in the junior college were designed to create equity in higher education, promote its popularity, and make education available to the public.

Summary

The body of literature reviewed for this project supports the premise that appropriate remedial assistance for marginal or poorly prepared students can have a significant impact on the students' subsequent academic success. The most

successful programs would appear to be holistic models such as the model program at Triton College (Chand, 1985). However, several of the programs reviewed described only remedial or developmental courses and did not describe the support services offered. These were nonetheless successful in bringing at-risk students up to college level and increasing course completion, retention, and/or graduation rates. The program described by Eanes (1992), in which developmental courses were linked to regular Humanities courses, was especially successful in raising the academic performance of developmental students to equal or surpass the performance of nondevelopmental students. Most studies concede that once developmental students are integrated into the regular college curriculum, they still show lower academic performance than their nondevelopmental counterparts, although they show comparable retention and graduation rates.

A particularly significant finding is the increasing number of adult students, especially in 2 year colleges. Although adult students require remedial courses in disproportion to younger students, it may be due, in part, to their lengthy absence from formal education and differences in high school preparation in past decades. Findings are somewhat inconsistent on the influence of age on academic performance; however research suggests that with developmental support, adult students may actually outperform their younger counterparts. This finding is significant, because predictions are that 75% of the existing workforce will need retraining over the next decade (Culross, 1996). The distinctions between

traditional and nontraditional students are blurred, only 20% of full-time students are under age 22.

A finding with critical implications is the number of students who require remediation in mathematics. Although some sources find mathematics deficient students tend to fare better than language deficient students, overall, students deficient in math have the lowest completion rate. The study of Stage and Kloosterman (1995), in which beliefs about mathematics played a role in success, especially for female students, has important implications for support services, such as counseling and for the respect for individual learning that is considered a keynote of developmental education.

Of all the studies reviewed, perhaps the most important, with far-reaching implications for policy makers is the recent report of the Institute for Higher Education Policy (as cited in Arenson, 1998b) which after extensive research concluded that the economic and social costs of not providing remedial education are far higher than the financial cost of remedial programs which, in fact, is only a tiny fraction of the total education budget. The study concluded that even if the cost of remedial education were double its present \$1 billion that is a relatively modest amount to be spent (Arenson, 1998b).

With respect to adult learners, the Institute for Higher Education (Murray, 1997) study reported that in a Florida study, 80% of remedial or developmental students were not recent high school graduates. To work toward diminishing the need for remedial education among recent high school graduates, several sources

recommended strong linkages between primary, secondary, and postsecondary institutions, as well as community and business organizations. For students entering college, a model program is the Summer Bridge program of the University of Michigan, which, in addition to language, mathematics, and computer literacy works to build the academic confidence of promising but unprepared students. Michigan's William Collins (as cited in Murray, 1997) summarizes the viewpoint of proponents of developmental education.

Developmental education, "helps to fulfill the higher education philosophy of preparing a capable, competent, and diverse group of people for the workforce of tomorrow" (p. 49). This viewpoint is largely supported by the literature in this study.

Chapter III

RESEARCH DESIGN AND METHOD

This chapter presents the data sources used in this study. The measurement and variable coding is explained and finally the methods for interpreting the results from the statistical analyses are reviewed.

Overview

Because of the reliance on previously collected, historical data, the research design was necessarily *ex post facto*. Despite their limitations, *ex post facto* analyses are often the only design choice available for the study of student outcomes; experimental, or even quasi-experimental, designs are not possible, in most cases, for studies using historical data. The advantages of such a design are primarily related to convenience; the data are already collected and available. Beyond convenience, however, the use of historical data in this study allowed for the longitudinal approach necessary to control for the "stopping-out" phenomenon common to students in developmental programs. Even successful developmental students often allow several semesters to pass before continuing on to the next course in the sequence, an occurrence that is particularly common in English.

This study will employ a correlational research and multivariate approach in an attempt to distinguish a relationship. According to Cohen and Manion (1994), the correlational research method allows the researcher to discover relationships among phenomena to ultimately predict and, in some situations, control their occurrence. "Correlational techniques are generally intended to

answer three questions about variables or two sets of data. First, 'Is there a relationship between the two or more variables (or set of data)?' If the answer is yes, then, 'What is the direction of the relationship?' and 'What is the magnitude?' (Cohen & Manion, 1994). This method assists the researcher to understand the complexity of the phenomena in the relationship. It is also helps to verify hunches the researcher may have regarding a relationship between characteristics or variables. Once a correlation is established, the information can assist in predicting future behavior.

Data Sources

Data sets analyzed in this study were retrieved from the Community College's administrative computer system. Students were grouped into cohorts divided by level of remediation. The selection of 1 academic year (1999-2000) allowed for 1951 students to be included. Descriptive factors for this group reflect representation of all students available in gender, age, ethnicity, enrollment status, and educational history. Once this information was retrieved for the fall 1999 and spring 2000 semesters, descriptive statistics were employed. The use of these statistics assists in answering the research question and subsidiary questions.

Selection of an Urban Community College

Junior colleges have decades of experience in providing developmental or remedial education for under prepared students. A community college has been chosen because research has shown that almost all public community colleges offer developmental courses and that 63% of all first time freshman enrolled in

developmental courses attend 2 year colleges (Lazarick, 1997). Also, community colleges have open door policies (Johnson, 1996). Finally, the profile of higher education has changed dramatically in recent years. Today 45% of all college students are age 25 or over, only 22% of college students are full-time, many are foreign born and have limited English. An urban community college in New Jersey was chosen because of similarities in its college's mission, its student make-up, and its designation as an urban community college. The school was established in the late 1960's under New Jersey law as an open-door public community college for residents of that county. It is committed to provide quality educational programs to people of all backgrounds and offers a program of remedial and developmental courses to enable students deficient in basic skills to acquire the necessary tools to engage in college-level study.

The choice to study remediation in a community college was influenced by the researcher's position as a director of academic programs in a community college setting. This has placed the researcher in a position to have knowledge, experience and a vested interest in this data.

Selection of English Composition

English Composition was selected as the subject area of study due to the requirement of this course in almost every 2 or 4 year degree program. It is also part of the first semester courses taken by incoming freshman if not placed in remediation. Students also cannot continue studies without successful completion in English Composition.

Written permission has been granted to conduct this study by the President of the Community College. Students will not be involved in the research procedures to protect their privacy.

Description of the Institution

An urban community college established in 1966 under New Jersey law as an open-door public community college for the residents of that county. It is committed to providing quality educational programs and life-long learning activities at an affordable cost. It encourages people of all backgrounds to enroll in its academic and continuing education programs. The College seeks to provide an environment that will accommodate the needs of the individual for self-enrichment and self-realization and the demands of society for well-educated, well informed, properly trained and self-sufficient citizens. Since the individual is the focal point of the learning process and since individuals differ in the ways they learn, the College recognizes that it must strive to be as comprehensive as possible within the limits of its resources. To achieve these ends, the College has as its mission the education of the individual as a whole. Hence, an integral and complementary part of its educational mission is an active program of counseling, academic support services, and cultural and recreational activities which promote a positive self-image and which facilitate the intellectual, social, emotional and physical development of students. There is an abiding commitment at the College to innovation, experimentation and evaluation in order to improve learning and the efficiency of the learning process. Consistent with its Philosophy, one of the

missions of the college is directed toward offering a program of remedial and developmental courses to enable students deficient in the basic skills of reading, writing and arithmetic to acquire the necessary tools to engage in college-level study.

The college's enrollment exceeds 8,000 students in its degree programs and another 12,000 in its continuing education (credit and non-credit), youth, and company and customized training programs. The College also offers multiple resources for academic and career growth at an affordable cost. The curriculum features more than 400 courses and a wide range of transfer and career programs. Students can earn Associate in Arts and Associate in Science degrees for transfer to 4 year colleges, or they can pursue Associate in Applied Science degrees and 1 year certificate options to prepare for employment in career and technical fields.

Description of the Population

All students who enrolled in English Composition 101 at the Community College during the Fall 1999 and Spring 2000 semester's constituted the population of interest. During this time 1951 students were enrolled in this course. Student variables, including age, race, enrollment status, gender, and educational history and grade in English 101, were assembled into a comprehensive set of data using the college's mainframe computer and file management system (Banner). Those students with transfer credits were also identified and transcripts reviewed. Those students with remedial courses at other institutions were placed in the proper Cohort group. A detailed examination of the data in terms of demographic

characteristics showed them to be comparable to the general population of students at the College and to U.S. urban community colleges.

Cohort Groups

The entire population of students enrolled in English 101 was divided into four cohort groups. Students were grouped according to the following criteria. The first cohort group represents any student who did not require any remediation based on their placement test scores and could enroll in English 101. The second cohort group represented students who required one level of remediation based on placement test scores before being able to enroll in English 101. This placed the student in English 096/97 at some time in their educational history. The third cohort group represents any student who required two levels of English remediation based on placement test scores before being able to enroll in English 101. This placed the student in English 086/87. The fourth group represents any student who tested on the level requiring English as a Second Language remediation before enrolling in English 101.

Description of levels of English Composition

English 086/87 is the lowest level of remediation or two semesters below English Composition 101. This course consists of two sections entitled Basic Writing and College language studies. Students are placed in this level when their essay score on the placement test falls between 1 and 5. As a writing course designed for the pre-college level student, there is a strong emphasis on Standard English usage and paragraph development as a basis for communicating

effectively in writing. The study skills portion of the course provides a foundation for the development of effective study skills and habits, emphasizing note-taking, concentrating, short answer and essay test-taking, following directions, and understanding textbooks. Special emphasis is placed upon helping students to overcome anxiety associated with testing, writing, and studying.

The next level of remediation is English 096/097, one semester below English Composition, called English Foundations I and English Foundations II. Students receiving an essay score between 6 and 8 on the placement test are placed in this course, which is designed to bring the student's level of organized writing beyond the basic level to one commensurate with the standards of college composition. The technique of putting an essay together is taught through a variety of methods from pre-writing, through the critical analysis of compositions by others, to a stress on editing one's own drafts for grammar, style, organization, and content. Thus, students are taught fluent and intelligible writing that culminates in a number of five-paragraph essays. The focus of the second part of the course is English grammar, usage, and mechanics with attention to common errors stressed in the processes of editing, revision, and rewriting.

English 101, or College Composition I, is the first college-level English course. Students must receive a 9 or above on the essay portion of the placement test in order to place into this course. Expository writing is taught through the principle of rhetoric, mechanics and style. Critical thinking is developed through

analysis and discussion of selected essays and introductory library procedures are also taught.

The English as a Second Language Program (ESL) is designed to expose non-native speakers of English to the foundations of the English language. Students are placed in ESL courses through a departmental writing exam and an oral interview conducted by an academic advisor in the Bilingual Education Department. Emphasis is initially placed on listening and comprehension, vocabulary expansion, and grammar. As students become more accustomed to the language, emphasis shifts to the production of clear and grammatically accurate writing and paraphrasing in anticipation of further college-level work. The transition to college-level reading comprehension is fostered by focusing students on reading for main ideas and details, a skill which students are required to demonstrate through oral and written assignments. After completing the ESL courses, students are prepared to move on to college-level courses.

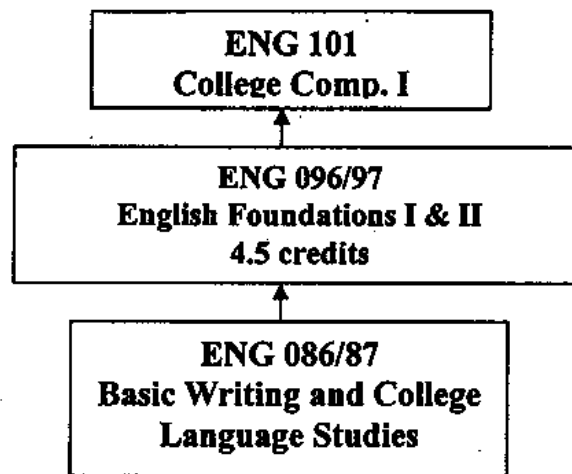


Figure 1. English Course Sequence

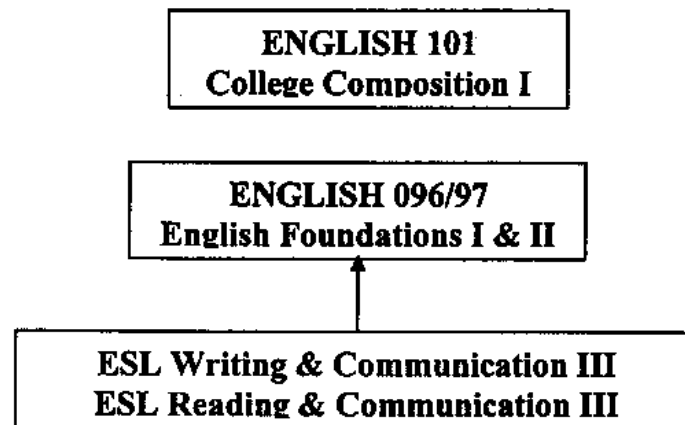


Figure 2. English as a second language (ESL) Course Sequence

Placement Test

A placement test is administered to each matriculated student attending the County College. The placement test was developed by the College Board with assistance from college faculty, to assess the student's level of skill accomplishment in reading, writing, and mathematics. The tests determine the English and mathematics courses most appropriate for the student.

The reading comprehension portion of the test uses multiple-choice questions to measure questions the students understanding of what they read. The reading section contains 35 questions to be completed in 45 minutes.

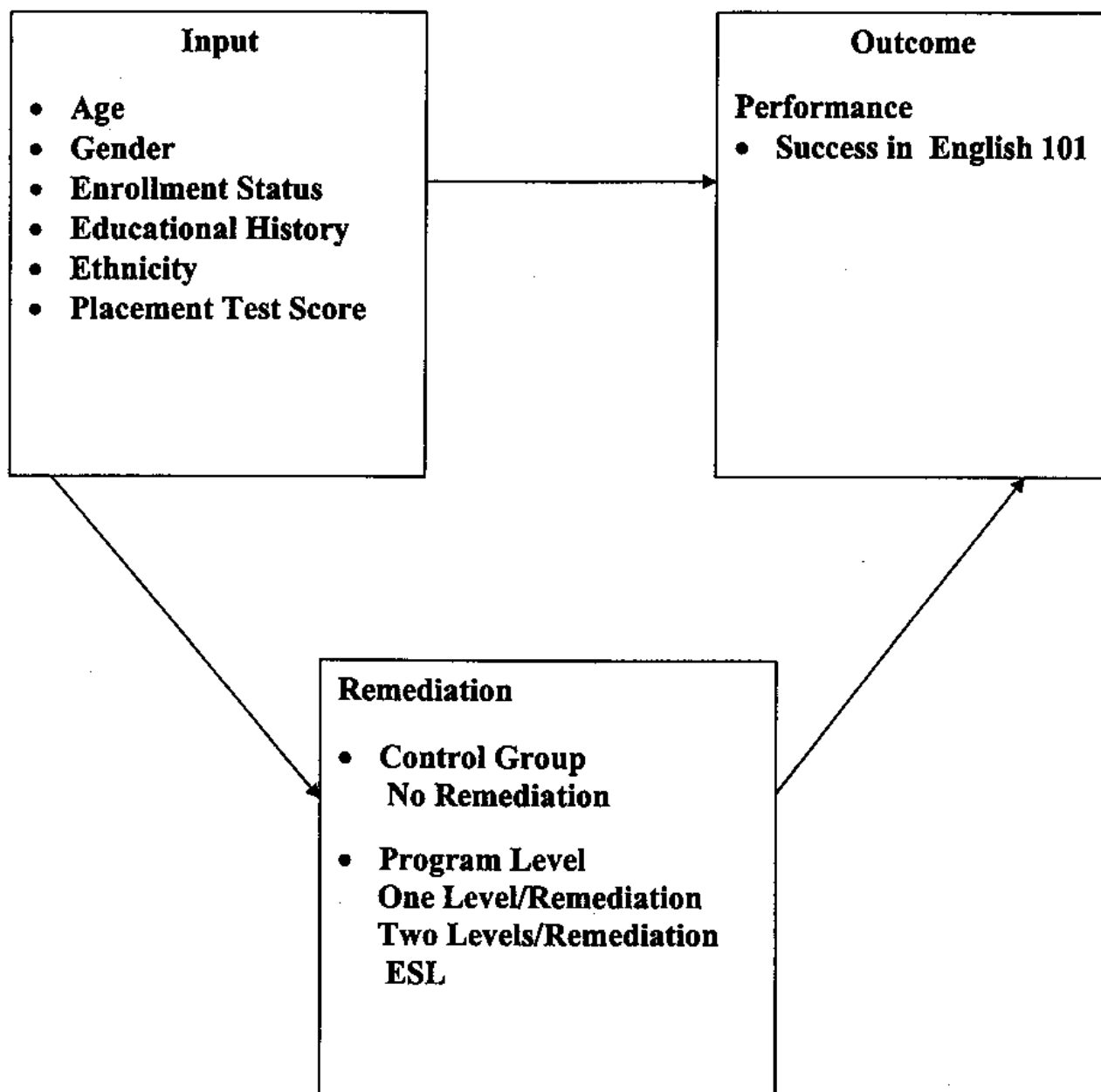


Figure 3. Research Design Framework

Measurement and Variable Coding

The outcome variable in this study is success in English 101 as defined by the subjects' class grade. The following were used as coding schemes for this variable: a=4, b=3, c=2, f=1(withdrew students withheld from analysis).

The independent variables were as follows: (a) student status (full=1, p=0), (b) sex (males=1, females=0), (c) age (continuous variable measured as years of age), (d) education (high school diploma=1, GED=0), (e) Score (continuous variable on initial E101 placement examination), (f) remediation Program (no remediation=3, 1 level of remediation=2, 2 levels=1, ESL=0), - dummy coded for inclusion in multiple regression analysis.

| | D1 | D2 | D3 |
|----------------|----|----|----|
| No Remediation | 0 | 0 | 0 |
| 1 Level | 1 | 0 | 0 |
| 2 Levels | 0 | 1 | 0 |
| ESL | 0 | 0 | 1 |

(a) Ethnicity for demographic and univariate analyses (White=1, African American =2, Hispanic=3, other=4), (b) ethnicity - dummy coded for inclusion in multiple regression analysis.

| | D1 | D2 | D3 |
|------------------|----|----|----|
| White | 0 | 0 | 0 |
| African American | 1 | 0 | 0 |
| Hispanic | 0 | 1 | 0 |
| Other | 0 | 0 | 1 |

Statistical Analyses

Statistical analyses were conducted to analyze the relationships between success in English 101 as measured by grade and the independent variables including student status, sex, age, ethnicity, education, initial placement test score, and remediation program.

Descriptive statistical analyses were used to examine the general characteristics of the sample. Frequency distributions are presented for each variable for all subjects and by remediation program. Next, bivariate relationships are examined using Chi2 analysis and analysis of variance to examine the relationships between English 101 grades and student status, sex, ethnicity, education, and remediation program.

Multiple regression analysis was used to examine multivariate relationships. Multiple regression analysis allows an assessment of the relationship between English 101 grades and several independent variables including student status, sex, age, ethnicity, education, and remediation program. The result of multiple regression is the development of an equation that demonstrates the best prediction of the outcome variable from more than 1 continuous or dichotomous independent variables (Tabachnick & Fidell, 1989, p. 123). The regression model is presented as follows: $Y' = A + B_1X_1 + B_2X_2 + B_3X_3 + \dots + B_kX_k$ where Y' is the predicted value of the outcome variable;

A is the intercept, the value of Y when all values of X are 0; $X_1, X_2, X_3 \dots X_k$ are the various independent variables; B are the regression coefficients developed for each independent variable.

A hierarchical multiple regression approach was used. In the first step, the demographic variables were entered including student status, sex, age, ethnicity, test score and education. This step statistically accounts for variance in English 101 grades that is related to the demographic variables. The next step included the remediation programs (no remediation, 1 level of remediation, 2 levels of remediation, ESL) dummy coded. The F test for change was examined when the second step was entered to determine if the entry of the program step resulted in a significant increase in the multiple correlation.

Chapter IV

RESULTS

This chapter presents the results of the statistical analyses conducted to analyze the data collected in this study. The chapter begins with a presentation of descriptive statistics on all variables included in this study. Next, Chi2 analyses and analysis of variance are presented to provide basic information on the univariate relationships that exist in the data set. Finally, multiple regression analyses are presented to present information on the multivariate relationships with English 101 scores.

Descriptive Statistics

Frequency data on the variables subcategorized by group are presented in

Table 1.

Table 1

Frequencies on Demographic and Outcome Variables

| Variable | No Remediation | 1 Level | 2 Levels | ESL | Total |
|----------------|--------------------|--------------------|--------------------|---------------------|---------------------|
| Education Type | | | | | |
| HSD | 523 (89.2%) | 841 (86.6%) | 204 (88.3%) | 154 (94.5%) | 1722 (88.3%) |
| GED | 63 (10.8%) | 130 (13.4%) | 27 (11.7%) | 9 (5.5%) | 229 (11.7%) |
| Ethnicity | | | | | |
| White | 125 (21.3%) | 128 (13.2%) | 20 (8.7%) | 13 (8.0%) | 286 (14.7%) |
| AA | 295 (50.3%) | 553 (57.0%) | 131 (56.7%) | 34 (20.9%) | 1013 (51.9%) |
| Hisp | 68 (11.6%) | 155 (16.0%) | 43 (18.6%) | 79 (48.5%) | 345 (17.7%) |
| Other | 98 (16.7%) | 135 (13.9%) | 37 (16.0%) | 37 (22.7%) | 307 (15.7%) |
| Grade | | | | | |
| A | 78 (13.3%) | 73 (7.5%) | 4 (1.7%) | 2 (1.2%) | 157 (8.0%) |
| B | 153 (26.1%) | 231 (23.8%) | 33 (14.3%) | 21 (12.9%) | 438 (22.5%) |
| C | 134 (22.9%) | 299 (30.8%) | 92 (39.8%) | 59 (36.2%) | 584 (29.9%) |
| F | 127 (21.7%) | 223 (23.0%) | 55 (23.8%) | 43 (26.4%) | 448 (23.0%) |
| W | 94 (16.0%) | 145 (14.9%) | 47 (20.3%) | 38 (23.3%) | 324 (16.6%) |
| Grade Mean | 2.37 | 2.19 | 1.92 | 1.86 | 2.19 |
| Grade SD | 1.03 | .93 | .75 | .75 | .95 |
| Sex | | | | | |
| Male | 219 (37.4%) | 348 (35.8%) | 90 (39.0%) | 63 (38.7%) | 720 (36.9%) |
| Female | 365 (62.3%) | 620 (63.9%) | 140 (60.6%) | 100 (61.3%) | 1225 (62.8%) |
| Missing | 2 (.3%) | 3 (.3%) | 1 (.4%) | | 6 (.3%) |
| Age | X=25.70 SD=8.01 | X=25.20 SD=7.43 | X=26.92 SD=7.39 | X= 27.69 SD=7.37 | X= 25.76 SD=7.63 |
| Status | | | | | |
| Full Time | 464 (79.2%) | 928 (95.6%) | 206 (89.2%) | 145 (89.0%) | 1743 (89.3%) |
| Part Time | 122 (20.8%) | 43 (4.4%) | 25 (10.8%) | 18 (11.0%) | 208 (10.7%) |

The frequency data presented in Table 1 presents the number and percent of subjects for each variable category or level subcategorized by remediation

program, and the means and standard deviations on age subcategorized by remediation program.

Univariate Relationships

Subsidiary Question 1. Are the variables of age, sex, status, ethnicity, education type, related to success in E101?

Chi2 analyses were conducted to examine the univariate relationships between the variables and programs for education type, ethnicity, E101 grade, sex, and status. An analysis of variance was conducted to compare the programs on age. The results of these analyses are in table below.

Education Type. A 2 X 4 Chi2 analysis was conducted to determine if a relationship exists between education type, either high school diploma or GED, and program defined as no remediation, 1 level of remediation, 2 levels of remediation, or ESL. The results are presented in Table 2. A significant Chi2 was found ($\chi^2=9.18$, $df=3$, $p=.02$)

Table 2

Chi2 Analysis on Education Type by Program

| Variable | ESL | 2 levels | 1 level | No Remediation |
|--------------|-------|----------|---------|----------------|
| GED Observed | 9 | 27 | 130 | 63 |
| Expected | 19.1 | 27.1 | 114.0 | 68.8 |
| HSD Observed | 154 | 204 | 841 | 523 |
| Expected | 143.9 | 203.9 | 857.0 | 517.2 |

Note: $\chi^2=9.15$, $df=3$, $p=.02$

These results show that more than expected subjects in the no remediation program had high school diplomas, and more than expected subjects in the ESL

program had high school diplomas. Also, more than expected subjects in the 1 level of remediation program had GEDs.

Ethnicity. The Chi2 results for ethnicity by program are presented in Table 3. A significant Chi2 was found ($\chi^2=175.00$, $df=9$, $p=.001$).

Table 3:

Chi2 Analysis on Ethnicity by Program

| Variable | ESL | 2 levels | 1 level | Ready |
|----------|------|----------|---------|-------|
| White | | | | |
| Observed | 13 | 20 | 128 | 125 |
| Expected | 23.9 | 33.9 | 142.3 | 85.9 |
| Afr Am | | | | |
| Observed | 34 | 131 | 553 | 295 |
| Expected | 84.6 | 119.9 | 504.2 | 304.3 |
| Hispanic | | | | |
| Observed | 79 | 43 | 155 | 68 |
| Expected | 28.8 | 40.8 | 171.7 | 130.6 |
| Other | | | | |
| Observed | 37 | 37 | 135 | 98 |
| Expected | 25.6 | 36.3 | 152.8 | 92.2 |

Note: $\chi^2=175.00$, $df=9$, $p=.001$

For the White subjects, more than expected were in the no remediation program.

The African American subjects indicated more than expected in the 1 and 2 levels of remediation programs, and less than expected in the ESL program. The

Hispanic subjects had more than expected in the ESL program, and less than expected in 1 level of remediation and no remediation programs. The other

subjects indicated more than expected subjects in the ESL program and less than expected in the 1 level of remediation program.

Gender. A Chi2 analysis on gender by remediation program is presented in Table 4. A non-significant Chi2 was found, which indicates that no relationship exists between gender and program.

Table 4

Chi2 Analysis of Gender by Program

| Variable | ESL | 2 levels | 1 level | No remediation |
|----------|-------|----------|---------|----------------|
| Male | | | | |
| Observed | 63 | 90 | 348 | 219 |
| Expected | 60.3 | 85.1 | 358.3 | 216.2 |
| Female | | | | |
| Observed | 100 | 140 | 620 | 365 |
| Expected | 102.7 | 144.9 | 609.7 | 367.8 |

Note: $X^2=1.15$, $df=3.9$, $p=.76$

Status. Table 5 presents the Chi2 analysis on status by program. A significant Chi2 was found ($X^2=103.11$, $df=3$, $p=.001$).

Table 5

Chi2 Analysis of Status by Program

| Variable | ESL | 2 levels | 1 level | No remediation |
|-----------|-------|----------|---------|----------------|
| Full Time | | | | |
| Observed | 145 | 206 | 928 | 464 |
| Expected | 145.6 | 206.4 | 867.5 | 523.5 |
| Part Time | | | | |
| Observed | 18 | 25 | 43 | 122 |
| Expected | 17.4 | 24.6 | 103.5 | 62.5 |

Note: $X^2=103.11$, $df=3$, $p=.001$

These results indicate that more than expected full time students were in the 1 level of remediation program and less than expected were in the no remediation program. For part time students, less than expected were in the 1 level of remediation program and more than expected were in the no remediation program.

Age. A one way analysis of variance was conducted to compare the programs on mean age. The results are presented in Table 6.

Table 6

Analysis of Variance on Age

| Source of Variation | Sum of Squares | df | Mean Square | F | Sig. |
|---------------------|----------------|------|-------------|------|------|
| Between Groups | 1225.98 | 3 | 408.66 | | |
| Within Groups | 112351.2 | 1947 | 57.70 | 7.08 | .001 |
| | | | | | |
| Total | 113577.2 | 1950 | | | |

These results show that significant mean differences were found between the programs on age [$F(3,1947)=7.08, p=.001$]. Scheffe post hoc comparisons were conducted to identify actual program differences, which indicated that the mean age of 27.69 for the ESL program was significantly higher than the mean age of 26.92 for the 1 level program and 25.70 for the no remediation program. Also, the mean of 26.92 for the 2 levels program was significantly higher than the mean of 25.20 for the 1 level program.

Student Grades

Subsidiary Questions 2 and 3. How effective are ESL courses in preparing students to succeed in E101? How effective was remediation in determining student grades in English 101?

Analysis of Pretest score vs. English 101 Grade.

Table 7

Chi2 Analysis on Pre Test Score by English 101 Grade

| Variable | A | B | C | F | Withdrew |
|---------------|------|-------|-------|-------|----------|
| 0 to 2 | | | | | |
| Observed | 3 | 35 | 73 | 47 | 51 |
| Expected | 16.8 | 46.9 | 62.6 | 48.0 | 34.6 |
| 3 - 4 | | | | | |
| Observed | 3 | 19 | 64 | 45 | 28 |
| Expected | 12.8 | 35.7 | 47.6 | 36.5 | 26.3 |
| 5-6 | | | | | |
| Observed | 44 | 154 | 232 | 151 | 113 |
| Expected | 55.9 | 155.9 | 207.8 | 159.4 | 115.0 |
| 7-8 | | | | | |
| Observed | 56 | 131 | 133 | 134 | 71 |
| Expected | 42.3 | 117.9 | 157.2 | 120.6 | 87.0 |
| 9-10 | | | | | |
| Observed | 51 | 99 | 82 | 71 | 60 |
| Expected | 29.2 | 81.5 | 108.7 | 83.4 | 60.1 |

Note: ($\chi^2=95.20$, $df=16$, $p=.001$)

The Chi2 results on pre test score by English 101 grades are presented in Table 7.

These results show fewer than expected subjects who scored in the low pre test score categories received grades A and B in English 101, and more than expected subjects who scored in the high pre test categories received grades A and B.

Grade by Program. The Chi2 results on grade by program are provided in Table 7. These results show that a significant Chi2 was found ($\chi^2=88.30$, $df=12$, $p=.001$).

Table 8

Chi2 Analysis of Grade by Program

| Variable | ESL | 2 levels | 1 level | No remediation |
|----------|------|----------|---------|----------------|
| Withdraw | | | | |
| Observed | 38 | 47 | 145 | 94 |
| Expected | 27.1 | 38.4 | 161.3 | 97.3 |
| F | | | | |
| Observed | 43 | 55 | 223 | 127 |
| Expected | 37.4 | 53.0 | 223.0 | 134.6 |
| C | | | | |
| Observed | 59 | 92 | 299 | 134 |
| Expected | 48.8 | 69.1 | 290.7 | 175.4 |
| B | | | | |
| Observed | 21 | 33 | 231 | 153 |
| Expected | 36.6 | 51.9 | 218.0 | 131.6 |
| A | | | | |
| Observed | 2 | 4 | 73 | 78 |
| Expected | 13.1 | 18.6 | 78.1 | 47.2 |

Note: $\chi^2=88.3$, $df=12$, $p=.001$

For subjects who withdrew, more than expected were in the ESL program and the 2 levels of remediation program, less than expected were in the 1 level of remediation program and the no remediation program. Subjects, who received an F, more than expected were in the ESL program and less than expected were in the no remediation program. For subjects who received a C, more than expected were in the ESL program and the 1 and 2 levels of remediation program. Less than expected were in the no remediation program. For subjects who received a B, less than expected were in the ESL program and the 2 levels of remediation program.

More than expected were in the 1 level of remediation program and the no remediation program. For subjects who received an A, more than expected were

in the no remediation program and less than expected were in the ESL, and 1 and 2 levels of remediation programs.

Effectiveness of ESL Program. In terms of the effectiveness of ESL programs in preparing students for E101, Table 7 demonstrates that more than expected ESL students withdrew and achieved grades Cs and Fs, and fewer than expected received Bs and As. Similar results were found for the 2 levels of remediation program. The ESL program had a lesser percentage of subjects (50.3%) receiving a passing grade (A, B, C) than the 2 level program (55.8%), the 1 level program (62.1%) and the no remediation program (62.2%).

Multivariate Analysis of programs and Grades

Research Question. Do significant differences exist in success in English 101 based on initial levels of readiness?

Multiple Regression Analysis

Multiple regression analysis was used to determine if differences in E101 grades exist between the no remediation programs and remediation programs. Given the significant relationships described above between programs and education type (diploma or GED), ethnicity, age, and status (full time, part time), the variance in grades associated with these variables and pre test score was identified before differences between programs were examined. A hierarchical regression analysis strategy was used with education type, ethnicity, age, status, gender and pre-test score entered as the first step to extract variance in E101

grades associated with these variables before comparing program differences (ready, 1 level, 2 levels, and ESL).

Analysis- Reference Program/No Remediation

The multiple regression analysis results with the no remediation program as the reference program is presented in Table 9.

Table 9

*Multiple Regression Analysis Results On E101 Grades-
No Remediation Program as Reference Program*

| Variable | Step 1 | | | Step 2 | | |
|----------|---------------------|-----|-------|---------------------|-----|-------|
| | Unstandardized Beta | SE | Sign. | Unstandardized Beta | SE | Sign. |
| Constant | 1.25 | .15 | .001 | 1.63 | .19 | .001 |
| Age | .02 | .00 | .001 | .02 | .00 | .001 |
| Educ. | -.08 | .08 | .32 | -.09 | .08 | .30 |
| Score | .05 | .00 | .001 | .02 | .01 | .09 |
| Sex | .16 | .04 | .001 | .16 | .04 | .001 |
| Status | -.21 | .08 | .008 | -.25 | .08 | .002 |
| Ethnic1 | -.11 | .06 | .10 | -.09 | .06 | .15 |
| Ethnic2 | -.21 | .08 | .009 | -.19 | .08 | .01 |
| Ethnic3 | .02 | .08 | .72 | .03 | .08 | .68 |
| Prgm 1 | | | | -.16 | .05 | .005 |
| Prgm 2 | | | | -.37 | .09 | .001 |
| Prgm 3 | | | | -.36 | .11 | .01 |

Note: $R_1^2 = .27$, $R_2^2 = .29$

The multiple regression analysis with the no remediation program as the reference program is presented above. The relationships with E101 grades at step 1 indicates that age, pre test score, sex, status, and ethnicity (White vs. Hispanic) resulted in significant Beta coefficients in the model. Education type, and ethnicity (White vs. African American and White vs. other) did not result in

significant Betas. The regression model was significant [$F(8,1535)=15.43$, $p=.001$], and the multiple correlation between these demographic variables and pre test scores with E101 grades was .27. A significant multivariate relationship was found between these variables and grades.

When the program comparisons with the no remediation program as the reference program was included with step 2, the regression model remained significant [$F(11,1532)=12.75$, $p=.001$]. The beta coefficients for the program comparisons were significant, indicating that a significant difference was found between the mean grades of the no remediation program and all other remediation programs after accounting for variance associated with the demographic variables and pre test scores. However, although the multiple correlation increased significantly [$F(3,1532)=5.25$, $p=.001$] indicating differences between the programs in grades accounted for unique variance in grades that was not already explained by variance in the demographics and pre test score, the increase was only .02 to .29. As a result, we can conclude that although statistically significant differences exist between the no remediation and remediation programs, remediation resulted in no practical difference in E101 scores.

Analysis-Reference Program/1 Level of Remediation

The multiple regression analysis results with the 1 level of remediation program as the reference program are in Table 10.

Table 10

*Multiple Regression Analysis Results On E101 Grades-
1 Level of Remediation Program as Reference Program*

| Variable | Step 1 | | | Step 2 | | |
|----------|---------------------|-----|-------|---------------------|-----|-------|
| | Unstandardized Beta | SE | Sign. | Unstandardized Beta | SE | Sign. |
| Constant | 1.25 | .15 | .001 | 1.46 | .17 | .001 |
| Age | .02 | .00 | .001 | .02 | .00 | .001 |
| Educ | -.08 | .08 | .32 | -.09 | .08 | .30 |
| Score | .05 | .00 | .001 | .02 | .01 | .09 |
| Sex | .16 | .04 | .001 | .16 | .04 | .001 |
| Status | -.21 | .08 | .008 | -.25 | .08 | .002 |
| Ethnic1 | -.11 | .06 | .10 | -.09 | .06 | .15 |
| Ethnic2 | -.21 | .08 | .009 | -.19 | .08 | .01 |
| Ethnic3 | .02 | .08 | .72 | .03 | .08 | .68 |
| Prgm 1 | | | | .16 | .05 | .005 |
| Prgm 2 | | | | -.21 | .08 | .01 |
| Prgm 3 | | | | -.19 | .12 | .12 |

Note: $R_1 = .27$, $R_2 = .29$

The multiple regression analysis results with 1 level of remediation as the reference program is presented above. When the program comparisons with 1 level of remediation was included with step 2, the regression model remained significant [$F(11,1532)=12.75$, $p=.001$], and the beta coefficients for the reference program compared to the no remediation and 2 levels of remediation were significant. However, the reference program (1 level of remediation) was not significantly different from the ESL program. And although the multiple correlation increased significantly from .27 to .29 [$F(3,1532)=5.25$, $p=.001$] indicating that these programs differences accounted for variance in grades that was not already explained by variance in grades related to the demographics and

pre-test score, the increase was only .02 from .27 to .29. Although statistically significant differences exist between the 1 level of remediation program and the ready and 2 levels of remediation programs, these results are not practically significant. Also, no statistical or practical significance was found between 1 level of remediation and ESL in E101 scores.

Analysis-Reference Program/2 Levels of Remediation

The multiple regression analysis results with 2 levels of remediation as the reference program is presented in Table 11 below.

Table 11

Multiple Regression Analysis Results On E101 Grades-

2 Levels of Remediation Program as Reference Program

| Variable | Step 1 | | | Step 2 | | |
|----------|---------------------|-----|-------|---------------------|-----|-------|
| | Unstandardized Beta | SE | Sign. | Unstandardized Beta | SE | Sign. |
| Constant | 1.25 | .15 | .001 | 1.25 | .17 | .001 |
| Age | .02 | .00 | .001 | .02 | .00 | .001 |
| Educ | -.08 | .08 | .32 | -.09 | .08 | .30 |
| Score | .05 | .00 | .001 | .02 | .01 | .09 |
| Sex | .16 | .04 | .001 | .16 | .04 | .001 |
| Status | -.21 | .08 | .008 | -.25 | .08 | .002 |
| Ethnic1 | -.11 | .06 | .10 | -.09 | .06 | .15 |
| Ethnic2 | -.21 | .08 | .009 | -.19 | .08 | .01 |
| Ethnic3 | .02 | .08 | .72 | .03 | .08 | .68 |
| Prgm 1 | | | | .37 | .09 | .001 |
| Prgm 2 | | | | .21 | .08 | .01 |
| Prgm 3 | | | | .01 | .12 | .90 |

Note: $R_1 = .27$, $R_2 = .29$

The multiple regression analysis results with 2 levels of remediation as the reference program is presented above. When the program comparisons with 2 levels

of remediation was included with step 2, the regression model remained significant [$F(11,1532)=12.75, p=.001$], and the beta coefficients for the reference program compared to the no remediation program and 1 level of remediation were significant. However, the reference program (2 levels of remediation) was not significantly different from the ESL program. And although the multiple correlation increased significantly from .27 to .29 [$F(3,1532)=5.25, p=.001$] indicating that these program differences accounted for variance in grades that was not already explained by variance in grades related to the demographics and pre-test score, the increase was only .02 from .27 to .29. As a result, we can conclude that although statistically significant differences exist between the 2 levels of remediation program and the no remediation program and 1 level of remediation program, these results are not practically significant. Also, no statistical or practical significance was found between 2 levels of remediation program and the ESL program on E101 scores.

Interpretations

The overall purpose of this study was to examine the relationship between remediation and success/performance in English 101. First, the relationships between the remediation groups and the demographic variables were evaluated including education type (high school diploma/GED), ethnicity, sex, age, and status (ft/pt). Next, the relationship between the demographic variables and E101 scores were evaluated. Finally, the impact of remediation was evaluated after controlling for the effects of the demographic variables.

Demographics Variables

The findings for the demographics variables and the groups are as follows:

- Education Type (high school diploma or GED) – The no remediation and ESL subjects had high school diplomas at a higher frequency than the level of remediation subjects.
- Ethnicity- More than expected white subjects were in the no remediation group, more than expected African American subjects were in the 1 and 2 levels of remediation groups, and more than expected Hispanic subjects were in the ESL group.
- Status (full-time/part-time) more than expected no remediation students were part time, and more than expected in the 1 level of remediation group were full time.
- Sex- No significant relationship was found between the groups and sex.

- Age- significant mean differences were found between the remediation groups on age. The ESL subjects were significantly older than the 1 level of remediation and no remediation groups. And the 2 levels of remediation group was significantly older than the 1 level group.

Other significant findings are as follows:

- E101 grades were significantly related to program. More than expected ESL and 2 levels of remediation subjects withdrew or received C's and F's. More than expected no remediation subjects received grades of A and B.
- E101 grades were related to pre-test scores. High pre-test scores were associated with high E101 grades, and low pre-test scores were associated with low grades or withdrawing from E101.
- The ESL program had a lesser percentage of subjects (50.3%) receiving a passing grade (A,B,C) than the 2 level program (55.8%) the 1 level program (62.1%) and the no remediation program (62.2%).
- The mean grade also decreased from program to program. The no remediation (2.37), one level (2.19), two levels (1.92), and ESL (1.86) program mean grade indicated that students needing extensive remediation did not perform as well. In addition those students who did not require remediation had a higher percentage of students receiving A's (13.3%) than any other remediation level; one level (7.5%), two levels (1.7%), ESL (1.2%).

When the relationship between success in English 101 and the demographic variables was examined, the following was found:

- For the demographic variables and E101 grades, significant relationships were found with age (older students achieving higher E101 grades), sex (male students achieving higher E101 grades), status (part time students achieving higher E101 grades), and ethnicity (whites achieving higher E101 grades than Hispanics).

Effects of Remediation

When the effects of remediation were examined after controlling for the relationship between E101 scores and the demographic variables, the following results were found:

- The mean E101 grades for the no remediation program were significantly higher than the grades for the remediation programs. However, although group mean differences were statistically significant, the demographic variables accounted for more variance in E101 scores than did remediation program differences.
- Significant difference in E101 scores were found between the 1 and 2 levels of remediation programs. The one level of remediation program had significantly higher E101 grades than the 2 levels program. However, like the results indicated above, the demographic variables accounted for more variance in E101 scores than did the remediation program differences. No

significant differences were found between the 1 level of remediation group and the ESL group.

- No significant differences in E101 scores were found between the 2 levels of remediation program and the ESL program.

These results indicate that older, white male, part time students in the no remediation program achieved significantly higher E101 grades than the other subjects. And while remediation did help students achieve a passing grade in E101, remediation did not result in a level of E101 performance equal to the no remediation group.

Although the percentage of the no remediation student receiving passing grades in E101 were greater than any of the remedial levels, indicating that remediation did not have an equal or positive effect, the analysis still indicates that those students in remedial programs that did succeed would not have without remediation. It is logical to assume that the remediated groups will not do as well as the college ready group in English 101. The no remediation group may have incoming skills above the college level. Therefore, though remedial programs may successfully get students up to college level, it may still leave a skills differential that might or might not be statistically significant but a differential nonetheless. This could account for the findings that college ready students do better than students who have been remediated. The conclusion is that there are other factors that cannot be substantiated. These include the fact that most remedial courses in English are taught by adjunct faculty, who may not be as well

prepared or committed as full-time faculty. Looking at all remedial students as a group obscures vast differences within the group. Some students in the remediation groups are reading and writing at the ninth or tenth grade levels; others may be reading and writing at the second grade level. One would expect vast differences in achievement in any such grouping of remedial students. If such data consistently show that the least prepared has little chance of success, considerable policy implications may be determined. Also, students who are required to enroll in remediation carry self-imposed stigmas by virtue of having been remedial students. Based on this outcome, an evaluation of the remedial program is required to possible concerns in the program such as grade inflation, curriculum, self motivation and instructional staff and methods.

Chapter V

SUMMARY OF THE INVESTIGATION AND RESEARCH

The purpose of this study is to determine if students whose skill level requires them to enroll in remedial English courses can eventually succeed in English Composition and if certain variables have an effect on their success. It provides information concerning programs considered essential to a post-secondary institution's mission and simultaneously unpopular with the public.

There has been minimal research on the effectiveness of remediation in higher education despite its existence in 1849 at the University of Wisconsin. Despite the complexities, most studies concluded that it is in the best interest of colleges to offer remedial course work, as it helps retain students and a proportion of students who complete remedial courses go on to graduate.

Aside from studies by Porter (1988) Slark (1989) and Seybert and Soltz, (1992) who specifically assessed a student's success in English composition who had been enrolled in remediation, most other studies measure retention and graduation rates of students who completed remediation. This researcher's choice of English Composition was determined because the course is universal to all degree programs. Success in English Composition provides support that the student has obtained skills necessary for college level courses. It was anticipated that the study will determine if a relationship exists between success in remediation and college level English Composition and if any variables have an effect on this success.

Major issues presently discussed by the New Jersey Department of Education officials and State Legislators center around the funding of remedial education courses to institutions of higher education. Research on the progress of students in remediation would provide necessary data to assist in the decision making progress.

In this study, statistical analyses were conducted to analyze the relationships between success in English 101 as measured by grade and the independent variables including student status, sex, age, ethnicity, education, initial placement test score and remediation program.

A hierarchical multiple regression approach was used to develop an equation that demonstrates the best prediction of the outcome variable from more than 1 continuous or dichotomous independent variables.

In the first step, the demographic variables were entered including student status, sex, age, ethnicity, test score and education. This step statistically accounts for variance in English 101 grades that is related to the demographic variables. The next step included the remediation programs (no remediation, 1 level of remediation, 2 levels of remediation, ESL) dummy coded. The F test for change was examined when the second step was entered to determine if the entry of the program step resulted in a significant increase in the multiple correlation.

In Chapter I, the researcher furnished the reader with background material requisite to an understanding of the study's objectives and working methods. A statement of the problem outlined the historical context of remediation including

controversial trends in remedial education and financing developmental programs. It was followed by the definition of key terms employed in the study. The chapter then delineated the significance of the study, its limitations, and organization.

An extensive Chapter II surveyed empirical research related to study inquiry. The chapter was comprised of four sections. The first section of Chapter II was dedicated to the historical perspective. In the second part of Chapter II, the researcher presented major finding from studies in remedial programs. The third section of this chapter focused upon program designs and evaluation and the fourth and final section focused on current rationale.

Chapter III detailed the study's methodology, and included information about study subjects, the basic data-gathering instruments employed, and the procedures followed in analyzing the data in relation to the study's hypotheses.

Chapter IV consisted of an analysis of the data. It included, results concerning the demographic background characteristics of the study subjects, findings generated through statistical tests of the research and subsidiary questions, and an interpretation of the data conducted by the researcher.

Conclusions

The results from this study point to four conclusions in reference to the research and subsidiary questions. First, remediation does not result in a level of English 101 performance equal to those subjects not requiring remediation. Second, the demographic variables account for more variance in English 101 grades than does remediation program differences. This includes significant

relationships found with age, sex, status and ethnicity. Third, ESL programs have a lesser percentage of subjects receiving a passing grade than other programs. Finally, remedial students who score low in pre-test score categories receive lower grades in E101.

Implications of the Research, Policy and Practices

It was anticipated that policy recommendations could be made if some relationship between success in college level composition and remedial program had been demonstrated. Since the results imply that remediation does not have a positive or equal effect on success in English Composition, policy, recommendations are substantive. Developmental programs assist many who would never have been given the opportunity if it weren't for remediation opening the door. However, as cost for a public college education increases, people are divided over accessibility to all.

The question still exists "Should higher education institutions provide instruction to students who are not prepared for college-level work?" This question will be asked and eventually answered in a variety of ways by and for different states and types of institutions. The study revealed that institutions are subject to far too many variable conditions and circumstances, both political and educational, to arrive at a single answer or plan that is acceptable to all. The task of researchers is to arm educators, elected officials, and the public with information that identifies and characterizes the problem. The challenge is for these officials to mesh the history and tradition of their higher

education/institutions with current needs and conditions and future educational goals. Facts such as those presented in this report are designed to assist officials in making more informed and knowledgeable decisions.

First, colleges must review their own open door admissions policy to determine if everyone who thinks they should have a college education should be provided an opportunity. If data consistently shows that the least prepared group has little chance of success then policy implications are considerable. Second, alternatives to the current remediation program must be explored since the results suggest the absence of a need for remedial courses as a solution to the problem of poorly prepared entry level students. A more effective use of funding may be applicable. Third, colleges need to review the student support services other than academics offered to students in remedial programs. Students in these programs may carry self-imposed stigmas by virtue of having to be remedial students. Also, many may be first generation college students, poor socio-economic upbringings, and other factors. Proper holistic student support is required. Although not a college policy implication, underprepared students entering college directly from high school raises questions concerning preparation provided by K-12 education.

The problem of students entering college who are academically unprepared will not disappear. It is obvious that higher education can no longer afford to fall further behind in responding to this problem. It seems that the question that really needs to be addressed is not should but rather how can states' educational systems function to achieve program quality. Systematic provisions must be made so that

inadequately prepared college-bound high school graduates have the opportunity to acquire the skills and knowledge necessary for success in college.

Institutions of higher education need to review policy to ensure that they:

- Recognize remedial/developmental education as an essential element of the mission of public institutions of higher education that admit students who are not ready to begin college-level work.
- Initiate and maintain effective remedial/developmental programs that uphold institutional integrity and standards for quality undergraduate education.
- Funding for remedial/developmental programs should reflect the fact that it can require comparatively greater efforts and costs to develop instruction and programs for teaching students who are academically deficient.
- Provide annual reviews and evaluation of remedial/developmental programs to ensure academic integrity and that students who complete those courses have competencies that are equivalent to entrance requirements for "regular" college-level courses.

Recommendation for Future Research

Although the design of developmental programs has improved tremendously since the haphazard efforts of the 1960's, program evaluation is still largely inadequate. The idea of evaluation often has a negative connotation, particularly with progressive educators; however, as painful as the process--and

the resulting discoveries--may be, thoughtful evaluation is the only reasonable plan by which inappropriate directions, decisions, or activities, can be corrected. This approach is supported by Weissman et al. (1997), who state that once an institution decides to implement a developmental program, the program must be designed to ensure that it serves the needs of the target population and the school environment. Given its results, the researcher would recommend the replication of this study.

Future researchers may also attempt to compare either additional years at the same college or comparison to similar community colleges or may want to consider replicating the study by including withdrawals as failures since students receiving grades and student withdrawing from a course fail to succeed. At the same time, major modifications in study design might permit other researchers to investigate the possible relationship between student success and instructional delivery by a full-time or adjunct professor. The addition of other independent variables such as socio-economic status should also be considered. Another major modification could include the dependent variables of student high school district factor groupings and per pupil cost of the receiving high school district.

Also, future studies may want to look at student success by placement test scores. Examining all remedial students as a group obscures vast differences within the group.

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