

The Effects of the Advancement Via Individual Determination on
Course Taking Patterns and Achievement
of High School Students

Vanessa L. Whitaker

Dissertation submitted to the faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the
degree of

Doctor of Education

In

Educational Leadership and Policy Studies

Travis W. Twiford, Committee Chair

Jean B. Crockett

Claire Cole Curcio

Christina M. Dawson

Robert R. Richards

February 9, 2005

Blacksburg, Virginia

Key Words: Advancement Via Individual Determination, Achievement, High School,

Middle School

Copyright 2005, Vanessa L. Whitaker

*THE EFFECTS OF ADVANCEMENT VIA INDIVIDUAL DETERMINATION
ON COURSE TAKING PATTERNS AND ACHIEVEMENT
OF HIGH SCHOOL STUDENTS*

Vanessa L. Whitaker

Chair: Travis W. Twiford, Ed.D.

(ABSTRACT)

The Advancement Via Individual Determination (AVID) Program was implemented to prepare students from groups traditionally underrepresented in postsecondary education for eligibility, acceptance, and success in 4-year colleges and universities. The purpose of this study was to investigate the effects of AVID on course taking patterns, weighted cumulative grade point averages, and achievement level of twelfth grade high school students. This is the first study that will provide school districts in the southeast with information on the effects of middle school and high school participation. The investigation included 7-year AVID participants (AVID-7), 3-year AVID participants (AVID-3), and non-AVID participants (AVID-0). The three research questions were: (1) Is there a difference in group membership with respect to course selection as measured by the combined number of honors and advanced standing courses; (2) is there a difference in group membership with respect to weighted cumulative grade point average; (3) is there a difference among group membership with respect to achievement as measured by scaled scores on the English: Reading/Literature and Research Standards of Learning (SOL) Test scaled scores?

Descriptive statistics were used to determine the mean, standard deviation, median and mode for the groups in the study. Three one-way Analysis of Variances (ANOVAs) were used to determine whether the group means differ significantly from each other. The Dunnett C post

hoc procedure was used to determine where the difference occurred in the pairs of variables. The results of the study indicated that statistically ($p < .05$), AVID-7 students earned more combined honors and advanced standing courses than AVID-3 or AVID-0 students and AVID-3 students earned more combined honors and advanced standing courses than AVID-0 students.

There were three major findings revealed in this study. The first finding indicated that students who participated in AVID take more rigorous courses than non-AVID participants. Secondly, the length of time a student participated in AVID has an effect on the number of honors and advanced standing courses students are likely to earn. The third finding of the study indicated that students who remained in the AVID program for seven years (during middle and high school) earned a significantly higher ($p < .05$) weighted cumulative grade point average than non-AVID students. There were no statistically significant differences in the weighted cumulative grade point average of the AVID-3 groups. The final finding of the study indicated that there was no statistically significant difference noted in the mean English:

Reading/Literature and Research SOL Test scaled scores for any group in this study. However, it must be noted that the means for the three groups differed numerically, but not statistically.

For example, the AVID-7 group had a mean scaled score of 476, the AVID-3 group had a mean scaled score of 455, and the AVID-0 group had a mean scaled score of 450. These scaled scores were different, but not statistically different ($p > .05$).

It appears that participation in AVID does affect the course selection and the weighted cumulative grade point average of students who participate in the AVID program from grades 6 through 12. These results indicate that AVID-7 students take more rigorous courses and perform well in them. Students in the program only during middle school enroll in more rigorous courses than non-AVID (AVID-0) students but their weighted cumulative grade point average is

statistically the same as non-AVID participants. Even though AVID-7 and AVID-3 students earned higher mean English: Reading SOL scaled scores than AVID-0 students, after performing the analysis of variance (ANOVA), there was no statistically significant difference in the scores($p > .05$).

In this era of accountability, school districts are searching for viable programs that affect the academic performance of students. The AVID program appears to make a positive impact on students who participate in the program from grades 6 through 12. These students enroll in more rigorous courses and perform better academically in those courses as evidenced by their weighted cumulative grade point average. However, the evidence is not as conclusive for students who participate in the program during middle school (grades 6 through 8). These students appear to make gains in their course selections, but their achievement in these courses is not impacted.

If school districts are to receive the full benefit of the AVID program, they should consider implementing the program from grades 6 through 12. It is apparent that AVID middle school students who remain in the AVID program during high school realized higher academic achievement than non-AVID students. Educational leaders in school districts should consider these findings before implementing the AVID program.

DEDICATION

I dedicate my dissertation to my loving and supportive family, Scott (my son),

Major and Louise (my parents), Tracy (my sister),

and in the memory of

Deborah Faye Whitaker Terrell (my sister)

ACKNOWLEDGEMENTS

I must first acknowledge that my dissertation journey would not have been possible without the support and encouragement of many people. I would like to first give honor to my God for walking with me and when necessary carrying me as I traversed this dissertation journey. I am grateful for the many lessons I have learned about life and faith while completing my doctorate.

I would like to thank Dr. Travis Twiford for serving as the chair of my committee. You were a pillar of strength and a wonderful guide. I really appreciate having you with me on this journey. You pushed me, encouraged me, consoled me, and gave me sage advice that sustained me throughout this process. Dr. Richards, thank you for admitting me into the program and being there for me when my sister died. Dr. Jean Crockett, Dr. Claire Cole Vaught-Curcio, Dr. Christina Dawson, and Dr. Bob Richards, I certainly appreciate the time that you spent reading my dissertation and providing me with comments and recommendations. I am extremely grateful for the time you invested in working with me during my prospectus and my final defense. I feel blessed that you were with me for this part of my life's journey. A journey has no value unless it is shared with others.

I thank my parents, Major and Louise Whitaker for your love, support, and encouragement. As parents, you instilled in me strong set of values, inner strength, and love for others. I am so grateful that you believed in me and made me believe in myself.

To my dear son, Scott, thank you for your understanding throughout this doctoral program. We had so many challenges eight years ago when Deborah died, but by loving and relying on each other we survived. I am so proud that you have grown to be such a fine young

man. You never quibbled when I had to study or write a paper. I thank you for your love and encouragement.

I thank my sister, Tracy for her love and constant care of me and the family as I progressed through this doctoral program. You have been a constant source of strength and support. Thank you for helping the family out when I was unable to do so. Thank you for serving as mom number two to Scott when I was in class or at the library. When you were young, I took care of you and now you have turned the tables on me.

I must also acknowledge my friends, extended family, and colleagues. Thank you for always asking about my dissertation and for always encouraging me to hurry up and finish. I would like to thank my many advisors and proofreaders. Dr. Neil Stamm and Dr. Spencer Baker, thank you for sharing your expertise as statisticians with me. I would like to thank Yvonne Roberts, my secretary, for taking care of me and always being there for me. Gayle Phillips you are an awesome advisor and friend. I thank you for your support. Sharon Moore, thank you for helping to collect my data. Your kindness will always be appreciated. All of you are marvelous and I am grateful that you have been with me on this journey.

Finally, I would like to thank my sister, Deborah, who passed away during my first semester in the doctoral program. As I sat beside her in the hospital, she encouraged me to go to class and not to worry about her. She was so excited that I was pursuing a doctorate. There were many times when I would have thrown in the towel and aborted the journey, but her spirit never allowed me to quit. I dedicate this dissertation to her.

TABLE OF CONTENTS

| | |
|--|------|
| ABSTRACT | ii |
| DEDICATION | v |
| ACKNOWLEDGEMENT | vi |
| TABLE OF CONTENTS | viii |
| LIST OF TABLES | xii |
| LIST OF FIGURES | xiv |
| CHAPTER 1 INTRODUCTION TO THE STUDY..... | 1 |
| Context for Inquiry | 1 |
| The Advancement Via Individual Determination Program | 5 |
| Statement of the Problem..... | 7 |
| Conceptual Model..... | 9 |
| Significance of the Study | 14 |
| Purpose of the Study | 16 |
| Research Questions..... | 16 |
| Definition of Terms..... | 16 |
| Limitations and Delimitations..... | 18 |
| Organization of the Study | 18 |
| CHAPTER 2 REVIEW OF RELATED LITERATURE..... | 19 |
| Changing Demographics..... | 19 |
| National Trends..... | 19 |
| Age Differences in the Population..... | 20 |
| Demographic Shift in Education..... | 21 |

| | |
|--|----|
| Underrepresentation of Minorities in Higher Education | 26 |
| Socioeconomic Status | 27 |
| Educational Aspirations and Plans..... | 28 |
| Secondary Attrition..... | 29 |
| Parental Support..... | 30 |
| Academic Preparation..... | 32 |
| Academic Achievement of Minority Students..... | 32 |
| High School Course Taking..... | 32 |
| Academic Tracking..... | 35 |
| Social Orientation | 37 |
| Functional Orientation | 45 |
| Academic Achievement in High School..... | 46 |
| Mathematics Achievement..... | 49 |
| English Achievement | 53 |
| Standards of Learning | 53 |
| Theoretical Framework..... | 54 |
| Advancement Via Individual Determination Program Research..... | 55 |
| Chapter Summary | 71 |
| CHAPTER 3 METHODOLOGY | 74 |
| Setting | 74 |
| Population | 75 |
| Research Design..... | 79 |
| Data Collection Procedures..... | 81 |

| | |
|--|-----|
| Instrumentation | 84 |
| Weighted Cumulative Grade Point Average..... | 84 |
| Course Selection | 85 |
| English: Reading/Literature and Research SOL Test..... | 85 |
| Threats to Internal and External Validity..... | 87 |
| Data Analysis | 90 |
| Chapter Summary | 91 |
| CHAPTER 4 FINDINGS/RESULTS | 93 |
| Data Collection Procedures..... | 94 |
| Sample and Population | 97 |
| Data Analysis | 100 |
| Course Taking Patterns | 101 |
| Weighted Cumulative Grade Point Average..... | 109 |
| English: Reading SOL Test Scaled Scores | 115 |
| Chapter Summary | 118 |
| CHAPTER 5 SUMMARY/CONCLUSIONS/RECOMMENDATIONS..... | 120 |
| Introduction and Summary | 120 |
| Limitations and Delimitations..... | 123 |
| Discussion of Findings..... | 123 |
| Conclusions and Implications for Practice | 127 |
| Recommendations for Practice | 129 |
| Recommendations for Future Study | 130 |
| Research Reflections..... | 131 |

| | |
|---------------------------------|-----|
| REFERENCES | 134 |
| APPENDIX..... | 142 |
| Summary of Related Studies..... | 143 |

LIST OF TABLES

| Table | Page |
|-------|---|
| 1 | Percentage of All B.A. and Ph.D. Degrees Conferred, by Ethnicity and U.S. Citizenship 4 |
| 2 | U.S. Census Bureau Population Estimates by Race-Ethnicity 22 |
| 3 | U.S. Racial-Ethnic Distribution of Public School Students in Grades 1-12..... 23 |
| 4 | Means and Standard Deviations of Variables for Total Pooled Sample and Proportion of Variance Between Schools, Twelfth Grade..... 40 |
| 5 | Within-School Zero-Order Correlation Matrix: Twelfth Graders in 48 High Schools..... 42 |
| 6 | Grade Point Averages by Ethnic Group, 1998 SAT-takers and 1990 California Graduates 47 |
| 7 | High School GPA by Years of Middle Grades AVID..... 63 |
| 8 | GPA by Middle School Algebra and AVID 64 |
| 9 | SAT-9 Test Scores by Years of Middle Grades AVID..... 66 |
| 10 | Student Enrollment by Race/Ethnicity for 2002-2003..... 75 |
| 11 | AVID Middle School Attrition for 1996-1997 Cohort..... 77 |
| 12 | AVID High School Attrition for 1996-1997 Cohort..... 78 |
| 13 | 2003 Graduate Pool for AVID-0 Participants..... 79 |
| 14 | Attrition of the Original Cohort 82 |
| 15 | Scale of Course Weighting 85 |
| 16 | English: Reading/Literature and Research SOL Test Pass Rates 87 |

| | | |
|----|--|-----|
| 17 | Status of Original Cohort | 95 |
| 18 | Number and Percent of Total Sample and Independent Variables by Gender and Race/Ethnicity for 2003..... | 98 |
| 19 | Fifth Grade Degrees of Reading Power (DRP) Test Results | 99 |
| 20 | Number and Percent of Students Earning High School Credits in Middle School..... | 102 |
| 21 | Number of Combined Honors and Advanced Standing Courses..... | 103 |
| 22 | Multiple Comparisons for the Combined Advanced and Honors Courses..... | 104 |
| 23 | Credit Requirements for the Standard and Advanced Studies Diplomas | 107 |
| 24 | Diploma Type Earned by Number and Percent for AVID-7, AVID-3, and AVID-0..... | 108 |
| 25 | Scale of Course Weighting | 110 |
| 26 | Descriptive Statistics for Weighted Cumulative Grade Point Averages | 111 |
| 27 | Number and Percent of Students Earning Weighted Grade Point Averages by Range of Scores | 111 |
| 28 | Multiple Comparisons for Weighted Cumulative Grade Point Averages | 113 |
| 29 | Descriptive Statistics for English: Reading SOL Scaled Scores | 115 |
| 30 | Performance Categories for Students on the English: Reading SOL Test by Number and Percent..... | 116 |
| 31 | Multiple Comparisons for the English: Reading SOL Test Scaled Scores..... | 117 |
| 32 | Summary of Related Studies..... | 142 |

LIST OF FIGURES

| Figure | | Page |
|--------|--|------|
| 1 | Minority undergraduate enrollment in 1976 and 1995 | 2 |
| 2 | Percentage of minority students enrolled in pre-k-12 public schools and colleges for 1976, 1995, and 2000 | 3 |
| 3 | Conceptual design of advancement via individual determination | 13 |
| 4 | Percentage of 25-29-year-olds attaining selected levels of education by race/ethnicity: March 1971 and 1999 | 25 |
| 5 | Enrollment of students in AVID from 1993 – 2002 | 76 |
| 6 | Mean and standard deviation for combined advanced standing and honors courses | 105 |
| 7 | A Comparison of the means and standard deviations of the advanced standing and honors courses displayed for the independent variables | 106 |
| 8 | Means and standard deviations for weighed cumulative grade point averages | 114 |
| 9 | Mean and standard deviations for English: Reading SOL test scale scores | 118 |

All children like all men, rise easily to the common level. There the mass stops; strong minds only ascend higher. But raise the standard, and, by spontaneous movement, the mass will rise again and reach it.

From Horace Mann's First Annual Report (1837)

CHAPTER 1

INTRODUCTION TO THE STUDY

Context for Inquiry

One of the major challenges facing public schools is the underrepresentation of low-income and students of color in colleges and universities. Mehan, Villanueva, Hubbard, and Lintz (1996) reported that students of color and those from low-income homes are more likely to drop out of school, less likely to take college preparatory and advanced classes, and less likely to enter college. High school graduates from low-income families enter 4-year institutions at lower rates than students from higher income families. The National Center for Education Statistics (NCES) (2000) reported that in 1998, high school students from high-income families were more likely to go to college immediately after high school (77%) than students from low-income families (46%).

In an effort to explain the underrepresentation of low-income students and students of color, many researchers have studied the controversial practice of “tracking.” Since the early 1920s, most high schools have offered a tracked curriculum, or sequences of academic courses ranging from slow-paced remedial courses to rigorous academic or college preparatory courses (Wheelock, 1992). Typically, participation in higher-level tracks such as the college preparatory and other high ability groups has a positive influence on the number of students admitted to college (Gamoran, 1986; Kulik & Kulik, 1982; Slavin, 1990). However, tracking is often found to work to the disadvantage of students placed in low-level classes or non-college-preparatory classes (Rosenbaum, 1980; Slavin, 1990). According to Oakes (1987), “students placed in low-ability groups in elementary school are likely to continue in these tracks in middle schools and junior high schools; they typically are placed in non-college-preparatory tracks in senior high school”

(p. 134). Oakes further contended that the cumulative result of tracking is that disproportionate percentages of poor students and students of color (principally Black and Hispanic) are placed in courses for low-achievers or non-college bound students.

A review of the enrollment data for students of color in 1976, 1995, and 2000 provides longitudinal information on attendance trends (NCES, 2000). In fall 1976, Blacks accounted for 10% of undergraduate enrollments; Hispanics, 5%; Asian/Pacific Islanders, 2%, and American Indians/Alaskan Natives 1%. During 1976, minorities had a combined undergraduate enrollment of 18%. However, these minorities accounted for 23.6% of the minority population in public schools. In fall 1995, Black undergraduates accounted for 11% of the total enrollment in colleges and universities. Hispanics represented 8% of enrolled undergraduate students; Asians/Pacific Islanders, 6%; and American Indians/Alaskan Natives, 1%. Minority enrollment continued to increase in 2000 (see Figure 1) for most minority groups, especially Hispanics (3.5% increase). However, there was a slight decrease for Asians (1%) and an increase for Blacks (1.2%) during the same period. Minority undergraduate enrollment in 1995 and 2000 was respectively 26% and 31%. Over the same period, the minority enrollment in public education was 34.5% (NCES, 2000).

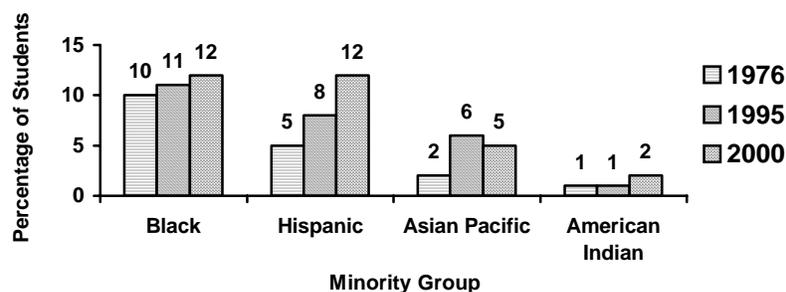


Figure 1. Minority undergraduate enrollment in 1976, 1995, and 2000.

Note: From the U.S. Department of Education, NCES. The condition of education (2000).

NCES 200-062, Washington DC: U.S. Government Printing Office.

Minority undergraduate enrollment in 1995 and 2000 was respectively 26% and 31% and over the same period, the minority enrollment in public education was 34.5%. A closer look at these statistics reveals that even though minority enrollment in public schools increased by 8.5% from 1976 to 1995, the undergraduate enrollment of minorities in college for the same period increased 5.6% (see figure 2). In addition, minority enrollment in pre-kindergarten to twelfth grade public schools increased 5% from 1995 to 2000 and the undergraduate enrollment increased 4% for the same period. In 1976, Whites comprised 76.4% of students in grades pre-K to 12 and 82.6% of undergraduate students. In 2000, minorities comprised a greater percentage of the total public school population and attended college in greater numbers but there continues to be a gap in the enrollment of minorities and Whites in undergraduate programs (NCES).

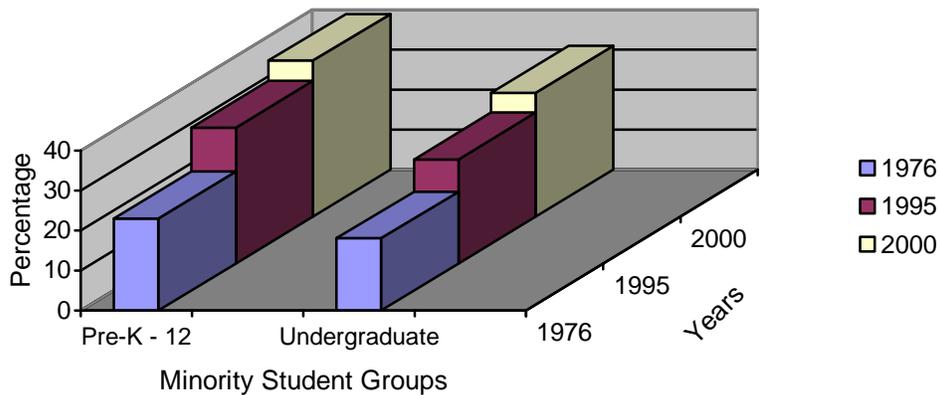


Figure 2. Percentage of minority students enrolled in pre-K – 12 public schools and college for 1976, 1995, and 2000.

Note: From the U.S. Department of Education. National Center for Education Statistics. Profile of Undergraduates in U.S. Postsecondary Institutions: 1999-2000, NCES 2002-168 by Laura Horn, Katharin Peter, and Kathryn Rooney. Project Officer: Andrew G. Malizio, Washington, DC: 2002

With the slight increase in post-secondary enrollment by underrepresented students, the percentage of minority and low-income students earning baccalaureate remains low. In 1996, Blacks, Hispanics, Asians, and Native Americans received 18% of all B.A.'s and 12.6% of all Ph.D.'s awarded from U.S. colleges and universities, while these minority groups comprised 26.2% of the U.S. population (NCES, 2000).

Educators have grappled with the development of viable systems, strategies, and supports to ameliorate the effects of tracking and increase the representation of minority and low-income students in post-secondary education. As a result, over the past 20 years, a number of programs have been developed and implemented in response to the dilemma of low representation by minority and low-income students in college (Slavin & Fashola, 1998).

Table 1

Percentage of All B.A. and Ph.D. Degrees Conferred, by Ethnicity and U.S. Citizenship, 1996

| Race/Ethnicity | % U.S. Population | % All B.A.'s | % All Ph.D.'s |
|-----------------|-------------------|--------------|---------------|
| Black | 12.0 | 7.5 | 4.7 |
| Hispanic | 10.0 | 4.7 | 3.4 |
| Asian | 3.5 | 3.5 | 3.9 |
| Native American | .7 | .6 | .6 |
| White | 73.0 | 78.8 | 85.9 |

Adapted from "Minorities in Higher Education," by D. Wilds and R. Wilson, 1998, 15th Annual Status Report. Washington, DC: American Council on Education.

Advancement Via Individual Determination (AVID), the program of discussion in this study, was implemented by school districts across the country as both a reform and a restructuring effort to address the low representation of minority and low-income students in higher education. The expressed goal of the AVID program is to motivate and prepare underachieving students from underrepresented ethnic minority groups and low-income students of any ethnicity to perform well in high school and to seek a college education (Mehan, Villanueva, Hubbard, & Lintz, 1996).

Advancement Via Individual Determination Program

Advancement Via Individual Determination (AVID) was developed by Mary Catherine Swanson in the early 1980s to address the significant need for educational reform at Clairmont High in San Diego, California. Clairmont High School historically served an affluent, homogeneous population, but with court ordered busing in 1980, the demographics of the school changed (Swanson, 1989). Busing brought hundreds of students to the school that had no experience in a traditional college preparatory program. Jim Grove, a colleague of Swanson's at Clairmont High School, designed a plan to integrate minority students into honors classes (Freedman, 2000). Swanson and Grove used their knowledge base about honors and college preparatory courses to design a curriculum for the mentoring class. Swanson and Grove named the program Advancement Via Individual Determination (AVID). The teachers incorporated components of an honors class and a seminar class in their AVID design. Swanson and Grove incorporated college students as tutors in the program to assist AVID students with rigorous challenging course work and to prepare the students for entry and success in college (Mehan, Hubbard, & Villanueva, 1994). The program was originally designed for high school students with some middle level students receiving AVID through a Summer Bridge Program. In 1989,

the Summer Bridge program was discontinued and a middle level AVID program was implemented (Victory, 1998).

The AVID elective class is taught by a teacher and staffed by college tutors. Students are selected for the program through a process designed to identify ethnically underrepresented and low-income students who have average standardized test scores and average to above average grades. The process for selection of students who meet this criteria begins in elementary school.

Guidance counselors and fifth grade teachers recommend students for program participation based on a profile established by the AVID program. Students participating in AVID are required to have average to above average grades (2.0-3.5 grade point average), average standardized test scores, good attendance (absent fewer than 10 days/year) and positive citizenship (few discipline referrals). Students interested in program participation are required to complete an application and participate in an interview. Upon successful completion of the application and the interview, the elementary school counselors recommend students for program enrollment. Parents of the recommended students are invited to an information session where they are provided with program information. After the meeting, parents must formally indicate their desire to have their child considered for placement in the middle school AVID program.

Names of recommended students are forwarded to the receiving middle school. Middle school administrators place students in the program based upon availability of AVID spaces in the sixth grade. In grades 7-10, counselors and administrators use the same process to fill spaces that may be vacant in their individual programs. Students selected for the program are taught a college preparatory curriculum that includes academic survival skills, motivational activities, and a tutorial program.

One of the most essential components of the AVID curriculum is the teaching of academic survival skills. In the AVID elective class, students receive intensive training in note taking, study skills, test taking strategies, and college entrance preparation as well as extensive writing experiences. Another component of the curriculum is the motivational activities that are provided for students. On motivational days, students may visit college campuses, hear guest speakers from the community, or attend various cultural events. The third element of the AVID curriculum is the tutorial program. Tutorial sessions provide opportunities for college students to facilitate small collaborative, inquiry based learning groups. The tutorial sessions are characterized as interdependent because students assist each other in solving individual questions brought to the group. In addition, students receive extensive assistance in preparing for college entrance tests and applying for admission and financial assistance. Each school has an AVID site team that is responsible for coordinating, monitoring, and supporting the AVID curriculum.

The site team is composed of subject area teachers, counselors, administrators, students, and tutors that work with the AVID teacher to support the AVID program. The site teams receive training in AVID methodologies and instructional strategies during training sessions at the AVID Summer Institute, and they are provided with follow-up staff development and assistance throughout the school year. In individual schools, teams meet regularly to coordinate all program activities.

Statement of the Problem

The AVID program was designed to address one of the major problems facing schools today -- the underrepresentation of low-income and minority youth in colleges and universities (Mehan, Hubbard, & Villanueva, 1994). One factor associated with lower rates of enrollment at 4-year institutions among low-income families is that they are less prepared academically. Most

colleges base academic qualifications on high school grade-point average, senior class rank, performance on standardized tests, SAT or ACT scores, and high school curriculum rigor (NCES, 2000). Traditional measures of academic achievement, such as grades and class rank, show severe underrepresentation of Blacks, Latinos, and Native Americans among top students. In a national sample of 1992 college-bound high school seniors, 29% of the Asian Americans and 21% of the Whites had a B+ average or higher, compared to only 10% of Latinos, 5% of the Native Americans, and 4% of the Blacks (Gandara & Maxwell-Jolly, 1999).

Similar results for underrepresented students can also be observed in the College Board's Advanced Placement Program (AP). The College Board's Advanced Placement Program is comprised of a rigorous set of college credit courses students may take in high school for college credit. The percentage of AP examinations taken by students in the United States who identify themselves with traditionally underrepresented ethnic groups has increased considerably since 1979; however, they continue to lag behind other subgroups of the population (The College Board, 2002). For example, in 1979, the percentage of AP exams taken by students ranged from 3% Blacks, 2% Hispanics, 5% Asian American, and 88% White/Caucasian. Thirteen years later in 2002, the number of minorities taking AP exams has increased, but the rate of participation for certain subgroups continues to be low. In 2002, AP participation increased slightly for all minority groups and decreased for White/Caucasian students: 4.4% for Blacks (an increase of 1.4%), 6% for Hispanics (an increase of 4%), 11% for Asian Americans (an increase of 6%), and 65.3% for White/Caucasian (a decrease of 22.7%).

At a time when more Blacks and low income students are graduating from high school with a desire for a college education and are taking entrance examinations at a higher rate, it is perplexing that college attendance rates are low among certain minorities (Mahoney & Merritt,

1993). In 1995, Black undergraduates accounted for 11% of the total enrollment at colleges and universities, yet they comprised 26.9% of public school students enrolled in grades 1-12. Hispanics comprised 12.1% of public school students enrolled in grades 1-12 and represented only 8% of enrolled undergraduate students (NCES, 2000).

AVID is an intervention purported to raise the academic qualifications of its students and to prepare them for eligibility, acceptance, and success at 4-year colleges and universities. The Virginia General Assembly at its 1994 session, “allowed School Boards to establish Advancement Via Individual Determination programs (AVID) to prepare at-risk students, such as minority and low-income students for post secondary education eligibility” (COV 22.1-209.1:3). Newport News Public Schools implemented the AVID program in 1993 and has continually received grant funding from the Virginia General Assembly for the continuation of the AVID program. However, during the 2002 session of the Virginia General Assembly, funding for the program was discontinued. In light of the elimination of State funding, school districts in the Commonwealth of Virginia are groping with whether they will continue to fund local AVID programs. The purpose of this study is to provide the first comprehensive examination of the effects of AVID participation on achievement and course taking patterns of twelfth grade students in Virginia.

Conceptual Model

Gamoran (1987) suggested that school districts can be viewed as a series of organizational layers where the decisions made at one level expand, restrict, or limit the conditions and processes at the next level. Gamoran further contended that opportunities provided by schools (i.e., advanced science courses) predetermine the bounds for student experiences. “A student’s desire to participate in these opportunities is dependent on three

conditions: the availability of experiences at the school level, the student's perception of being in a situation where the opportunity exists, and the student's ability to grasp the opportunity" (p. 137).

Figure 3 outlines the conceptual model of one of the opportunities afforded to middle and high school students, the Advancement Via Individual Determination program. The model depicts the factors that influence the participants' opportunities in this setting. As noted in the figure, the effects of school setting, background variables, and school composition influence the opportunities afforded to students or the program of study offered by schools.

As students enter a school setting, (urban, suburban, rural) they bring with them variables related to their background. These background variables include the student's prior achievement, gender, socio-economic status, race/ethnicity, and parent/guardian's educational attainment. School districts disaggregate the background variables to determine the mean school composition. Factors such as mean achievement, mean socio-economic status, and mean race/ethnicity percentages determine the school composition. School setting, background variables, and mean school composition impact on the curriculum provided to students.

To promote and support student success with the curriculum, school districts often adopt or develop programs and strategies to serve the unique needs of their population. A specific program implemented to support student success with the school curriculum is AVID. Students enrolled in the AVID program receive a specialized curriculum composed of academic skills, tutorial sessions, and motivational activities. In grades 6 through 8, the AVID curriculum is integrated into core subjects (math, science, social studies, and English). However, for AVID students in grades 9 through 12, the curriculum is delivered via an elective class.

The AVID curriculum at the middle school level focuses on organization, time management, test taking, critical reading, and study skills. The skills introduced in AVID during the middle school years are continued and further reinforced in the high school program. The high school AVID elective class promotes the college entry process. This process includes activities that provide students with a positive transition to college through guided practice in the college application and acceptance procedures. Students are taught how to apply to college, to maximize their performance on college entry examinations, and to complete financial aid and scholarship forms. Connections between course selection, grade point average, and test taking are of central importance to the high school AVID elective curriculum.

Conceptually, courses are selected and credits are earned toward the completion of graduation requirements. Course offerings are of varying levels of difficulty and include general courses, honors courses, Advanced Placement, and International Baccalaureate courses. The rigor of courses ranges from the lowest level which includes general courses (i.e., English 9) to higher levels such as honors courses (i. e., Honors English) and Advanced Placement courses (i.e., AP English Literature) or International Baccalaureate courses (i.e., IB World History).

All students earn credits for completion of courses; they must successfully master end-of-course Standards of Learning (SOL) tests as prescribed by the Virginia Department of Education (1999). During the eleventh grade, all students are required to take the English: Reading/Literature Research and the English: Writing end-of-course SOL tests. Upon successful completion of all course work in the program of study, students earn an Advanced Studies Diploma, a Standard Diploma or a Magnet Diploma. After high school graduation, students may enter the workforce or pursue additional education.

Of central importance in this study is the influence of an educational intervention, AVID, on high school students. The study will compare grade point average, course selection patterns, and English: Reading SOL scores of three groups of students: students who did not participate in AVID (AVID-0) and students with three or more years of AVID participation in grades 6 through 8 (AVID-3); and students with six years of continuous AVID participation in grades six through eleven (AVID-7). The AVID-7 students were recruited for program participation during the fifth grade by teachers and counselors and remained in the program for grades 6 through 12. Students who comprise the AVID-3 group participated in AVID during grades 6-8, exited the program after grade eight, and did not participate in AVID in grades 9-11. The non-AVID (AVID-0) students were not enrolled in AVID at any point during grades 6-11. The conceptual model presented in this study provides background information on the impact of AVID on AVID-7, AVID-3, and AVID-0 students.

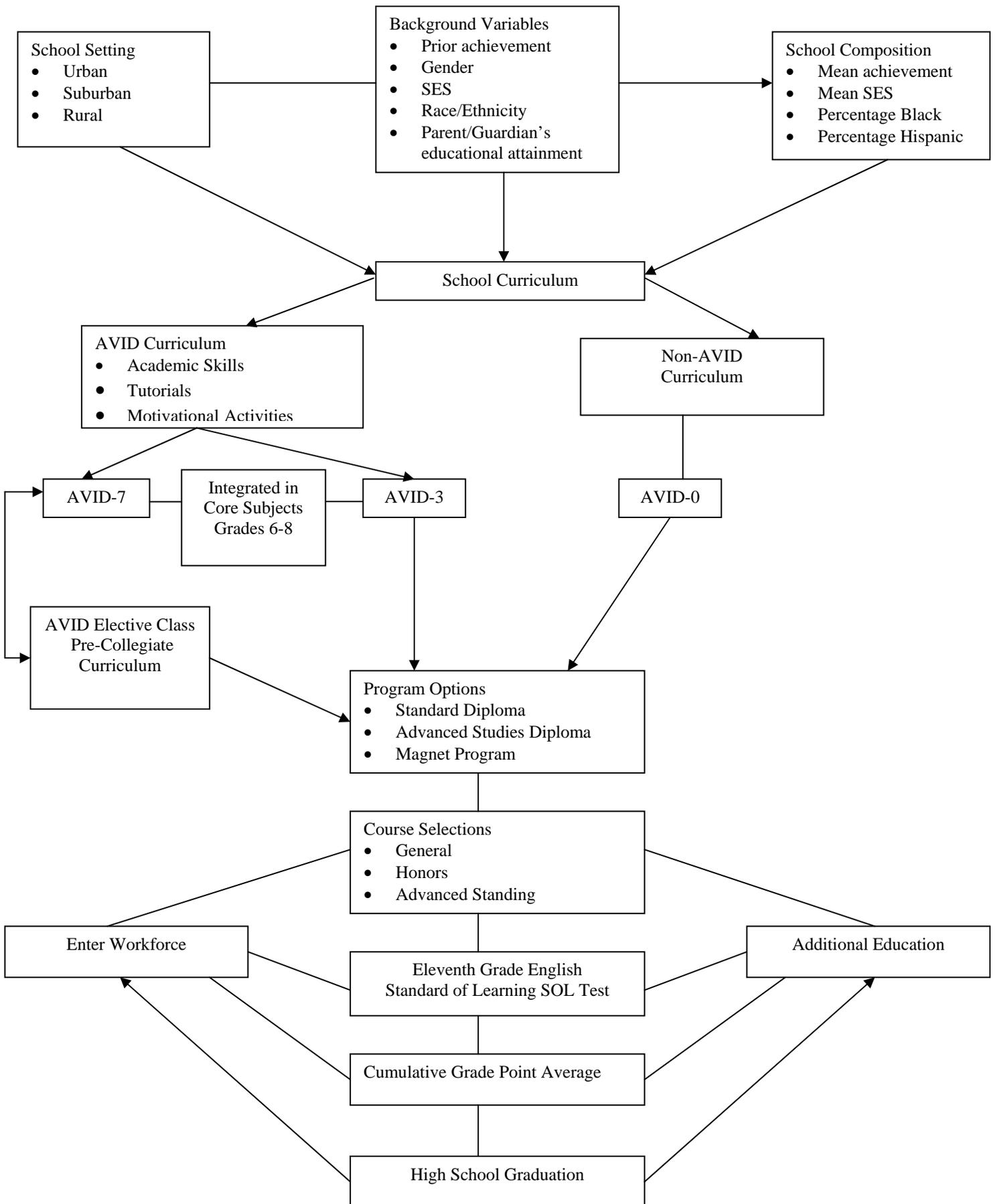


Figure 3. Conceptual design of Advancement Via Individual Determination.

Significance of the Study

Proponents of AVID (Hubbard & Mehan, 1999) contend that AVID has been successful in preparing underrepresented students for college. The researchers previously reported on the college enrollment of San Diego AVID graduates in 1990, 1991, and 1992. Their research indicated that 48% of students who completed 3 years of AVID enrolled in 4-year colleges, 40% enrolled in 2-year or community colleges, and the remaining 12% began working or engaged in other activities. According to Hubbard and Mehan, these figures compared favorably to local and national averages.

The American Council on Education summarized key findings of research conducted using three major surveys. The research used for the study included The National Education Longitudinal Study (NELS), The Beginning Postsecondary (BPS) Longitudinal Study and the Baccalaureate and Beyond (B&B) Study (Wilds, D. & Wilson, R., 1998). Key findings from the studies indicated that of the 20 million high school graduates in 1990, 39% of them enrolled in 4-year colleges. The Commonwealth of Virginia reported similar statistics. The Virginia Department of Education (2002) indicated that of the 68,593 Virginia 2001 graduates, 48% enrolled in 4-year colleges and 25% enrolled in 2-year colleges. In Newport News Public Schools, the statistics for 2001 graduates were somewhat different with 65% of the 2001 graduates enrolled in 4-year colleges and 12% enrolled in 2-year colleges. The college enrollment of AVID students in San Diego (84% 4-year college enrollment) and Newport News Public Schools (93% 4-year college enrollment) exceeded both local and national averages.

Victory (1998) analyzed testing and attendance data for 398 eighth-grade students within one school district using the Stanford 9-TA Achievement Test and school district data. The study included 152 students in the Talented and Gifted Program and 246 students in the AVID

Program. The purpose of the study was to determine if there was a statistically significant interaction among group membership (AVID, Gifted and Talented), gender (males, females), and race/ethnicity (blacks, whites) with respect to student achievement and attendance after controlling for socioeconomic issues. The data was analyzed using two three-way ANCOVAS, with a .05 level for statistical significance. Victory's finding indicated that "White students who were members of the Talented and Gifted program achieved higher NCE basic mathematics scores, and reading and language scores than Black students who were members of the AVID program (p.79). Victory further asserted that data from the study do not substantiate the premise of AVID creators "that students participating in the AVID program will attend school and achieve academically as well as other groups of children" (p.3). With regard to the contradictory reports on student participation in AVID, several questions remain unanswered regarding the effectiveness of AVID in preparing underrepresented students for college.

The questions that remain unanswered are (a) Is college preparatory curriculum more available to students as a result of participation in AVID, (b) Does AVID impact course taking patterns of students, and (c) What effect does participation in AVID have on achievement (English: Reading SOL scores)? As school districts are encouraging students to take more rigorous courses, earn higher grades, and perform better on standardized measures, it is imperative that a thoughtful analysis of the data occurs. The NCES asserts that colleges actively use grade point average, the rigor of course work in high school, and standardized test scores as factors in determining college admissions (NCES, 2000). This information may prove valuable to school districts throughout the country as they search for ways to increase the opportunity for students most typically underrepresented to be admitted into a four-year college or university.

Purpose of the Study

The purpose of this study is to investigate the effects of AVID participation on course taking patterns, cumulative grade point average, and English: Reading SOL scores of twelfth grade students. This investigation will include 7-year AVID participants, 3-year AVID participants, and non-AVID participants.

Research Questions

The research questions of this study are:

1. Is there a difference among groups (AVID-7, AVID-3, and AVID-0) with respect to course selection?
2. Is there a difference among groups (AVID-7, AVID-3, and AVID-0) with respect to twelfth grade cumulative grade point average?
3. Is there a difference among groups (AVID-7, AVID-3, and AVID-0) with respect to eleventh grade English: Reading Standards of Learning (SOL) Test scale scores?

Definition of Terms

An understanding of the following terminology is essential to readers of this study. The terms are defined as they relate to the topic of this paper.

1. Advanced Placement Program: Advanced Placement (AP) courses are rigorous academic college-level courses developed by the College Board and offered in high school setting. Upon completion of AP courses, students may take the related AP examination course and may qualify for college credit.
2. AVID-7: Students continuously enrolled in the AVID program and in the school districts from grade 6 through grade 12.

3. AVID-3: Students continuously enrolled in the AVID program and in the school district from grade 6 through grade 8. The students did not enroll in the AVID program during high school (grades 9-12).
4. AVID-0: Students who are non-AVID participants were not enrolled in AVID during middle school (grades 6-8) or high school (grades 9-12). These students graduated from high school in 2003.
5. Course-taking patterns: The cumulative number of honors and Advanced standing courses students are enrolled in during middle and high school years. The number of honors courses and Advanced standing courses appearing on a student's transcript.
6. Cumulative Grade Point Average: A weighted numerical average (on a 4 point scale) of grades students receive from all high school credit bearing courses. The cumulative grade point average is computed by dividing the aggregate total of quality points by the total number of courses attempted.
7. Honors courses: Rigorous credit-bearing courses in various content areas that are weighted an additional 0.5 quality points on a 4.0 scale and computed in a student's grade point average.
8. Standards of Learning – SOL Tests: Statewide tests administered to students in Virginia upon completion of designated course work. Students are required to take English: Reading and English: Writing SOL tests at the end of grade eleven.
9. WIC: An acronym to indicate the methodologies used in the AVID program to deliver the curriculum. The acronym stands for writing, inquiry, and collaboration.

Limitations and Delimitations

This study is limited to middle and high school students in one urban school district in southeastern Virginia. Several limitations within the research design reduce the ability to generalize the results to a population other than the one studied. During the course of the study, maturation in research participants may have occurred, which could lead to difficulty in determining if differences in the participants were due to the intervention (AVID) or maturation. Experimental mortality, or attrition, is an extraneous factor that threatened the internal validity of this study. At the time of this study, there were no achievement measurements available to determine the comparability of the students in the study. This may limit the ability to generalize the results of this study to other groups. The researcher delimited the study by targeting students who entered the program three years after the school district's implementation of AVID. This decision was made to provide time for the school district to refine the recruitment process and to select students in line with the program goals.

Organization of the Study

A five-chapter dissertation format will be used to organize the study. In Chapter One, the context for the study is established. The chapter includes background information on the topic; the statement of the problem; the conceptual model; the significance of the study; the research questions; and definitions for terms used in the study. Chapter Two provides an review of the literature relevant to the study. Chapter Three outlines the methodology employed in the investigation including population and sample selection, instrumentation issues, and the procedures used to collect and analyze data. In Chapter Four, the results of the study will be reported. Chapter Five includes a discussion of those results and their implication for future practice and research.

CHAPTER TWO

Review of Literature

The review of literature contained in this chapter was a synthesis of information related to the achievement of middle and high school students as they prepared for post secondary education. Numerous databases were used to generate the literature that was reviewed for this study. Searches were conducted using PsychINFO, Wilson Web, catchword.com, and Infotrac. In organizing the review of literature, several themes emerged as significant to the topic. One of the primary issues, which provided the context for inquiry on this topic, was the changing demographics in America and the impact of those changing demographics on secondary and post secondary education. Another pervasive theme analyzed in the literature was the evolution of the high school curriculum and its relationship to student achievement. In researching the high school curriculum, the concept of academic tracking emerged as a significant component of the topic. With the present emphasis on high standards, one facet of the research in this chapter centers on mathematics and English achievement and their relationship to college attendance. The chapter concludes with a synthesis of current research on the Advancement Via Individual Determination (AVID) program.

Changing Demographics

National Trends

The United States is experiencing a major demographic shift that is affecting all facets of life for its citizenry. “The White population is shrinking relative to non-white groups and the dramatic increase in ethnic minorities is felt disproportionately among the school-age population” (Gandara & Maxwell-Jolly, 1999, p. 5). The researchers attribute this shift in school

enrollment to the baby boom, the 25% increase in the Nation's birthrate that began in the mid-1970s and peaked in 1999, and to rising immigration."

The Census Bureau statistics substantiated this trend (U.S. Department of Commerce, 2003). From 1990 to 2000 the total population in the United States increased by approximately 13.2% from 248,709,873 in 1990 to 281,421,906 in 2000. The increase of the total population encompassed all races; however, from 1990 to 2000, minority groups experienced marked increases in population growth. The increase was largely due to growth in the Hispanic population. In 2000, Hispanic and Black students accounted for 11.9 and 12.2% of the total population (up 2.9 and 0.3 percentage points respectively from 1990). From 1990 to 2000, the population of American Indians remained constant at 0.7; however, the Asian population increased 1%, from 2.8% to 3.8%. Comparatively, in 1990, Whites comprised 75.7% of the total population and in 2000 that percentage decreased by 4.4 to 71.3%. As the White population decreases, the growth of certain minority groups is expected to further contribute to the demographic shift.

Age Differences in the Population

Another factor related to the shifting demographics is the mean age of the American population. In 2000, 71.3% of Americans were classified as White, non-Hispanic, with a mean age of 38.7 (NCES, 2000). African Americans and American Indians maintained a consistent proportion of the populations, 12.2% and 0.7% respectively. The mean age of African Americans is 32.5 and American Indians is 31.3. The Hispanic population, the fastest growing, accounted for 11.9% of the 2000 population with a mean age of 29.1. del Pinal and Singer (1997) noted that the youthfulness of the Latino population; its fertility rate (the highest of all major groups); and sustained immigration means that the Latino population will continue to

grow at a disproportionately high rate in the coming years. The researchers further contended that shortly after the turn of the century, Latinos will become the nation's largest minority group. The NCES further reported that as the nation's population becomes more diverse, and the demographic shift is realized in education, American public schools will be profoundly affected. These changes in enrollment will affect resources such as qualified teachers, physical facilities, and funding levels that are typically required to provide a quality education for America's students.

Demographic Shift in Education

Further insight on the demographic shift of students in education can be gained by noting the enrollment of students regionally. The NCES (2000) reported that in the West, almost 40% of the total public school population was minority students with Hispanic students accounting for 30% of the student enrollment (up from 15% in 1972). In California, a state with the highest immigration rate (approximately 40%), White students represent only 39% of the public school children, with Latinos comprising 40% of the public school-age students. The second largest non-White group is Asians, with more than 11% of the state's k-12 students and Blacks represent the third largest school-age group with fewer than 9% of school-age children (California Department of Education, 1998). The minority population in the Midwest was considerably lower, 21%. Hispanic students represented 5% of all students in public elementary and secondary schools in the Midwest.

In the South, the proportion of Black students (28%) was higher than the proportion of students in other regions. The total public school enrollment in Virginia as of April 1, 2000,

Table 2

U.S. Census Bureau Population Estimates by Race-Ethnicity

| | Nov. 2000 | July 1997 | July 1993 | July 1990 |
|--|-----------|-----------|-----------|-----------|
| Hispanic Origin | 32,832 | 29,182 | 25,222 | 22,571 |
| % of total | 11.9 | 10.9 | 9.8 | 9.0 |
| Mean Age | 29.1 | 28.5 | 28.1 | 27.8 |
| White (not Hispanic) | 196,929 | 194,746 | 191,697 | 188,596 |
| % of total | 71.3 | 72.7 | 74.4 | 75.6 |
| Mean Age | 38.7 | 38.1 | 37.5 | 37.0 |
| Black (not Hispanic) | 33,619 | 32,339 | 30,795 | 29,404 |
| % of total | 12.2 | 12.1 | 11.9 | 11.8 |
| Mean Age | 32.5 | 31.8 | 31.1 | 30.8 |
| Asian and Pacific Islanders (not Hispanic) | 10,620 | 9,537 | 8,184 | 7,090 |
| % of total | 3.8 | 3.6 | 3.2 | 2.8 |
| Mean Age | 33.2 | 32.4 | 31.6 | 31.1 |
| American Indian, Eskimo, Aleut (not Hispanic) | 2,059 | 1,979 | 1,884 | 1,804 |
| % of total | 0.7 | 0.7 | 0.7 | 0.7 |
| Mean Age | 31.3 | 30.6 | 29.6 | 29.1 |

Note: Population Estimates Program, Population Division, U.S. Census Bureau,

Washington, D.C. 20233. <http://www.census.gov/popest/archives/1990s/nat-srh.txt>

(Virginia Department of Education, 2000) was 1,133,994 with White students representing 64.3% of the population, African American students 27.2%, Hispanic students 4.4%, Asian students 3.9%, and American Indian students .26%. The NCES (2000) reports that “differences in enrollments among racial/ethnic groups can provide insight into inequality of access and participation, areas that are of concern for many educational reform efforts” (p. 4).

Table 3

U.S. Racial-Ethnic Distribution of Public School Students in Grades 1-12

| October | White | Total | Black | Hispanic | Other |
|---------|-------|-------|-------|----------|-------|
| 1972 | 78.0 | 22.0 | 14.8 | 5.8 | 1.4 |
| 1977 | 76.3 | 23.7 | 15.8 | 6.2 | 1.8 |
| 1982 | 72.1 | 27.9 | 16.0 | 8.7 | 3.2 |
| 1987 | 68.8 | 31.2 | 16.4 | 10.8 | 3.9 |
| 1992 | 67.0 | 33.0 | 16.8 | 11.9 | 4.3 |
| 1998 | 62.7 | 37.3 | 17.1 | 15.1 | 5.1 |
| 2000 | 61.3 | 38.7 | 16.6 | 16.6 | 5.4 |

Note. U.S. Department of Education, National Center for Education Statistics (2000). The condition of education 2000. NCES 2000-062, Washington, DC: U.S. Government Printing Office, 2000.

With demographic shifts in the general population, and specifically in pre-kindergarten through twelfth grade education, enrollment in America’s colleges and universities has become

increasingly diverse (NCES, 2000). According to the NCES immediately after high school, approximately two-thirds of all students enroll in college, however only about 60% of Blacks enroll in college. Although only one-third of all students (38.7%) attend 2-year colleges, the majority of Hispanic (56%) and Native American (51%) students attend 2-year colleges (NCES). These statistics may seem promising; unfortunately, only smaller percentages (8%) of students that attend 2-year colleges go on to complete an undergraduate degree. Gandara and Maxwell-Jolly (1999) reported that underrepresented minority students, especially those from low-income backgrounds may not receive the advice and counseling that allows for the transfer to a 4-year college or university. The NCES (2000) reported that Black and Hispanic students take longer to graduate from college and leave college without completing the bachelor's degree more often than either Whites or Asians. From 1971 to 1999, the educational attainment for 25- to 29-year-olds increased across all educational levels for all racial ethnic groups. The percentage of 25-to 29-year-olds who completed at least high school, who completed at least some college, and who obtained a bachelor's degree or higher increased during this period. In addition, the gap in the rate at which Blacks and Whites completed at least high school began to close. In contrast, the NCES reports that the gap in attainment between White and Black high school completers with at least some college remains basically the same and the gap between Blacks and Whites who completed college widened significantly.

As the American economic and social landscape changes, the connection between a healthy economy and a solid educational system becomes evident to decision and policy makers. The United States is competing in a global market that requires an economy founded on a high-skill, high-wage work force. In the future, more workers will come from the fast-growing population groups of today's school-aged children - Latino, immigrant, Asian, and Native

American children. Wheelock (1992) asserted that the changing demographic and economic circumstances highlight new directions in the reform of American education. “As the American population becomes increasingly heterogeneous, schools must nurture a greater appreciation of diversity” (p. 14).

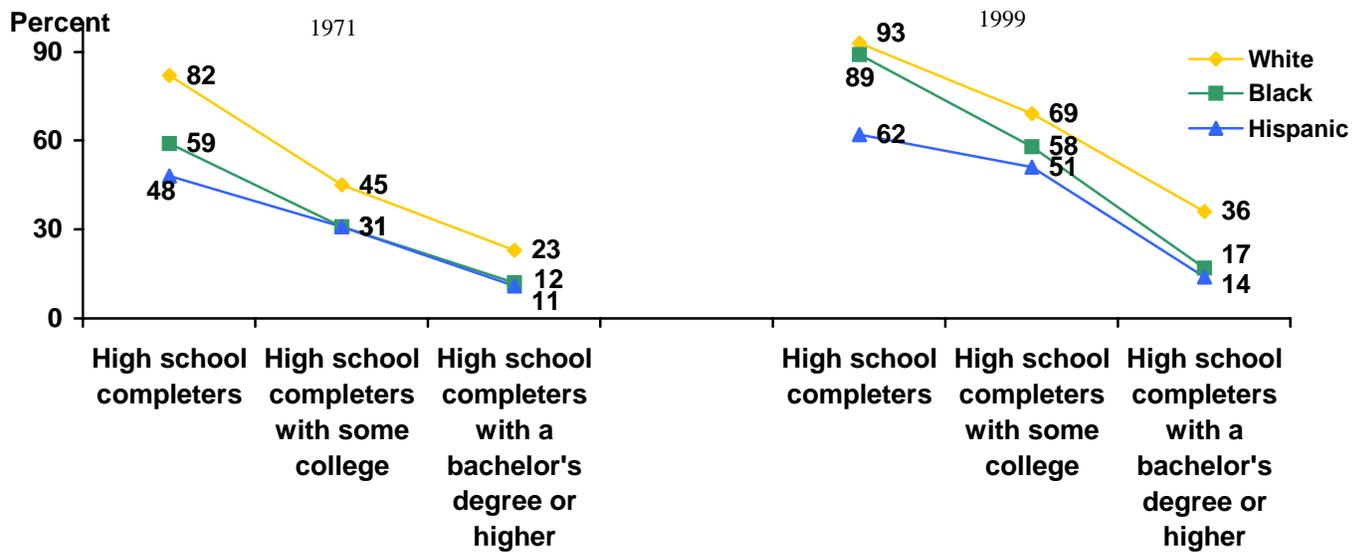


Figure 4. Percentage of 25- to 29-year-olds attaining selected levels of education, by race-ethnicity: March 1971 and 1999.

Note. U.S. Department of Education, National Center for Education Statistics (2000). The condition of education 2000. NCES 2000-062, Washington, DC: U.S. Government Printing Office, 2000.

According to Hodgkinson (1998) the youngest children in the United States are the most diverse. Although 26% of all Americans are nonwhite, among school age children that figure is 37% and for preschool children younger than 5, the figure is 38%. Hodgkinson projected that in the future, in terms of ethnic groups, the population of Whites will increase by 5 million between 2000 and 2010; Hispanics by 9 million; Blacks by 3.8 million; Asian by 3.8 million; and Native

Americans by 266,000. There will be more Hispanics than Blacks in America's schools for the first time in the history of the country. Hodgkinson suggested that educators socialize students into the American fabric representing new backgrounds and new traditions. He asserted, "we will achieve our 21st century goal [of] blending all children into a new and very diverse social culture" (p.7).

In summary, as the numbers of Blacks, Hispanics, and Native Americans comprise a larger and larger percentage of the total population, they also comprise a larger percentage of students in American's public schools. The changing demographics in public schools will have a profound impact on students entering higher education. Minority and low-income backgrounds remain seriously underrepresented among the higher academic achievement levels in secondary and post secondary schools; therefore, the economic advantages of higher education are not available to many minority students.

The Underrepresentation of Minorities in Higher Education

As the number of minorities comprises a larger percentage of the population, students from these backgrounds remain seriously underrepresented at the higher academic levels. Researchers provide a myriad of factors that contribute to the lower number of minorities in post secondary education (Gandara & Maxwell-Jolly, 1999). Factors such as socioeconomic status; education aspirations and plans; dropout rates; academic preparation and achievement; and parental support and encouragement contribute to lower numbers of minority and low-income students' enrollment in college (Borus & Carpenter, 1984; Perna, 2000). Numerous researchers suggest that these factors are important predictors of college enrollment (Mahoney & Merritt, 1993; Mehan, et al., 1994; Perna, 2000).

Socioeconomic Status

A significant factor to the underrepresentation of minorities in higher education is socioeconomic status of the family. Generally, one of the most powerful predictors of students' academic achievement is socioeconomic status. Students from low-income homes, or students who have parents with little formal education, are much more likely to be low achievers and much less likely to be high achievers than students from high-income families, or students who have parents with bachelor's or advanced degrees (NCES, 2000). In one large national study, only 5% of the eighth graders whose parents did not have a high school degree had achievement test scores in the upper quartile, whereas over half of the students who had at least one parent with a graduate degree scored in the top quartile (Guthrie & David, 1994).

In the past 35 years, this pattern, combined with the very high percentages of Black, Latino, and Native American children living in poverty, has led many educators and policymakers to give priority to school reform, early childhood education and other strategies intended to improve educational outcomes for low-income minority children (NCES, 2000). Since the 1960s, there is an extensive body of research that shows that Black, Hispanic, and Native American students at all socioeconomic levels do not perform nearly as well on standardized tests as their White and Asian counterparts. Significantly, some of the largest of these test score gaps are often found at middle and professional class levels, at least when they are measured by the education of students' parents (The College Board, 1999).

With the inception of Title 1 in 1965, educators and policy makers recognized that poverty is strongly related to low academic achievement (Perna, 2000). Researchers have learned that children experiencing chronic, long-term poverty are among the most at-risk educationally. Students of poverty frequently have health problems that compromise learning. In

addition, families in poverty tend to move frequently, which means that many of their children experience serious disruptions in their education (Gandara & Maxwell-Jolly, 1999). In schools with a 25% student poverty rate, both poor and non-poor students do less well academically than their counterparts in schools with very low student poverty rates (Kane, 1994; Kane & Spizman, 1994). Schools serving large numbers of poor students may not have sufficient resources to meet their students' needs and they may have high student mobility (turnover) rates (Gandara & Maxwell-Jolly; Kane; Kane & Spizman; Perna). Underrepresented minority students are much more likely to be poor or to attend high-poverty-concentration schools than White students. This may mean that poverty is taking a higher education toll for both poor and non-poor students from these groups (Perna).

Educational Aspirations and Plans

A second factor that some researchers associate with the underrepresentation of minorities in higher education is lack of educational aspirations and planning. Mahoney and Merrit (1993) conducted an exploratory study comparing the college aspirations and expectations of Black and White high school seniors in Virginia who desired to attend college. The data for the study was obtained from a 1987 survey of approximately 56,000 seniors sponsored by the Virginia Department of Education. The 56,000 seniors comprised approximately the entire population of Black seniors and White seniors enrolled in Virginia public high schools in 1987. Of the seniors surveyed, 53,083 completed questionnaires and 40,848 indicated a desire to attend college and were used in the study. Cross-tabulations were used to display observed differences between both races and sexes. Chi-square analysis was used to test for significant differences between races. The results of the study indicated that Black students use high school counseling to assist in the development of educational goals significantly more than White students ($p <$

.05). Approximately 60% of the White students and 40% of the Black students were enrolled in college curriculum. The findings of the study suggested that this did not produce a significant difference between the races in their educational expectations or aspirations, even when the students were enrolled in non-college preparatory programs.

However, as other researchers note (Berkner & Chavez, 1997; Perna, 2000) simply aspiring to attend college is not sufficient to ensure actual college enrollment. Alderman (1999) asserted that the consistency of aspirations appears to be particularly important with regard to bachelor's degree attainment. According to Alderman, bachelor's degree attainment rates are higher for students who consistently report as high school sophomores and seniors that they aspire to complete at least a bachelor's degree than for those with less consistent aspirations. Mahoney and Merritt (1993) contended that certain students, particularly Black students, rely on educators to a great degree in planning for their futures. They further contended that counselors and teachers are more important in helping Black students develop educational/occupational plans than other students. Minority students may depend on educators to assist with educational planning because their parents are generally less educated, and may not be comfortable in advising students about postsecondary options. The research by Mahoney and Merritt substantiated that Black students use these resources more frequently, and find them to be helpful.

Secondary Attrition

The third factor that is related to the underrepresentation of minorities in higher education is the loss of minority students in the education system. The NCES (2000) reported that the overall dropout rate in America's public schools has declined since the 1970s; however, certain subgroups of students have higher rates than others. For example, in 1995, the NCES reported

that the high school dropout rate was 8.6% for White students, 12.1% for Black students, 30% for Hispanic students, and 30% for American Indian students in the 16-to-24-year-old age cohort.

Blacks appear to close the gap with Whites significantly over the years succeeding high school. In the 25-to-29-year-old age group, Blacks have high school completion rates similar to those of Whites--85.6% versus 87.5% for Whites. Researchers conclude that this may result from a large number of Blacks pursuing high school equivalency certificates. However, for Hispanics, the number of dropouts remains large, with only 61.1% completing high school by age 29. According to Wilds and Wilson (1998) the discrepancies in the Hispanic dropout rate with high school completions rates may be the result of immigration and the fact that many Hispanic youth do not ever enter the American education system and are therefore not counted as dropping out. Blacks, Hispanics, and Native Americans form the largest portion of students who drop out of high school, and are, therefore, unprepared to continue their education beyond the secondary level. (Gandara & Jolly-Maxwell, 1999; NCES, 2000).

Parental Support

Mahoney and Merritt (1993) explored the perceptions of high school seniors on the importance of parental advice to college and vocational planning. The data for the study was obtained from a survey sponsored by the Virginia Department of Education in 1987 of Black and White seniors enrolled in public high schools. Of the 40,878 surveys, 40,712 responded to the question regarding the importance of parents to high school seniors with college aspiration in making educational plans. Approximately 90% of both Black and White seniors felt that their parents were at least somewhat important in helping them make their educational plans. The chi-square computed percentage differences between races were low .16 ($p > .35$). Mahoney and

Merritt noted that a higher proportion of Blacks than Whites indicated that their parents were “very important” in making their educational or vocational plans ($\chi^2 = 1.69, p > .10$, one-tailed). However, the difference between the races in the “very important” category was not statistically significant. In addition, Mahoney and Merritt asked students who aspired to attend college how much education they thought their parents desired for them, the responses of Blacks and Whites were similar and the difference in percentages between races was not significant ($\chi^2 = .86, p > .25$, one tailed).

The researchers used the entire data set (which included students with no college aspirations) to investigate the strength of relationship between parents’ desires for their children’s education and children’s education aspirations. Pearson product-moment correlation coefficients within each of the four race and sex categories were computed. Overall, the correlations were among the highest observed between variables in the data set (Black men, $r = .54$; Black women, $r = .58$; White men, $r = .64$; White women, $r = .63$). In summary, one of the most significant factors of the study indicated that Blacks did not differ significantly from Whites in the importance that they placed on parental help in planning their educational goals and regarding the effects of perceived parental desires for more schooling on the students’ anticipated educational attainment.

Perna (2000) contended that early intervention programs may increase parents’ capacity to support and encourage their children in planning and preparing for postsecondary education in various ways. The researcher suggested that programs work to educate parents about the advantages of postsecondary education and the availability of financial assistance.

Academic Preparation

The fifth factor associated with lower rates of enrollment at 4-year institutions among low-income and minority students is that they are less qualified academically. Most colleges base academic qualification on high school curriculum rigor, high school grade-point average, senior class rank, performance on a standardized test and SAT or ACT score (NCES, 2000). Underrepresented minority students take fewer rigorous college preparatory courses in high school and their grade point averages in the courses that they do take are uniformly lower than for Whites or Asian students (NCES). The body of research associated with the academic qualifications of minority and low-income students is grounded in the historical perspective of the high school curriculum.

Academic Achievement of Minority Students

High School Course Taking

In order to understand the issues related to the academic performance of minorities in high school, it is necessary to review research on high school course taking and academic tracking. Mirel and Angus (1994) reviewed the trends in America's high school course-taking from 1890-1990. They analyzed a series of national surveys of high school course-taking conducted by the U.S. Department of Education from 1928, 1934, 1949, and 1973. In addition, Mirel and Angus used survey and transcript data gathered by the National Center for Education Statistics in 1982, 1987, and 1990. Mirel and Angus linked this data to previous studies and to describe the modern history of the high school curriculum.

Between 1890 and 1930, the number of 14- to 17-year-olds attending high school increased from 359,949, fewer than 7% of the age group, to 4,804,255, over 51% of the age group (Mirel & Angus, 1994). Most schools, prior to the 1930s, stressed an academic program.

The Great Depression prompted a new debate that favored curricular differentiation (Mirel & Angus). By 1930, schools offered an increasing number and variety of vocational and elective courses to meet the more practical needs of youth. In 1940, 7,123,009 students between the ages of 14 to 17 were in high school, over 73% of the age group (Mirel & Angus). With the new influx of students in the educational system, Mirel and Angus noted that two key assumptions prevailed among educational leaders. First, students entering school at this time were less academically talented than previous generations. Secondly, they were fearful that rigorous courses would force students to drop out, which would further deplete the current job shortage. As a result, Mirel and Angus suggested that beginning in the 1930s, students were “disproportionately assigned to non-academic tracks and courses and to academic classes that had lower standards and less rigorous content” (p. 8).

In the post World War II era, the Life Adjustment Movement, a federally sponsored curricular reform effort had a profound effect on the course-taking patterns for much of the century. “In 1928, over 67% of the courses taken by American students were academic. Six years later, the amount of academic course taking had dropped to 62%. Over the next two decades the percentage of academic courses taken by American high schools students continued to fall from just over 59% in 1949 to 57% in 1961 and then returned to 59% in 1973” (Mirel & Angus, 1994).

In the 1970s and 1980s the decline in academic course taking began to reverse. For the first time in almost half a century, the percentage of academic courses taken by high school students increased from 59% to over 66%. Mirel and Angus (1994) attribute the causes of this shift to various reasons:

A changing economic situation, in which a high school diploma carried less value than previously; demands of parents for higher quality education for their children; alarm about the steady decline in SAT scores; the publication of such manifestos as *A Nation at Risk*; enactment of more stringent high school graduation requirements by state legislatures; and the setting of higher standards for student performance by school districts. (p. 40)

According to the U.S. Department of Education, (NCES, 2000), today's high school graduates are taking more courses and more difficult courses than they were in the early 1980s. The average number of credits earned by high school graduates increased from 22 credits in 1982 to 25 credits in 1998. Furthermore, the increase in course taking during this period has been in academic rather than vocational or other credits. The NCES noted that racial/ethnic differences in the number of courses taken have diminished but not disappeared. For example, in 1982, the NCES reported that white graduates earned more academic credits on average than Hispanic graduates, but there was no difference in 1998. However, there were Black-White differences in the number of academic credits earned between 1982 and 1998.

High school graduates are taking more demanding courses in mathematics and science. The percentage of high school graduates who took the most rigorous mathematics curriculum doubled from 6% to 12% between 1982 and 1998. In addition, the percentage that took both chemistry and physics increased from 7% to 19% during the same period (NCES, 2000).

Another indicator associated with more demanding course work is the Advanced Placement (AP) program. The College Board's AP program provides high school students with the opportunity to take college level courses (Gandara & Maxwell-Jolly, 1999). AP examinations allow students to receive college credit for their knowledge of college-level

subjects. Between 1984 and 1997, the number of students who took AP examinations increased significantly, rising from 5% to 13.1% of 12th-graders (NCES, 2000). During this period, the number of students taking examinations increased for both sexes and all racial ethnic groups. “In 1997, Whites (132/1,000 12-graders) were more likely than Blacks (37/1,000 12th-graders) or Hispanics (85/1,000 12-graders) to take AP examinations in all subject areas, with the exception of foreign languages. Hispanics were at least three times more likely to take a foreign language AP examination than Whites (NCES, 2000, p. 38).

Mirel and Angus (1994) asserted that an increase in academic course taking has contributed to improved student outcomes especially among minorities. The increases in academic course taking by minority students have not resulted in increases in college enrollments, especially on the part of Black students (Mirel & Angus, Mahoney & Merritt; 1993; NCES, 2000).

Although underrepresented minority students are taking more rigorous courses than in the past decade (NCES, 2000), these students continue to take fewer rigorous college preparatory courses in high school than White or Asian students and their grade point averages in the courses that they do take are uniformly lower (Gandara & Maxwell-Jolly, 1999). Closely related to the issue of the high school curriculum is the sociological perspective of academic tracking and its impact on the academic qualifications of students preparing for postsecondary education.

Academic Tracking

Academic tracking is another phenomena used to explain the differences in achievement among underrepresented students in higher education. According to Mehan et al. (1996), educators in the United States have historically addressed differences among individuals and groups by separating students and altering the content of the curriculum to which they are

exposed. Since the 1920s, most high schools have offered a “tracked” curriculum or sequences of academic classes that range from slow-paced remedial courses to rigorous academic ones. Wheelock (1992) defined tracking as “the categorizing of students according to particular measures of intelligence into distinct groups for purposes of teaching and learning” (p. 6). Jones, Vanfossen, and Ensminger (1995) characterized tracking as “a form of ability grouping in American secondary schools that has been viewed as the institutional mechanism by which students are selected or channeled for different educational experiences” (p. 287).

Mehan, et al.(1996) asserted that tracking starts as early as elementary school where students who have similar skills are placed in small working groups, often called ability groups, for the purpose of instruction. Students who have less measured ability are placed in low-ability groups and students with greater amounts of measured ability are placed into high ability groups. The curriculum in the low-ability grouped classes is reduced in scope, content, and pace relative to high-ability grouped classes. In the elementary schools, the structure of these groups is informal; however, in middle schools and high schools, this process called tracking, becomes institutionalized and a dichotomy is established with students assigned to a college preparatory track or a vocational track. Students in each track receive a distinct curriculum and are typically separated from students in other tracks (Mehan et al., 1996).

The rationale for tracking can be traced to the height of the industrial revolution and hinges on the assumptions related to the nature of the occupational structure and the role of schooling in an industrial society (Mehan et al., 1996). Davis and Moore indicated that tracking was justified at the height of industrialization because it supported the long-standing belief that a crucial function of schools is to prepare students for jobs (1945). During the industrial revolution, labor was divided into jobs and occupations that required different kinds of skills. As

a result, workers with different kinds of knowledge were needed to fill the varied jobs. The function of schools during this period was to serve as a sorting device by matching students' skills to the needs of the workplace (Turner, 1960). As a result, rigorous academic classes could prepare students heading for jobs that require college degrees, and vocational programs could prepare students for less skilled jobs or for jobs requiring technical training after high school.

According to Mehan, et al., (1996) early research on tracking and ability grouping indicated that tracking students for different types of jobs was fair because students were thought to possess different intellectual abilities, motivations, and aspirations and jobs demand different skills and talents. From this perspective, tracking was thought to be both functional and democratic (Lovelace, 1999). Tracking was functional because it accurately matched students to the appropriate slots in the work force and thus provided the nation with a range of needed workers. In addition, tracking was considered democratic because students were provided with an education that was based on their talent, effort, and hard work and was congruent with their abilities.

Sociologists and educators have viewed the issue of tracking from many perspectives. Lovelace (1999) outlined the two perspectives as social orientation and functional orientation. Both perspectives provide a rationale for the value of tracking to the educational success of students and served to legitimize the practice of tracking.

Social Orientation

The social orientation perspective holds that ability grouping invites bias in schooling and is defined in a way that discriminates by race and class. Lovelace (1999) asserted "ability grouping is often defined and measured in a way that discriminates by race and class" (p. 14). The social orientation perspective contends that when students are assigned to groups by ability

or prior achievement, white and wealthier students are often over represented in high groups and poor and minority students are over represented in low groups. When exposing students to different curricula, the social orientation purports that “tracking stratifies learning by race and class and reinforces social inequality” (p. 14).

Numerous researchers of the social orientation have studied tracking and its effects on curriculum opportunities and student outcomes. Studies have focused on the relationship between students’ socioeconomic backgrounds, socio-psychological variables, and consequences of tracking on high school students (Garet & DeLany, 1988).

Three early studies of this nature (Alexander, Cook, & McDill, 1978; Heyns, 1974; Jencks & Brown, 1975) investigated the high school curriculum as part of a more general investigation of the effects of high schools on achievement and educational attainment. Heyns based her work on the Equality of Educational Opportunity survey; Jencks and Brown utilized the 1960 Project Talent sample for ninth grade students; and Alexander, Cook, and McDill based their work on data from the Academic Growth Study conducted by the Educational Testing Service.

The analysis used by Heyns (1974) was based on data collected by the Equality of Educational Opportunity survey conducted in the fall of 1965 (Coleman, et al., 1996). In examining the data, collected by Coleman et al., Heyns selected a subsample of high schools from the total population of schools, and all students enrolled in the selected schools were included. Four-year high schools with ninth graders entering high school and twelfth graders in the final year of high school were selected for the study. The study was restricted to comprehensive metropolitan schools located outside the South. In the 48 schools available for the study, there were 15,384 twelfth graders and 15,894 ninth graders.

The sample selected by Heyns (1974) does not represent a random sample of schools; therefore, the sample does not represent a large and heterogeneous population of urban non-Southern high schools. Specific data regarding the demographics of the sample were not provided. Heyns noted that the distribution of the total sample by sex and father's educational attainment within racial groups compared favorably with 1965 population reports for urban pupils enrolled in public high schools. Nonwhite students were overrepresented in the study and the 48 high schools selected were larger and more likely integrated than the typical American high school in 1965. Therefore, generalizations based on this study should be made cautiously.

The methodologies employed in the study were regression and analysis of covariance. The models utilized in the study, which refer to within-school equations and path analyses, summarize the relationships studied (Heyns, 1974). In the analysis, three socioeconomic background variables, father's occupation (O), father's educational attainment (E), and the number of siblings (S), are considered to be effects that influence verbal achievement (V) directly and curriculum placement (C) both directly and indirectly. The researchers contended that socioeconomic background and verbal achievement were antecedent to curriculum placement (C), grades (G), and student aspirations (A). The information collected for the analysis was obtained from student self reports. Response rates were included for the twelfth-grade sample (between 84.9% and 100.0%), but were not included for the ninth grade sample.

Dependent variables included in the study were the raw scores on the verbal achievement test (V), which ranged from 0 to 60 points. Curriculum placement (C) was coded 1 for students in a college preparatory curriculum and 0 for students in a non-college preparatory curriculum. Grades (G), self-reported by students, were an average of all courses taken, coded from 1 to 5. Aspirations (A) were coded as the actual years of schooling aspired by the student. With

reference to the variables included in the analysis, Table 4 presents the means, standard deviations, and proportion of variance between schools.

Table 4

Means and Standard Deviations of Variables for Total Pooled Sample and Proportion of Variance between Schools, Twelfth Grade

| Variable | Mean | SD | Proportion of Variance between Schools |
|----------------------|--------|--------|---|
| Verbal ability | 36.633 | 12.834 | 18.126 |
| Father's occupation | 55.151 | 18.702 | 13.073 |
| Father's education | 11.656 | 3.414 | 14.417 |
| No. of Siblings | 2.860 | 2.263 | 8.204 |
| Grades | 3.421 | 0.910 | 5.433 |
| Curriculum placement | 0.520 | 0.500 | 10.827 |
| Aspirations | 15.014 | 2.222 | 10.951 |

Note: From "Social Selection and Stratification within Schools by B. Heyns, 1974, *American Journal of Sociology*, 79(6), p.1439.

Analysis of covariance is used by Heyns (1974) as a method to analyze the variance between and within school components. Heyns asserts that curriculum placement and grading are separate processes that occur within schools and should be distinguished from the effects of being in a particular school. According to Heyns, an analysis of this type is important because the likelihood of students being placed in a college preparatory curriculum depends on both the

student's specific position relative to others within a school and the relative size of the college preparatory curriculum compared with other schools.

The findings of Heyns (1974) reveal that social background measures are highly interrelated and have a unique effect on achievement scores. The within-school zero-order correlations listed in Table 5 reveal the importance of verbal ability in predicating curriculum placement (direct effect of .44). The effect of verbal ability on curriculum placement explains 17.6% of the variance, or slightly less than 65% of the total variance. Social class explains 3.2% of the total variance in curriculum placement; however, the collective effects of verbal achievement and social class account for 25% of the total variance explained. Heyns findings indicated two major conclusions. First, educational stratification largely results from differential performance on achievement tests. Secondly, curriculum assignment differentiates and labels students academically. Heyns concludes that equality of education is related to tracking which ensures segregation and differential access to school resources and personnel.

Heyns (1974) conducted one of the earlier studies on the social selection and stratification within schools. The researcher viewed social selection as a process that operated within schools and contended that aspirations and attainment are in part structured by academic differentiation.

Heyns further contended that high schools structure student attainment selectively through differentiation of curriculum and allocation of rewards. The relationship between high school graduation and college attendance is essential to differential attainment and is in part structured by access to college preparatory curriculum. In 1972, Jencks and Brown (1975) using a national sample, estimated that 85% of the high school seniors in a college preparatory curriculum enrolled in college the following year, compared with 15% who were in another curriculum.

Table 5

Within-School Zero-Order Correlation Matrix; Twelfth Graders in 48 High Schools

| | V | O | E | S | G | C | A |
|-------------------------|-------|-------|--------|--------|--------|--------|--------|
| V) Verbal ability | 1,000 | .2049 | .2267 | -.2014 | .3712 | .4933 | .4250 |
| O) Father's occupation | ... | 1.000 | .4653 | -.1311 | .1524 | .2382 | .2399 |
| E) Father's education | ... | ... | 1.0000 | -.1489 | .1611 | .2596 | .2785 |
| S) No. of siblings | ... | ... | ... | 1.0000 | -11.05 | -1661 | -.1550 |
| G) Grades | ... | ... | ... | ... | 1.0000 | -.3081 | .3007 |
| C) Curriculum placement | ... | ... | ... | ... | ... | 1.0000 | .5607 |
| A) Aspirations | ... | ... | ... | ... | ... | ... | 1.0000 |

Note: From “Social Selection and Stratification within Schools by B. Heyns, 1974, *American Journal of Sociology*, 79(6), p.1441.

The research conducted by Heyns (1974) examined the stratification patterns within schools in an effort to assess the role educational institutions play in social selection and the allocation of educational resources. According to Heyns (1974), tracking and assignment policies typically segregate students within schools and define an academic hierarchy through which certain rewards may be allocated. Earlier researchers (Coleman, et al., 1966; Jencks & Brown, 1975) concluded that resources do not determine achievement differences between schools and the researchers ignore or understate the effects of stratification patterns and access of resources within schools. Heyns asserted that “if access to better teachers, counseling, and highly motivated, academically oriented peers affects achievement to any degree, such resources should operate between curricula within schools as well” (p. 1435).

Jencks & Brown (1975) conducted a study of the effects of high schools on students. The researchers used data from Project Talent, a longitudinal study of students who were enrolled in grades nine through twelve in March, 1960. Project Talent selected a stratified random sample of 1,063 public and private senior high schools. Jencks and Brown selected a sub sample of 98 comprehensive public high schools because Project Talent retested all twelfth graders in these schools in the spring of 1963 using the same tests that were administered to ninth graders in 1960. Jencks and Brown were able to use a large sample of individuals who had been enrolled in the same school for three years, and who had been pre-tested and post-tested. In addition, Project Talent followed up with these students in the fall of 1964 and in the fall of 1968.

The study focused on several variables, which include gender, race, socioeconomic status, siblings, curriculum, educational plans, grades, education expectation, occupation, and eight standardized tests. Analysis of covariance and regression were the methodologies used to analyze the data. Analysis of the covariance included the calculation of each student's deviation from his or her school's mean on each of the variables listed in Table 6. In addition, the researchers computed the regression of students' twelfth-grade deviation scores for each test, on all of their deviation scores for certain ninth grade characteristics. The researchers used the within-school coefficients to predict each school's twelfth-grade mean on each test.

Based on analysis of the data, Jencks and Brown (1975) indicated several policy implications or objectives relevant to increasing the effect of high schools on their students. The policy objectives include increasing the schools' effectiveness; making schools accountable; reducing inequality of opportunity (reducing the effects of race, sex, parental SES, or other factors on any given outcome); and reducing inequality of conditions. According to Jencks and Brown, the effect of equalizing high school quality can be assessed by the gap between certain

visible social groups, such as males and females, Blacks and Whites, or children from high and low SES homes. The researchers indicate that SES has no significant effect on cognitive growth between ninth and twelfth grades (standardized coefficient less than 0.01). In addition, when ninth grade test scores are controlled, SES has a substantial effect on both occupational status and career plans at age 23.0.

In a similar study, Alexander, Cook, and McDill (1978) examined students' course work patterns and grades received during the ninth, eleventh, and twelfth grades over the junior high school and senior high school years. The purpose of the study was to assess the degree to which early patterns of course selection and performance are important considerations for track placements. A structural equation model of curriculum processes was developed for the study. The researchers employed a curriculum dichotomy (college preparatory vs. all others) and evaluated curriculum differences across several junior year and senior year outcomes. Alexander, Cook, and McDill analyzed data from the Study of Academic Prediction and Growth conducted by the Educational Testing Service between 1961 and 1969. In describing the sample, the researchers indicated the selection process, however, sample size or specific demographic characteristics of the group studied was not included. Their findings indicated that traditional academic criteria, including relevant prior coursework and grade performance, are influential in determining students' high school track placements. Educational tracking, Heyns (1974) asserted, or any system of stratification ensures segregation and differential access to school resources and personnel.

In more recent years, the study of tracking has continued (Finley, 1984; Gamoran, 1987; Hoffer, 1992). Gamoran used a longitudinal, nationally representative sample of public school students from the High School and Beyond data base to study ability grouping. The results of his

study showed that students' opportunities to learn may be stratified by influences of curriculum tracking and course-taking. Further results indicated that the gap between Blacks and Whites in similar programs of study was larger than the overall gap between Blacks and Whites.

Functional Orientation

According to Lovelace, (1999) functional orientation “argues that tracking is useful for grouping students to receive appropriate instruction” (p.14). This orientation holds that instruction is more effectively delivered when the teacher can deliver the material at a level most understood by the entire class.

Nevi (1987) asserts that “tracking was born the first time an enterprising young teacher in a one-room schoolhouse in the 1800s divided his or her class into those who could read and those who didn't” (p. 25). As a proponent of tracking, Nevi contends that an appropriate tracking program has the same expectations for all students and uses tracking to provide for the “remediation and upgrade of selected students” (p. 26).

Lovelace (1999) posed the question: Should tracking be abolished? According to Lovelace, until recently, tracking has been such a universal practice of high schools that there have not been enough untracked schools to assess their effectiveness. In reference to the book *Constructing School Success: The Consequences of Untracking Low-Achieving Students*, (Mehan et al., 1996). Lovelace reported

the book reports on a program in San Diego that moves a select group of low-track students into high tracks and gives them intensive academic support-all the while keeping the schools' track system intact. Contrary to the title, no students were untracked” (p. 17).

Lovelace further contended that it is a good idea to identify students who could benefit from a more challenging academic curriculum and place them into more rigorous tracks, but the study conducted by Mehan et al. does not gauge the effects of detracking.

Academic Achievement in High School

Another significant factor related to the underrepresentation of minorities in the college-going category is poor high school performance. Minority students take fewer rigorous college preparatory courses in high school (NCES, 2000), and their grade-point averages in the courses that they do take are generally lower than for White or Asian students.

The College Board (1999) collects data on students who take the Scholastic Aptitude Test (SAT I) yearly. Colleges typically use the SAT I as a prediction tool in the admissions process. Many studies have been conducted on the validity of the SAT I in predicting the success of students in college. The majority of these studies use the high school record (i.e., grade averages, rank) and SAT scores as predictors and freshman GPA as the criterion representing success in college. According to The College Board (2000), freshman GPA is used as a criterion because freshman courses are similar and less variable than at any other year of college and freshman grade averages are highly correlated with cumulative grade averages. Furthermore, the College Board reports that the most accurate predictors of first-year college success are SAT I performance and high school grades. Bridgeman, McCamley-Jenkins and Ervin (2000) reported that together these two measures have a high multiple correlation ($r = .7$). Table 6 reports the grade point averages for students from certain ethnic groups who took the SAT exams in 1998 and for all California high school graduates in 1990.

Table 6

Grade Point Averages by Ethnic Group, 1998 SAT-takers and 1990 California Graduates

| Race/Ethnicity | National SAT-takers, 1998 | California, All Graduates 1990 |
|------------------|---------------------------|--------------------------------|
| White | 3.29 | 2.74 |
| Asian | 3.36 | 3.11 |
| Hispanic | 3.18 | 2.48 |
| Native Americans | 3.09 | - |
| Black | 2.90 | 2.33 |

Note: From Gandara, P. & Maxwell-Jolly, J. (1999). *Priming the pump: Strategies for increasing the achievement of underrepresented minority undergraduates* (College Board Report No.987257). New York, NY: College Board Publications

Hispanic, Black, and Native American high school students, including those who intend to go on to college, perform at lower levels in the classroom than Asian and White students. This evidence suggests that their performance may be even lower than the GPA data indicate because grade-point averages in low-performing schools, such as those attended by many low-income minority students, do not reflect the same level of accomplishment as in high performing suburban schools, more often attended by high-income White students (College Board, 1999).

Alexander, Cook, and McDill (1978) conducted a study that focused on a subset of a cohort of students in the Academic Growth Study. Approximately 5,600 students in 27 high schools in 17 communities took the Academic Growth Study. Students were eliminated from the study because of a lack of race information, two schools were eliminated because they were vocational, and other students were excluded from the analysis because of missing data. With the

elimination of these students, the sample was reduced to approximately 1,600 students. In the ninth and eleventh grades, students were administered the SCAT (School and College Ability Tests) verbal and quantitative batteries, six Sequential Tests of Educational Progress; and an attitude questionnaire. In the senior year, the students were administered the PSAT (Preliminary Scholastic Aptitude Test) and the SAT (Scholastic Aptitude Test). The study focused on the relationship between students' socioeconomic background, intervening social-psychological variables, and subsequent educational and occupational attainment. Regression procedures were used to analyze the data. One of the findings of the study indicates that students in the college track score approximately 16 points higher than similar non-college track students on the SAT verbal (about 0.15 standard deviations), and 47 points higher on the SAT quantitative (about 0.40 standard deviations).

The NCES (2000) reported that undergraduate enrollment of minority students increased from 17.4% in 1976 to 26.4% in 1995. The rise in enrollments was primarily due to the increased enrollment of Asian/Pacific Islander and Hispanic students. In the fall of 1976, Blacks accounted for 10.1% of the undergraduates enrolled in colleges and universities and in 1995, Black undergraduates accounted for 11.1% of the total enrollment at colleges and universities (NCES, 2000).

Mahoney and Merritt (1993) presented exploratory research comparing college aspirations and expectations of Black and White high school seniors in Virginia who desired to attend college. The data for the study was obtained from a survey sponsored by the Virginia Department of Education in 1987 of Black and White seniors enrolled in public high schools. Of the 40,878 surveys, 40,712 responded to the question regarding the importance of parents to high school seniors with college aspiration in making educational plans. The results of the study

indicate that Black students use high school counseling to develop educational goals significantly more than whites do ($p < .05$). In addition, their results indicated that more than 60% of White students and 40% of Black students were enrolled in a college preparatory curriculum. The researchers found that a strong relationship existed between the type of high school curriculum in which students were enrolled and their desire for a college education. The data for this study was obtained from a survey sponsored by the Virginia Department of Education in 1987. Subjects of the study were 53,083 seniors enrolled in Virginia public high schools. The researchers used chi-square analysis to test for significant differences between the races.

According to Mahoney and Merritt (1993), three policy issues were raised as a result of their findings. The researchers contended that

“educators should be aware of the degree that Black students rely upon them in planning for the future; educators must continue to examine closely the procedures by which students who desire to go to college are included in (or excluded from) college preparatory curricula; and that both races placed high levels of importance on parental encouragement.” (p. 37)

Mathematics Achievement

Mathematical literacy is gaining importance as a prerequisite for participation not only within the United States, but also in the larger global economy. Concern over the level of academic achievement among our nation’s school population heightened with the publication of *A Nation at Risk* (1983). With this report, the National Commission on Excellence in Education sought to generate reform in the educational system and to renew the Nation’s commitment to schools and colleges. One finding indicated that many 17-year-olds lacked higher order intellectual skills and nearly 40% cannot draw inferences from written material. Only one-third

of the 17-year olds could solve a mathematics problem requiring several steps. The Commission reported that between 1975 and 1980, remedial mathematics courses in 4-year colleges increased by 72% (A Nation At Risk, 1983). The Third International Mathematics and Science Study (Peake, 1996) revealed that U.S. students continue to lag behind other highly technological nations in mathematics and science achievement. Singapore was the first ranked country in mathematics and science for both the eighth and seventh grade students. The study also revealed that the United States ranked 31st in eighth grade achievement and 27th in seventh grade achievement.

The National Assessment of Education Progress (NAEP) and the National Council of Teachers of Mathematics (NCTM) posited that the traditional approach to mathematics education in secondary schools emphasizes the selective nature of mathematics, reserving access to advanced coursework to the “brightest” students (Lindquist, 1989). Other studies have indicated that mathematics achievement in the early part of high school is the single strongest predictor of whether a student will continue to take higher-level math courses in high school and that early access to algebra may have positive consequences for the ultimate mathematics attainment of high school students (Smith, 1996).

Researchers are now challenging the belief that algebra, currently considered a gatekeeper course, cannot be grasped by large numbers of urban minority and poor people (Reyes & Stanic, 1988). Researchers are exploring the assignment of students into curriculum tracks at the secondary level and factors that determine who receives certain coursework (Jones, Bruton, & Davenport, 1984).

The proportion of 8th graders taking the National Assessment of Educational Progress mathematics assessment who reported taking algebra has increased. In 1992, only 20% of

students reported taking algebra. In 1996, the next year the NAEP mathematics assessment was administered, 25% reported taking algebra. However, minority and low-income students continue to be less likely to take challenging mathematics courses in middle school than other students (Smith, 1996).

Students of all income levels who take rigorous mathematics courses in high school are much more likely to go to college, and among low-income students the difference is particularly dramatic. Students from low-income families who took algebra I and geometry were almost three times as likely to attend college as those that did not. Although 71% of low-income students who took algebra I and geometry went to college, only 27% of low-income students who did not take algebra I and geometry went on to college. In middle and high-income families, 94% of students from high-income families, and 84% of students from middle-income families who took algebra I and geometry went on to college (NCES, 2000).

Jones, Burton, and Davenport (1984) conducted a study using National Assessment of Educational Progress (NAEP) results for 1973 and 1978. The data for the study was collected at 400 schools (both private and public) approximately 4,507 students. The students were tested at age 13 and age 17 using a subset of mathematics exercises adapted from the first mathematics assessment. The data was analyzed using a series of multiple regressions for the total samples and separately by race. The researchers examined the achievement of Black students in mathematics. An analysis of the differences in mathematics achievement was explored in relation to the characteristics of schools and the individual students. A substantial difference was found between average mathematics achievement scores of white and black youth. Jones et al. (1984) concluded that school-to-school difference in background variables and individual background difference within school equally influence the mathematical achievement of

students. A particularly influential predictor of mathematics achievement is the number of high school algebra and geometry courses taken, for which the standardized regression coefficient is .37. According to Jones et al. high school grade point average and grade in school contributed to the prediction, with regression coefficients of .20 and .14, respectively. The regression coefficients for each of the predictors were significant at .01 (Jones et al.). In a similar study, Welch, Anderson, and Harris (1982), using NAEP data from 1977-1978, examined three separate national samples of about 2,200 in-school 17-year-old students. Welch et al. concluded that the number of semesters of high school mathematics was highly correlated to mathematics achievement.

Smith (1996) completed a study of the benefits of early access to algebra. The theoretical model outlined two factors that contribute to individual differences in mathematics attainment. These factors were the effect of social background and high school experiences on mathematics outcomes. Smith contended that mathematical achievement in the early part of high school is the single strongest predictor of whether a student will continue to take advanced mathematics courses and whether the student will continue to achieve in high school. Other researchers proposed that there are both psychological and pragmatic causes of this consequence. Ethington (1991) proposed that learning in mathematics builds heavily on prior knowledge and when students experience difficulty in the first part of high school, their ability to continue learning is severely limited. According to Ethington, students who do not do well in mathematics by tenth grade may feel discouraged from continuing. Ethington concluded that students in this position might be prevented from continuing by teachers or counselors until they demonstrate greater proficiency of mathematics skills.

English Achievement

In 1983 “A Nation at Risk” recommended that all students seeking a high-school diploma be required to enroll in a core curriculum composed of four years of English and three years of social studies, science, and mathematics (National Commission on Excellence in Education). Most states, including Virginia, are requiring high school students to earn four Carnegie units of credit in English. As high school requirements have increased, colleges have noticed a decline in the communication skills of its applicants. Skills such as writing serve important functions to the admissions process and placement of prospective students. The College Board echoes this recommendation and encourages students in college to enroll in English to improve their writing skills, reading comprehension and vocabulary. In Virginia, students are required to take four years of English to meet graduation requirements. Most high schools and colleges throughout the country have embraced this standard and have included assessments to measure student competency in English (Virginia Department of Education, 1999).

The primary goals of English education in the Commonwealth of Virginia (Virginia Department of Education, 2000) are “to teach students to read and to prepare students to participate in society as literate citizens, equipped with the ability to communicate effectively in their communities, in the work place, and in postsecondary education” (pg. 3).

Standards of Learning

In April 1994, the Board of Education of the Commonwealth of Virginia, under the leadership of four school districts, reviewed and revised drafts of proposals for new educational standards. Thousands of Virginia’s parents, teachers, principals, school board members and community leaders contributed to the appraisal of the standards. After public hearings and debate, the Board of Education of the Commonwealth of Virginia adopted new standards of

learning (SOL) in the areas of English, mathematics, history/social science, science, and computer/technology. These standards set targets and expectations for what teachers teach and what students learn. The Virginia Board of Education set forth to use these standards to inform parents and teachers of what students would be expected to learn

After the standards were developed, the Virginia Department of Education collaborated with Harcourt Educational Measurement to develop a series of tests to measure student achievement against the standards. The test development began in 1996 and was completed in 1998 with assessments for students in grades 3, 5, 8, and high school end of course tests. In addition, Harcourt Educational Measurement staff developed assessment blueprints for each grade and content area. The blueprints served as maps, or plans, for test constructors and as a guide in further development of the SOL tests.

The Virginia English Standards of Learning assessments are administered in grades 3, 5, 8, and 11. These standards are organized in four related strands: oral language, reading/literature, writing, and research. Students in the eleventh-grade are administered two English tests. The first test contains multiple-choice items and measures student success in reading, literature, and research. The second English SOL is composed of a writing prompt which measures the writing ability of students.

Theoretical Framework

“Tracking is an institutional practice that promotes or deters equity and accounts for substantially significant differences in access to higher education” (Oakes, 1992). Numerous recent reform and restructuring efforts have sought alternatives to tracking. Theoretically, the issue of detracking or untracking is grounded on a phenomenon called ability formation, the process used by individuals to form conceptions of their individual abilities and the abilities of

others (Rozenholtz & Simpson, 1984). According to Rozenholtz and Simpson, “Although many social forces may coalesce to determine widely accepted characteristics of intellectual ability, it is the school to which we assign the institutional right and obligation to define intellectual ability for children” (p. 33). In this model, students are viewed as active participants in their own socialization. Student interpretations are influenced by the structure of their daily classroom experiences.

Several processes characterize the ability formation theory. The first process presented by Rozenholtz and Simpson (1984) posits, “intellectual ability is formed comparatively and is a relative concept” (p. 36). The second process of the theory maintains that feedback from students, teachers, and peers influence ability perceptions. According to Rozenholtz and Simpson, the third process maintains that the way daily academic activities are organized will suggest how academic ability is structured. The final process defined by Rozenholtz and Simpson maintains “the way in which performance evaluations are organized and interpreted will provide a language within which students will cast their interpretations of ability,” (p. 36). The basic tenets of ability formation provide a philosophical base for many detracking and untracking programs. The AVID program is organized to include the processes outlined in the theoretical framework.

Advancement Via Individual Determination Program Research

Program Introduction

AVID, Advancement Via Individual Determination is a college preparatory program for middle and high school students. The expressed goals of the program are to motivate and prepare students from underrepresented ethnic minority groups or students from low income families of any ethnicity to perform well in high school and seek a college education. In order to

achieve these goals a distinctive approach to curriculum and instruction is employed in the AVID class (Mehan et al., 1996). The methodologies employed by teachers in delivering the curriculum are referred to as WIC: Writing to learn activities, Inquiry, and Collaboration.

Writing is used as a tool for learning in the AVID elective class. Students are taught a special form of note taking called the Cornell system. In this system of note taking, students are required to take notes from their academic classes in a wide right hand margin on a sheet of paper; and as homework, students are asked to develop questions based on the notes in a narrow left-hand column on the same sheet of paper. The Cornell method of note taking requires students to review, analyze, and summarize their course content. In addition to taking notes, students are required to write frequently in the classroom via learning logs, quick writes, and essays (Mehan, et al., 1996).

Inquiry refers to the method used to ask questions in the AVID classroom. Students are taught the different levels of cognitive thought and questioning. College students are employed to tutor AVID students two periods a week. Students prepare for tutorial groups by developing questions about the material they are studying, using their Cornell notes. In small groups, under the tutors' guidance, students quiz one another, discuss class notes, clarify questions, review for tests, and resolve homework problems with the expectation of greater student proficiency in all academic classes. The AVID tutors are trained to help students clarify their thoughts by using the different levels of questioning (Mehan, et. al 1996).

In the AVID classroom teachers use collaboration to help students achieve their instructional goals rather than having them work independently. Collaborative study groups enable students to serve as sources of information and feedback for each other. AVID asserts that collaboration shifts the responsibility of learning from the teacher to the student. The AVID

curriculum focuses on organizational skills, time management, study skills, critical reading/thinking skills, and test-taking skills (Guthrie & Guthrie, 2000).

Motivational activities and career and college exploration are scheduled weekly during the AVID class. Guest speakers expose students to career options and provide information on their education, work, and goals. Students regularly visit colleges and universities to participate in tours, workshops, performances, and many other collegiate awareness activities (Guthrie & Guthrie, 2000).

AVID teachers serve as advocates for students. The teachers assist students in removing impediments to their academic achievement. One of the most important functions of the AVID teacher is to monitor the course selections of students to ensure a college preparatory focus with appropriate rigor. AVID teachers intervene on students' behalf with other teachers, administrators, counselors, and college admissions officers. Counselors conduct classroom guidance on topics related to college admissions. In addition, counselors assist students completing the college admissions process. The teacher and counselors promotes self-direction by instructing students in locating and using resources appropriately (Swanson, 2000).

The relationship among peers is an integral facet of the program. AVID students share commonalities. AVID students are enrolled in an elective class that meets daily. Notebooks, which the students carry, are marked with the program logo. Within the AVID classroom, the students develop "academically oriented friendships and develop new identities" (Mehan et al., 1996). Students learn to scaffold the educational system with exposure to special note taking techniques, test-taking strategies, college application procedures, SAT test timelines, and financial aid and scholarship information. Mehan further asserts that AVID provides students

with social supports and exposes them to the “hidden curriculum of the school, teaching explicitly in school what middle-income students learn implicitly at home” (p. 149).

Parents play a vital role in the AVID program. At the beginning of the school year, parents sign a contract indicating their commitment to assist students in academic endeavors. “The parents of AVID students have high expectations and aspirations for their children, but reportedly they lack the knowledge to propel their children towards their goals” (Mehan et al., 1996, p.190).

In order to garner acceptance to college, students must be academically qualified by taking rigorous, challenging courses; earning better grades and obtaining high achievement on standardized achievement measures (The College Board, 1999). The AVID elective class serves as a support for students and parents as they prepare for acceptance in a 4-year college or university. As students progress through the program, they receive the full benefits of AVID (Swanson, 2000). Swanson further contended that college preparatory curriculum and rigorous courses are more realistic choices for students because of program participation.

AVID Research

The majority of the literature related to the Advancement Via Individual Determination program is not located in referred journals. The studies are descriptive in nature and were often commissioned by the national AVID office. Therefore, the rigor and the research design of the studies reviewed are questionable and possibly biased or self-serving. However, the literature reviewed adds important information about the topic.

Guthrie and David (1994) completed a descriptive report for the AVID Center that focused on the conditions of a successful AVID program related to implementation and dissemination strategies. The report was commissioned by the California Department of

Education for the AVID Project. The researchers interviewed AVID coordinators, AVID students, tutors and subject area teachers of AVID students, as well as site, district, and country administrators from 15 high schools in 13 districts.

According to the researchers, the key structural element of AVID is the AVID elective class taught by the AVID teacher and staffed with college tutors. The AVID teacher works with a site team of subject area teachers, counselors, administrators, and students to support the enrollment of AVID students in college-preparatory courses. According to the researchers, students are selected to participate in the program through a rigorous process that identifies ethnically underrepresented and low-income students who have average and above average standardized test scores but low grades. The students must be willing to make a commitment to the program and have parental support.

Guthrie and David (1994) reported that AVID students in the program enroll in their high schools' advanced courses to prepare them for university eligibility. In the AVID elective class, students receive training in note taking, study skills, test taking, writing, and college entrance preparation. Assistance is provided for students in preparing for college entrance exams and applying for admissions and financial aid. In addition, students also hear guest speakers from the community, visit college campuses, and attend various cultural events. The students interviewed during the research of Guthrie and David described the support of the AVID teachers, the assistance of the tutors, and the note-taking process as the most important elements of the program.

Swanson (2000), the founder of AVID, reported that of the first six AVID classes that graduated in San Diego, 178 of 181 AVID students enrolled in college with 89% in 4-year institutions and 11% enrolled in community colleges. The cumulative grade point average of the

first six classes at San Diego State University was 2.46 and the freshman average at the university was 1.9. According to Swanson, the information was obtained from the San Diego State University, Office of Institutional Research. Little can be discerned about the statistical processes used to generate the data. Demographic information about the students was not reported in the article.

Several research studies have been published concerning the sociological factors related to AVID and detracking (Hubbard, 1999; Hubbard & Mehan, 1999; Hubbard & Ottoson, 1997; Mehan, Hubbard, Villanueva, 1994). Hubbard (1999) examined the gender-specific strategies used by 30 African American high school students to remain academically successful. All students in the study participated in the AVID program. The ethnographic study was conducted at a high school in San Diego. Hubbard traced the strategies students used to remain academically successful.

Guthrie and Guthrie (1994) reported that the goal of the middle school AVID program is successful transition to a high school curricular path that will lead to college. They conducted longitudinal research on middle grades AVID that began in 1997-1998. The study began with an initial cohort of 435 AVID students and established a baseline for tracking the students' transition to high school and postsecondary education. In 1998, the researchers added a new cohort of 9th grade students in order to expand the sample size and to increase regional representation. This increased the study sample to more than 1,100 students. Of the total, 225 in Cohort 1 and 281 in Cohort 2 had been enrolled in AVID in middle school. The students were followed into tenth and eleventh grade in 1999-2000.

Guthrie and Guthrie (2000) focused their longitudinal research on two aspects of AVID. The first component of the research evaluated the effects of middle school AVID on the two

cohorts of high school students. The purpose of the research was to establish baseline information on the design, implementation, and effectiveness of middle school AVID programs in California. Guthrie and Guthrie's research was designed to determine whether and to what extent participation in middle grades AVID had an effect on students' high school performance as measured by grade point averages, course taking patterns, and credit accumulation.

The second component examined by Guthrie and Guthrie (2000) was the impact of participation in AVID beyond high school. An assessment of the students' post-program experiences; e.g., enrollment and performance in university were assessed. The researchers identified cohorts of 1996 and 1997 high school graduates from AVID programs in several school districts in California.

The researchers identified two key findings in the second and third year of the longitudinal study. First, enrollment in algebra in middle school by Cohort 1 was found to be the single most critical predictor of grade point average (GPA) and college credit accumulation. Students with middle school algebra achieved a GPA of 3.0 or more whether they were in AVID or not. Those without middle school algebra had a GPA of 2.51.

Secondly, students with two years of middle school AVID had a significantly higher GPA than those with only one year of AVID or no AVID experience in middle school. The researchers noted that this difference was maintained in 1999-2000 among boys (but not girls) in Cohort 1 ($p = .05$); girls with two years of AVID also performed better than the other, but only slightly (the researchers did not provide additional statistical measures for this group or t scores for either group). There were no statistically significant differences among the Cohort 2 students. Guthrie and Guthrie (2000) reported that the overall GPA of both cohorts of AVID students was 2.69 and 2.66.

To conduct the research, Guthrie and Guthrie (2000) developed a database on the two cohorts of students that contained background variables and outcome data. Most of the data were collected through a review of student transcripts. In addition, descriptive data on each of the AVID programs and schools were collected in order to interpret possible variations in student enrollment patterns and academic outcomes. The primary comparison group included 323 eleventh graders and 226 tenth graders who were not enrolled in middle school AVID programs. According to Guthrie and Guthrie, the comparison group was enrolled in high school AVID because they met the same selection criteria as their peers who had been enrolled in middle school AVID programs. Information on the selection criteria was not provided in the study. The comparison group shared the benefits of AVID in high school with the treatment group, but was not enrolled in the AVID program at the middle school level.

Three performance indicators were examined in the longitudinal study of the middle grades: high school GPA, credits earned, and SAT-9 standardized test scores. For the initial cohort, Advanced Placement (AP) courses taken were also examined. Enrollment in Advanced Placement courses was measured by counting the number of AP courses in which students had enrolled. GPA, credits, and AP course data were based on the fall 1999 transcripts. Guthrie and Guthrie (2000) calculated grade point averages on a 4.0 scale, where A = 4 and D = 1. Advanced standing and “honors “courses were weighted; therefore, students could earn more than a 4.0 GPA.

To examine credits, the researchers used the A-F credits or course requirements for admission to 4-year public universities in California: the University of California and California State University systems. Students receive 5 credits for each college preparatory course taken. A total of 220 credits are needed to graduate; 150 of these are the required A-F subjects. The

required subjects include 20 credits of history/government, 40 credits of English, 30 credits of mathematics, 20 credits of laboratory science, 20 credits of foreign language, and 20 credits of eligible electives.

Guthrie and Guthrie (2000) examined the Total Reading and Total Math scores from the SAT-9, a standardized test given each spring to every student in California’s public schools. SAT-9 scores are reported in NCE (Normal Curve Equivalent) scores, which are based on a normalized curve of 99 equal units with a mean of 50. Students who score at or near 50 NCEs are near the national mean of the norm group.

Table 7

High School GPA by Years of Middle Grades AVID

| Middle Grades AVID | Cohort 1 (Grade 11) | | Cohort 2 (Grade 10) | |
|--------------------|---------------------|----------|---------------------|----------|
| | Mean | <i>N</i> | Mean | <i>N</i> |
| Total AVID | 2.69 | 186 | 2.69 | 253 |
| 1 Year | 2.70 | 139 | 2.71 | 163 |
| 2 Years | 2.67 | 48 | 2.65 | 90 |
| No AVID | 2.76 | 301 | 2.65 | 208 |

Note: From “Longitudinal Research on AVID 1999-2000: Final Report,” by L.F. Guthrie and G. P. Guthrie, 2000. Center for Research, Evaluation, and Training in Education, Burlingame, CA. Adapted with permission of the author.

According to Guthrie and Guthrie (2000), on an average, the tenth and eleventh grade AVID students had a GPA of 2.69. The Cohort 1 and 2 students who did not take AVID in middle school earned a GPA of 2.76 and 2.65, respectively. The researchers noted that while students without AVID in middle school had a somewhat higher GPA in Cohort 1, there were no

significant differences in the GPA of students with middle school AVID experience. In the 1998-1999 report, the researchers found that students who were in AVID for both years in middle school earned a significantly higher GPA than did those with no middle school AVID ($p = .01$) or with only one year of AVID ($p = .01$). Guthrie and Guthrie noted that in 1999-2000, the differences disappeared, and all students converged around a GPA of 2.65 to 2.75. The findings of Guthrie and Guthrie's (2000) research indicate that taking algebra in middle school was strongly related to course grades. Students in Cohort 1 who took algebra along with AVID in middle school earned a GPA of 3.2, however, those without middle school algebra had a GPA

Table 8

GPA by Middle School Algebra and AVID

| | Cohort 1 (Grade 11) | | Cohort 2 (Grade 10) | |
|------------|---------------------|-----|---------------------|-----|
| | Mean | N | Mean | N |
| Algebra | | | | |
| AVID | 3.20 | 45 | 2.83 | 103 |
| No AVID | 3.44 | 52 | 3.07 | 28 |
| No Algebra | | | | |
| AVID | 2.53 | 141 | 2.59 | 150 |
| No AVID | 2.63 | 249 | 2.59 | 180 |
| Total | 2.74 | 491 | 2.67 | 461 |

Note: From “Longitudinal Research on AVID 1999-2000: Final Report,” by L.F. Guthrie and G. P. Guthrie, 2000. Center for Research, Evaluation, and Training in Education, Burlingame, CA. Adapted with permission of the author.

of only 2.5 ($p = 2.5$). In addition, Cohort 1 students with algebra achieved a GPA of 3.0 or more whether they were in AVID or not. In Cohort 2, students who took algebra and AVID in middle school earned a GPA of 2.83, while middle school AVID students without algebra earned a 2.59 GPA. The difference was also statistically significant ($p = .05$).

The minimum number of A-F credits needed for admission to the University of California or the California State University system is 150. Students earn between 35 and 40 A-F credits per year. By the end of the first semester of grade 11, students would probably have earned from 90 to 100 credits, and by mid-year of grade 10, students should have earned 55 to 60 credits.

Guthrie and Guthrie (2000) disaggregated credits earned by years of middle school AVID, and found that two years of middle school AVID made a difference of about 3 credits on average for Cohort 1, compared to students without middle school AVID, and about two credits for Cohort 2. These differences were not statistically significant, but the researchers pointed out that they do indicate a trend toward increased credit earning. When Guthrie and Guthrie examined credits earned by enrollment in algebra and middle school AVID, Cohort I students earned more than 116 credits, and Cohort 2 students earned more than 60 credits. Furthermore, unpaired comparisons showed that enrollment in algebra made a significant difference for AVID students accumulation of credits for both cohorts ($p = .0001$).

In addition to credits, Guthrie and Guthrie (2000) examined SAT-9 NCE (Normal Curve Equivalent) standardized test scores for Cohort 1 and 2 AVID students. All students in the sample did not complete both portions of the test; therefore, the “N” in their analyses based on Total Math and Total Reading scores vary. Cohort 1 AVID students had an average Total reading score of 40.7 NCEs and an average Total Math score of 48.9. In Cohort 2, students total

Reading score (42.1 NCE) was also lower than their Total Math score (51.5 NCE). There were some differences between students who took AVID in middle school and those who did not take AVID in middle school, but none of the differences were statistically significant.

Another finding of Guthrie and Guthrie (2000) concerned the number of Advanced Placement (AP) courses of AVID students. The researchers examined the number of AP courses by years of middle school AVID for Cohort 1. According to Guthrie and Guthrie, Advanced

Table 9

SAT-9 Test Scores by Years of Middle Grades AVID

| | Cohort 1 (Grade 11) | | Cohort 2 (Grade 10) | |
|---------------|---------------------|----------|---------------------|----------|
| | Mean | <i>N</i> | Mean | <i>N</i> |
| Total Reading | 40.7 | 513 | 42.1 | 490 |
| 1 Year | 42.0 | 51 | 41.4 | 173 |
| 2 Years | 42.0 | 51 | 41.4 | 94 |
| No AVID | 41.1 | 309 | 42.9 | 223 |
| Total Math | 48.9 | 512 | 51.5 | 490 |
| 1 Year | 47.2 | 147 | 51.1 | 174 |
| 2 Years | 48.1 | 52 | 53.9 | 92 |
| 3 Years | 49.8 | 309 | 50.9 | 224 |

Note: From “Longitudinal Research on AVID 1999-2000: Final Report,” by L.F. Guthrie and G. P. Guthrie, 2000. Center for Research, Evaluation, and Training in Education, Burlingame, CA. Adapted with permission of the author.

Placement courses were not recorded for Cohort 2 sophomores because AP courses are generally not available to students before they are juniors, and in this Cohort 2, only a small number of students were enrolled. Approximately 25% of all students in the sample were enrolled in AP courses with about 10% taking two or more courses. The researchers noted that 12.5% of students with two years of middle school AVID took three or more AP classes, compared to less than 5% of 1-year and no AVID students.

Watt, Powell, and Mendiola (2004) investigated the AVID program in Texas to determine how AVID students performed in comparison to other non-AVID students in Texas. Data was collected on 1,291 AVID students in Texas schools. The data indicated that the majority of the AVID students in Texas were Hispanic (51%) and Black (25%) and female (59%). The researchers found that AVID students attended school at a rate of nearly 5 percentage points higher than other students. AVID students passed the Algebra end-of-course exam at higher rates (12 percentage points) than their classmates in 2000 and they exceed the state average and their classmates' average in 2001. Watt, Powell, and Mendiola found that over 97% of the AVID students in 2002 were on track to graduate with diplomas that would lead to college. In addition, the researchers found that 87% of all AVID students were enrolled in some type of college preparatory course and that the AVID enrollment in AP classes has steadily increased. The findings of Watt et al. indicate that AVID students exceed the performance of non-AVID students in the areas of standardized testing and attendance rates.

Mehan, Hubbard & Villanueva (1994) have conducted extensive research on sociological and academic facets of students participating in the AVID program. Mehan, et al. interviewed 144 of the 1990 and 1991 AVID graduates and 72 of the students who left the program within one year. Their findings indicated that high school students participating in the AVID program

develop a critical consciousness about their educational and occupational futures and the students become academically successful without losing their ethnic identity (Mehan, et al., 1994).

Mehan, Villanueva, Hubbard & Lintz, 1996), report

Although the results of our research are generally positive, we have attributed the success of the program [AVID] to different factors than the program does (e.g., more to social scaffolds and social networks, less to inquiry-based curriculum and collaborative instruction in academic courses). (p. 24)

Mehan, et al. used triangulation to facilitate the research and consulted official school records; interviewed students, teachers, parents, and school officials; and conducted observations in classrooms at 14 schools in San Diego. The subjects of the study were high school graduates from 1990 to 1992. Only students who participated in the AVID program for 3 years (AVID3) and those who had left the program after one semester or one year (AVID1) were included in the study. The number of students in each group was 248 AVID3 students and 146 AVID1 students. The academic performance of students who participated in the program for one semester or one year was compared to the academic performance of students who participated in the program for three years.

Analysis of the data resulted in dividing AVID3 and AVID1 students into three groups. The students were grouped according to their scores on the California Tests of Basic Skills (CTBS) and their grades. The three groups that resulted were high (high CTBS scores and high grades, or middle CTBS scores and high grades) middle (high CTBS scores and middle-level grades, or middle-level scores and middle-level grades), and low (low grades and low CTBS scores) groups. College enrollments of AVID students were compared to those of the U.S. population. AVID3 students had a greater rate of attending 4-year institutions than AVID1

students. The rates of enrollment in 4-year colleges of the two groups also exceeded San Diego (37%) and US (39%) averages.

Slavin and Fashola (1998) identified six programs that were purported to show an impact on dropouts, college attendance, and school performance. Advancement Via Individual Determination was one of the programs critiqued. The evaluation of the programs was based on the following standards: rigorous evaluation, extensive replication, and serving students placed at risk. Descriptive data was presented on the programs. The AVID program was found to partially meet the criteria for evaluation. Slavin and Fashola indicated that AVID appeared to serve students at risk and had been successfully replicated at additional sites. Research conducted on AVID was found to have limitations.

In a review of the Mehan et al. study, Slavin and Fashola (1990) indicated that AVID has some positive effects on students who needed it most. However, they argued that the AVID1 and AVID3 groups in the study were not comparable, because the AVID3 students were able to stay in the program for all 3 years and the AVID1 students dropped out. Slavin and Fashola maintained that the AVID3 students were more motivated, higher achieving, and better behaved than the AVID1 students.

Slavin and Fashola (1998) further contended that

Comparison of both AVID groups to San Diego county and U.S. means are even more susceptible to bias. Students are specially selected for AVID based on high CTBS scores and other indications of promise, and some students do not even make it to the end of the first year and are therefore not included in either group. (p. 86)

Slavin and Fashola (1998) concluded that the college enrollment data for AVID was impressive and the program had a good record in serving students throughout the United States.

For these reason Slavin and Fashola indicated that AVID was “worthy of consideration by other schools serving many students placed at risk” (p.87).

Victory (1998) conducted a causal-comparative study of AVID and Talented and Gifted middle school students to determine if participation in AVID improved student achievement and attendance. Victory posed two major research questions. The questions were as follows:

1. Is there a statistically significant interaction among gender, race/ethnicity (Blacks, Whites), and group membership (AVID, Talented and Gifted) with respect to Stanford total Normal Curve Equivalent (NCE) achievement scores after controlling for initial differences in socioeconomic status?
2. Is there a statistically significant interaction among gender, race/ethnicity (blacks, whites), and group membership (AVID, Talented and Gifted) with respect to attendance after controlling for initial differences in socioeconomic status?

Victory (1998) found that white students who were members of the Talented and Gifted program achieved higher NCE scores in mathematics and language than black students who were members of the AVID program. With respect to attendance, there were no statistically significant interactions found for students in the Talented and Gifted programs, regardless of gender or race/ethnicity. The major finding of the study indicated that AVID students do not achieve as well as Gifted and Talented students.

Victory (1998) failed to indicate the limitations and delimitations of his study. One limitation of the study is the non-comparability of AVID and Gifted and Talented students. The selection criteria for students enrolled in the gifted and talented program include multiple assessment tools but are generally based on performance in the 90th percentile on standardized tests and demonstrate general intellectual aptitude, specific academic aptitude, technical or

practical arts aptitude, or visual or performing arts aptitude. Victory controlled for socioeconomic factors; however, the study failed to address the prior ability of the students in the statistical measure and in the related research. In addition, other than basic demographic information, little was known about the subjects of Victory's study or their tenure in the program.

Previous studies (Guthrie & Guthrie, 2000; Mehan et al., 1996) indicated that at least three years of participation in AVID is needed before achievement gains can be seen. In addition, Slavin and Fashola (1998) maintained that "interventions are needed in secondary schools to increase the chances that students will stay in school, complete their high school degrees, and make transition to post secondary studies or to the workforce" (p. 68).

Chapter Summary

During the past 25 years, the changing demographics in America have altered the landscape of public education. With greater numbers of minorities attending public elementary, middle, and high schools, it is surprising that more of these students are not accessing higher education. The literature is replete with data that suggests factors that impact on the underrepresentation of minority students in higher education. However, few of these studies provide empirical evidence to substantiate their assertions. Factors such as the changing high school curriculum; academic tracking, and poor academic achievement in mathematics and on high stakes tests have purported to significantly impact on the performance of minority students in high school and in higher education.

As the early studies on curriculum differentiation maintained, in many schools, students are often placed in courses based upon teacher recommendation and performance on achievement tests. Low-income and minority students are underrepresented in rigorous courses

such as Advanced Placement. Researchers indicated that although background variables are related to placement in higher level course, it is almost entirely mediated by differential achievement. Therefore, the question remains as to how do educational institutions alter these outcomes for groups of students.

Many initiatives and programs have been developed to impact on the underrepresentation of minorities in higher education. AVID has been characterized as a college preparatory program that increases the number of minority students eligible for post-secondary education. The research conducted on the program does not substantiate this assertion. Slavin and Fashola (1998) found the AVID research lacking in rigor of evaluation. The study conducted by Mehan et al. (1996) and Victory (1998) used identified control groups that were not comparable. AVID students are selected based upon average standardized test scores. Students in the Talented and Gifted Programs have standardized test scores that are above the 90th percentile. One would not expect AVID students to perform comparably with students in the Talented and Gifted program. The studies conducted by Guthrie and Guthrie (2000) are not included in any referred journal. These studies were commissioned by the AVID Center and provide very little empirical evidence of the effectiveness of the middle school AVID program. Guthrie and Guthrie indicated that AVID students' enrollment in algebra in middle school was the single most critical predictor in grade point average and credits accumulated. Fortunately, when any student takes algebra in middle school, their grade point average and accumulated credits are increased, which is a function of taking the early mathematics credit rather than participation in AVID.

During the past 20 years, there have been articles written about the impact of AVID on the college attendance of minority students. The AVID studies are not refereed, lack the rigor of a quality research study, are suspect of self promotion, and do not use empirical data collection

procedures. Far too often, the purpose of the research was to satisfy an evaluation requirement for a funding agency, rather than to study the true long term impact of the program. It is the intent of this study to ascertain the impact of AVID on high school students.

CHAPTER THREE

METHODOLOGY

The purpose of this study was to examine the impact of the AVID program on course-taking patterns, cumulative grade point average, and achievement (as measured by the English: Reading Standards of Learning Test) of students participating in AVID for 7 years, 3 years, and non-AVID participants. This chapter includes a description of the setting, population and sample, research design, data collection procedures, and data analysis procedures.

Setting

The study took place in a large urban school district located in the southeast section of Virginia. During the 2002-2003 school year, the school district had 48 individual schools: 31 elementary schools, 8 middle schools, 2 alternative secondary schools, and 5 high schools. Approximately 33,000 students in grades pre-kindergarten through 12 were enrolled in the school district. Based on school district census data, middle and high school students comprise 49% of the total student population.

A diverse group of students are enrolled in the school district. Students of color (Black, Hispanic, Asian, and Americana Indian) comprised 63% of the total student population of the school district with Blacks representing the largest group (56%). The race/ethnicity of students in the school district is listed in Table 10. With respect to gender, males comprised 49% of the secondary student population and females comprised 51% of the secondary school population.

Approximately 10% of the students in the school district received special education services and 3% of the student population received talented and gifted services. Only 1% of the total district student population was considered English Speakers of Other Languages (ESOL).

Approximately 15% of the students in the district were military connected. Approximately 46% of the student population were eligible for free or reduced price lunches.

Table 10

Student Enrollment by Race/Ethnicity for 2002-2003

| Race/Ethnicity | <i>N</i> | % |
|-----------------|----------|-------|
| American Indian | 287 | .9 |
| Asian | 808 | 2.4 |
| Black | 18,319 | 55.9 |
| Hispanic | 1,378 | 4.2 |
| White | 12,004 | 36.6 |
| Total | 32,796 | 100.0 |

Note. Demographic and Student Achievement Profiles, 2002-2003.

For the purpose of this study, it is not only important to explore the demographics of the school district, but also to review its implementations for AVID. In 1993-1994, the school district piloted the AVID program at two high schools and one middle school with approximately 130 students participating in the program. During the next school year (1994-1995), the school district implemented the AVID program district-wide at all middle and high schools. Approximately 1,000 students participated in the program during the first year of implementation. In 1995-1996, the program enrollment increased to 1,593 students. In subsequent years, the program's enrollment has steadily increased at a rate of approximately 100 students per year. In 2001-2002, the enrollment in grades 6 through 12 exceeded 2,200 students. A summary of the AVID enrollment from 1993 to 2003 is noted in Figure 5.

Population

There were three groups of students involved in this study. The groups were identified as AVID-7, AVID-3, and AVID-0 students. All of these students entered the sixth grade in the fall

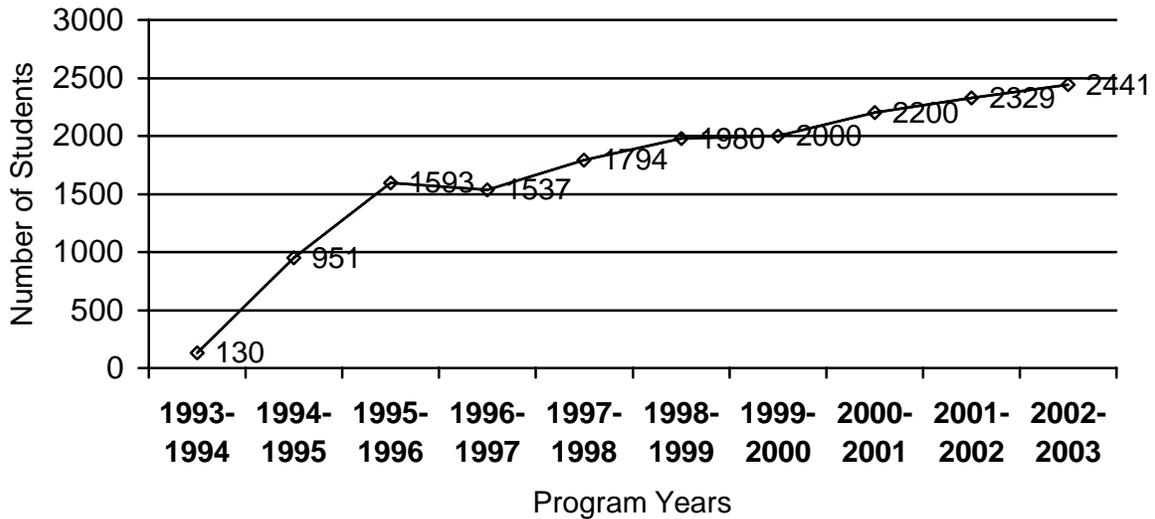


Figure 5. Enrollment of students in AVID from 1993-2003.

of 1996 and have been enrolled in the school district for seven consecutive years. The AVID-7, AVID-3, and AVID-0 students were seniors in the school district during the 2002-2003 school year. The AVID-7 group received seven years of consecutive AVID instruction, the AVID-3 group received three years of consecutive AVID instruction in grades 6-8, and the AVID-0 group has had no AVID instruction.

In the fall of 1996, 394 sixth grade students enrolled in the AVID program. The AVID students comprised 16.9% of the total sixth grade enrollment for the 1996-1997 academic year. Criteria for participation in AVID included average standardized test scores; 2.0 – 3.0 grade point average on a 4.0 scale; 10 or fewer days of absence, and no discipline referrals. The attrition of the 394 students is displayed in Table 11. As these students matriculated through middle school, 72 (18.2%) exited the program after one year of participation and 69 (17.5%)

exited the program after two years of program enrollment. At the end 1998-1999, there were 253 eighth grade students (64.2% of the original cohort) with continuous enrollment in AVID from grades 6 through 8. The AVID-3 and AVID-7 participants were selected from the 253 students in the eighth grade cohort.

Table 11

AVID Middle School Attrition for 1996-1997 Cohort

| School Year | Grade Level | Total Enrollment | Attrition | Cumulative Percent |
|-------------|-----------------|------------------|-----------|-----------------------|
| 1996-1997 | 6 th | 394 | | 100.0 |
| 1997-1998 | 7 th | 322 | 72 | 81.7 |
| 1998-1999 | 8 th | 253 | 69 | 63.9 |

In selecting the participants for AVID-3, several characteristics or criteria were identified. The students selected for AVID-3 were enrolled in the school district continuously from grades 6 through 12. AVID-3 students participated in the AVID program for three consecutive years, from grades 6 through 8 and did not continue in the AVID program during high school. Essentially, 48.2% of the 253 students from the original cohort were identified as AVID-3 participants because they met the established criteria and graduated from high school in 2003. A total of 130 students were identified.

The AVID-7 students were 2003 graduates with continuous participation in AVID from grades 6 through grade 12. Table 12 provides information on the attrition of the original cohort from grades 8-12. Of the 86 seniors enrolled in AVID in June 2003, 36 were members of the original 1996-1997 cohort. Only 29 of the 36 students had continuous enrollment in AVID and

the school district from grades 6-12. The 29 students identified comprised the population and were identified in the study as the AVID-7 group.

Table 12

AVID High School Attrition for 1996-1997 Cohort

| School Year | Grade Level | Total Enrollment | Attrition | Cumulative Percent |
|-------------|------------------|------------------|-----------|-----------------------|
| 1998-1999 | 8 th | 253 | | 100.0 |
| 1999-2000 | 9 th | 101 | 151 | 40.0 |
| 2000-2001 | 10 th | 70 | 31 | 27.7 |
| 2001-2002 | 11 th | 47 | 23 | 18.6 |
| 2002-2003 | 12 th | 36 | 11 | 14.2 |

The defining characteristics of the AVID-0 participants were that they had continuous enrollment in the school district from grades 6 through 12, but did not participate in the AVID in grades 6-12. Of the 1,960 seniors, 425 were enrolled in AVID for some period during grades 6-12. Because students who received special education (218) or gifted services (131) were not currently enrolled in AVID-7, the students who participated in these programs were eliminated from the study. In addition, students who were not enrolled in the school district consecutively from grades 6 through 12 were eliminated (235) from consideration in AVID-0. As noted in Table 13, of the 1,960 graduates in the school district, 991 were identified as potential participants in AVID-0. A stratified random sample of 28 AVID-0 students was conducted using a random table of numbers. Students were stratified according to high school attended to ensure comparability with AVID-7 and AVID-3 participants.

Table 13

2003 Graduate Pool for AVID-0 Participants

| Group | Number of Students | Potential Number of Students |
|---------------------------------|--------------------|------------------------------|
| 2003 Graduates | 1,960 | 1,960 |
| AVID Participants | 425 | 1,535 |
| Special Education | 218 | 1,317 |
| Gifted and Talented | 131 | 1,186 |
| Non-continuous Enrollment | 195 | 991 |
| Total Potential AVID-0 Students | | 991 |

Research Design

The research design used in this study includes the independent variable, group membership, with three levels: AVID-7, AVID-3, and AVID-0. The dependent variables are course-taking patterns, weighted cumulative grade point average, and English: Reading SOL scaled scores. Course-taking patterns, weighted cumulative grade point average, and English: Reading SOL scaled scores are on the interval scale. The dependent variable course-taking patterns will be represented by a count of the number of honors and Advanced standing courses completed by each student. Cumulative grade point average is a numerical average based on the course taken, the grade received, and the rigor or the weight of the course. The English: Reading SOL scaled score is a numerical score earned and computed based on a student's performance on the end-of-course assessment. The following research questions and null hypotheses were addressed in the study:

1. Is there a statistically significant difference among group membership (AVID-7, AVID-3, and AVID-0) with respect to course-taking patterns (the number of honors and Advanced standing courses taken)?

Null Hypothesis: There is no statistically significant difference among group membership (AVID-7, AVID-3, and AVID-0) with respect to course taking patterns (the number of honors and Advanced standing courses taken).

2. Is there a statistically significant difference among group membership (AVID-7, AVID-3, and AVID-0) with respect to weighted cumulative grade point average (as measured at the end of the second semester of the senior year)?

Null Hypothesis:

There is no statistically significant difference among group membership (AVID-7, AVID-3, and AVID-0) with respect to weighted cumulative grade point average (as measured at the end of second semester of the senior year).

3. Is there a statistically significant difference among group membership (AVID-7, AVID-3, AVID-0) with respect to the English: Reading SOL test scaled scores?

Null Hypothesis:

There is no statistically significant difference among group membership (AVID-7, AVID-3, and AVID-0) with respect to the English: Reading SOL test scaled scores.

Essentially, the purpose of the study was to determine whether participation, non participation or degree of participation in AVID had an impact on the courses students take, their grades, and an English assessment. In other words, the study determined which group (AVID-7, AVID-3, or AVID-0) took more honors level and advanced standing courses. The second indicator of program impact was the cumulative grade point average of students. In the study, it

was necessary to establish the group (AVID-7, AVID-3, and AVID-0) with the highest mean cumulative grade point average. The third indicator of program impact is the scores earned by students on the English: Reading SOL end-of-course assessment. This scale score is reported for each student and can range from 200 to 600. For each group in the study, scores were computed and a statistical measure was used to determine differences in the mean performance between or within the groups.

Data Collection Procedures

A request to conduct the study was submitted and approved by the Research Committee and the Superintendent of the school district. Essential to the data collection process was the identification of the AVID-7, AVID-3, and AVID-0 participants. AVID class lists for 1996-2003 were obtained from the school district. The sixth grade AVID students for 1996-1997 were entered into a file of a database using SPSS 13. Names for students in the 1996-1997 AVID sixth grade class were identified. Using the school district's student information database, information was entered for each student.

To further delineate the AVID-7 and AVID-3 students, the school district's mainframe student information database and the AVID program enrollment records were used to determine the students with consecutive years of AVID participation in grades 6-8, and participation of students in the ninth, tenth, and eleventh grade AVID program. The students who participated in the AVID program each year from grades 6 through 12 comprised the potential members of the AVID-7 group. Students who attended more than one middle school but remained in the program were included in the study. There were 29 students who met the criteria for the AVID-7 group, but one of the students was eliminated from the study due to incomplete test data. There were 28 AVID-7 students in the study.

A similar process was employed to determine the AVID-3 participants. The students included in this group were enrolled in AVID for three consecutive years (from grades 6, 7, and 8); did not enroll in AVID in grades 9, 10, 11, and 12; and were enrolled in the school district for grades 9, 10, 11, and 12. There were 122 students who met the criteria for the AVID-3 group.

There were no students who received special education and gifted education services in the AVID-7 group. Therefore, to ensure comparability to the AVID-7 students, students who received these services were eliminated from the potential AVID-3 candidates.

Table 14

Attrition of the Original Cohort

| Total Group | Exit Period | Attrition | Remaining Students |
|-------------|-------------------------------|-----------|--------------------|
| 394 | End of 6 th Grade | 72 | 322 |
| 322 | End of 7 th Grade | 69 | 253 |
| 253 | Withdrawals | 30 | 223 |
| 223 | End of 8 th Grade | 122 | 101 |
| 101 | End of 9 th Grade | 17 | 84 |
| 84 | End of 10 th Grade | 17 | 67 |
| 67 | Non-continuous | 29 | 38 |
| 38 | Ineligible | 9 | 29 |
| 29 | Original Cohort | - | 29 |

The attrition of the original cohort, described in Table 14, indicated that a significant number of students (35.7%) exited the program at the end of the eighth grade. By the end of the tenth grade, 17.0% of the students remained in the program. In addition, 29 students were

enrolled in the program non-continuously. These students exited the program for a semester or more and re-enrolled in the program afterwards. The nine ineligible students graduated in less than the traditional four years of high school or exited the school district for one or more semesters.

Of the 1,960 seniors, 425 were enrolled in AVID for some period during grades 6 through 12. Because students who received special education (218) or gifted services (131) were not currently enrolled in AVID-7, the students who participated in these programs were eliminated from the study. In addition, students who were not enrolled in the school district consecutively from grades 6 through 12 were eliminated (235) from consideration in AVID-0. As noted in Table 14, of the 1,960 graduates in the school district, 991 were identified as potential participants in AVID-0. A stratified random sample of 28 AVID-0 students was conducted using a random table of numbers. Students were stratified and randomly selected according to high school attended to ensure comparability with AVID-7 and AVID-3 participants. This sampling technique was used to minimize the influence of student characteristics of ethnicity, SES, gender, school attended, and other contextual influences.

When identifying students for the selection in the AVID program, the Degrees of Reading Power (DRP) test scores were collected. The Degrees of Reading Power is a criterion and norm referenced assessment of fundamental reading comprehension. The standard DRP test measures a student's ability to comprehend the meaning of increasingly more difficult text and can be used to match ability with appropriate materials. The test was developed by Touchstone Applied Science Associates, Incorporated, in 1976. In this school district, the DRP tests were administered to elementary school students in the first, third, and fifth grade to assess students' reading comprehension ability and to track their reading development over time. Several

students in the study did not participate in DRP testing. In the AVID-7 group, DRP scores were missing for two students; in the AVID-0 group, DRP scores were missing for three students; and in the AVID-3 group all students' scores were available. The mean DRP scores were computed for AVID-7, AVID-3, and AVID-0 participants to discern the comparability of each group.

Instrumentation

Weighted Cumulative Grade Point Average

Weighted cumulative grade point averages were provided to students in grades 9 through 12. This grade point average was based upon the grades the student had earned in courses for which high school credit was awarded (including failing grades, repeated courses, summer school, night school, and credit courses taken prior to grade nine).

The school district offered courses with varying levels of rigor and weighted credits. Course weighting was assigned upon the recommendation of the school district's curriculum committee and the approval of the School Board as noted in Table 15. Courses identified for advanced standing contained a mandated external evaluation component. Students who did not participate in the external evaluation received honors weighted credit. International Baccalaureate courses and Advanced Placement courses were weighted with advanced standing; honors and Pre-International Baccalaureate courses received honors weight. Weighted cumulative grade point averages were computed at the end of each semester.

The school district offered a wide variety of courses to middle and high school students. The high school credit courses available to middle school students were foreign language (Spanish, French, German, and Latin), Algebra I, Honors Geometry, and Summer Institute for

Table 15

Scale of Course Weighting

| Grade | Advanced Standing | Honors | Standard |
|-------|-------------------|--------|----------|
| A | 5 | 4.5 | 4 |
| B | 4 | 3.5 | 3 |
| C | 3 | 2.5 | 2 |
| D | 2 | 1.5 | 1 |
| F | 0 | 0 | 0 |

Note: Information taken from the Directory of High School Courses: Guide for Students to Academic Options 2002-2003.

Course Selection

the Arts. Of these courses, only Honors Geometry and Summer Institute for the Arts were weighted. The comprehensive high school curriculum included 26 Advanced Placement courses and 22 honors courses.

Students began their high school planning in the eighth grade. Counselors met with students and parents individually and in groups to develop a program of study for grades 9-12. Students and parents had opportunities to attend three district-wide meetings that focused on the academic transition from middle school to high school. A course offerings booklet with a description of all courses and district-wide programs were provided to all eighth grade students. The school district offered open access to all courses at the high school level. Open access allowed students and parents to enroll in any course offered in the high school curriculum with the exception of courses that were sequential in nature. For example, Algebra II is a sequential

course; one must take Algebra I and Geometry before enrolling in Algebra II. Open access enabled students to take honors and Advanced standing courses without prerequisites or teacher approval.

For the purpose of this study, a tally of the number of honors and Advanced standing courses were taken for each AVID-7, AVID-3, and AVID-0 student at the end of each semester starting with the eighth grade and continuing through the second semester of their senior year (2002-2003). There was no distinction made between honors and Advanced standing courses. Both were given equal value for the purpose of this study.

English: Reading/Literature and Research SOL Test

The Standards of Learning English: Reading/Literature and Research assessment and the English: Writing assessments were administered to students in the eleventh grade. As of the 2003-2004 academic year, students were required to pass both portions of the English SOL tests in order to graduate from high school. For the purpose of this study, only the English: Reading/Literature and Research assessment was used. The English: Reading/Literature and Research assessment is an un-timed multiple choice test that requires students to demonstrate their proficiency in three categories: understanding a variety of print materials; understanding the elements of literature; and locating and using information. For the Virginia Standards of Learning assessments, each student receives a scaled score ranging from 0-600. There are three levels of performance that students can earn on the Standards of Learning assessments. In order to pass an assessment, students must earn a mean scaled score of 400 or above. Students receive a pass proficient rating with a mean scaled score of 100 to 499 and a pass advanced with a mean scaled score of 500 to 600. The assessment is composed of 52 items that includes 42 operational items and 10 field test items.

Threats to Internal and External Validity

To ensure that the SOL assessments were fair and accurate measures of a student’s knowledge and skills, test reliability statistics were used. Test developers used Kuder-Richardson Formula #20 (KR-20) as the statistical measure of test reliability. The Kuder-Richardson is designed to determine the degree to which the test questions consistently measure the same body of content and skills. Scores on this measure of reliability range from 0 to .99. Experts in the field indicated that a reliability coefficient of .80 and above was sufficient to justify the use of test scores on high-stake assessments. The high school English: Reading/Literature and Research SOL had a KR-20 reliability coefficient value of .85.

The Virginia Department of Education established a Standards of Learning Technical Advisory Committee (TAC). The committee was tasked with setting acceptable standards or determining the level of achievement required of students in each performance category. Virginia SOLs have three performance categories: “Did not pass,” “Proficient,” and “Advanced.” Statewide pass rates for the tests have risen substantially over the past five years. Table 16 includes data concerning statewide and school district pass rates.

Table 16

English: Reading/Literature and Research SOL Test Pass Rates (Stated in Percent Passing)

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|-----------------|------|------|------|------|------|------|
| Statewide | 72 | 75 | 78 | 82 | 86 | 93 |
| School District | 68 | 76 | 74 | 81 | 85 | 94 |

Note: Source <http://www.pen.k12.va.us/VDOE/src/SOLassessments.shtml>

The validity of a study can be compromised externally and internally. External validity refers to the degree to which the findings in a study can be applied to individual and settings beyond those that were studied (Gall, Borg & Gall, 1996). The internal validity of a study is the extent to which extraneous variables have been controlled by the researcher, so that any observed effect can be attributed solely to the treatment variable (Gall, Borg & Gall).

In this research design, the entire population was used for one level of the independent variable (AVID-7) and a stratified random sample was used to identify participants for two levels of the independent variable (AVID-3 and AVID-0). Gall, Borg and Gall (1996) defined population validity as “the extent to which one can generalize from the experimental sample to a defined population” (p. 474). AVID-7 and AVID-3 (treatment group) students were identified for program participation using similar criteria. The AVID-7 and AVID-3 students received the AVID intervention during grades 6 through 8, had continuous attendance in the school district from grades 6-12, and graduated from high school in June 2003. The AVID-0 (the control group) students had continuous enrollment in the school district from grades 6 through 12 and graduated from high school in June 2003. Stratified sampling was used ensure that AVID-3 and AVID-0 students were representative of the AVID-7 students. The groups will be stratified by high school attended to ensure that students had exposure to similar curricula at the high schools. For example, if five AVID-7 students were from ZZZ High School, AVID-3 and AVID-0 would each have five randomly selected students from ZZZ High School. Caution should be exercised in generalizing the results of this study to other populations.

Extraneous variables are any variable other than the treatment variable that can affect the outcome of a study. Gall, Borg, and Gall (1996) described 12 extraneous variables that can affect the results of research studies. The extraneous variables that may have impacted this study

were history, maturation, differential selection, experimental mortality, and compensatory equalization of treatments. Students participated in the AVID program for three or seven years which might have provided the opportunity for other events (history) to occur and impact on program results. Stratified sampling was used to ensure that students selected for AVID-3 and AVID-0 attended similar middle schools. During the course of the study, maturation (physical or psychological changes) in research participants may have occurred; therefore, it may have been difficult to determine if differences in the participants were due to the intervention (AVID) or maturation. Gall, Borg, and Gall suggested that to reduce the effects of maturation, it would be necessary to have a control group of participants who received no exposure to the intervention. AVID-0 students were not enrolled in the program and served as the control group for the study. Having the control group, AVID-0 would allow the researchers to reasonably conclude that the intervention (AVID) not maturation, may lead to differences among the groups. To guard against differential selection, another extraneous variable, participants for the AVID-3 and AVID-0 groups were identified using stratified random sampling. Experimental mortality, or attrition, is an extraneous factor that threatened the internal validity of this study. During the course of the AVID intervention, students dropped out of the program. The study was designed to reduce the threat of differential loss of students. The students who left the program from the AVID-7 group were identified and included in the AVID-3 group. The study was designed to determine differences that occur between the groups as a result of attrition. Compensatory equalization of treatments is an extraneous variable that may occur when the AVID-7 and AVID-3 participants receive goods and services perceived as desirable. Gall, Borg & Gall concluded that when this happens, administrators and others may attempt to compensate the AVID-0 participants by giving the group similar goods and services. AVID-0 students may have received

goods or services that were similar to those received by AVID-7 and AVID-3 students. Because this study was conducted using historical data, the researcher was unable to define the extent to which this might occur. Other variables that could possibly influence the outcome of this study were student characteristics of ethnicity, SES, gender, school attended, and other contextual influences. To minimize these variables' influence, stratified random sampling was employed for the AVID-3 and AVID-0 groups.

Data Analysis

In analyzing the data for this quantitative study, several procedures were used. The first phase of the analysis entailed computing descriptive statistics (means and standard deviations) for each of the independent and the dependent variables.

After descriptive statistics were collected, inferential statistics were used to test each null hypothesis. The overall null hypothesis stated that there was no statistically significant difference among group membership (AVID-7, AVID-3, and AVID-0) with respect to course taking patterns (the number of honors and Advanced standing courses taken), cumulative grade point average, and English: Reading SOL scale scores. The inferential statistical procedure used in the study is Analysis of Variance (ANOVA). The ANOVA is a statistical procedure that compares the amount of between-groups differences in individual scores with the amount of within-groups differences (Gall, Borg, and Gall, 1996). An ANOVA was used to test each null hypothesis for the levels of the independent variable (AVID-7, AVID-3, and AVID-0). The ANOVA was the most appropriate statistical procedure for this study because the dependent variables are univariate in nature; therefore, inferences can be made for each dependent variable separately using one-way ANOVAs. In addition, the one-way ANOVA was an appropriate statistical procedure to use in this study because this study met the criteria for three assumptions

that must be in place to use ANOVA. The assumptions are that each dependent variable is normally distributed for each of the populations, variances of the dependent variables are the same for all populations, and cases represent random samples from the populations (Green & Salkind, 2004).

During each analysis, the Levene's test for homogeneity of variance was performed. If the Levene's test for homogeneity of variance was statistically significant at $p=.05$, the Dunnett C post hoc test was conducted to determine where differences occurred among the groups. The Dunnett C was chosen because it is a conservative post hoc test that does not assume equal variances across groups and controls for a Type I error (Green & Salkind, 2004). If the Levene's test for homogeneity of variance was not statistically significant at $p = .05$, the Scheffe post hoc test was conducted to determine where the difference occurred among the groups. The Scheffe is also a conservative estimate assuming equal variances across groups and controls for Type 1 errors (Green & Salkind).

Chapter Summary

The purpose of this study was to determine the effect of participation in the AVID program on course taking patterns, weighted cumulative grade point average, and the English: Reading SOL achievement of twelfth grade students. During the first part of the chapter, the setting and the study population were described.

The latter part of the chapter provided additional information on the three dependent variables and the data collection procedures for each variable. Data were collected from multiple sources which include program documents and the computer information system used by the school district. The procedures used to collect and analyze data were included in this chapter. Both descriptive and inferential statistics were used to test each of the null hypotheses of the

research study. Analyses of variances (ANOVAs) were used to test for between-group differences and within-group differences. The ANOVA for each hypothesis was presented and discussed in relationship to the descriptive statistics. These inferential statistics were used to accept or reject the null hypotheses with the goal of determining if participation in the AVID program produced statistically significant results in course selections, weighted cumulative grade point averages, and English: Reading SOL scaled scores.

CHAPTER IV

RESULTS

The purpose of this study was to examine the impact of participation in Advancement Via Individual Determination (AVID) on course taking patterns, weighted cumulative grade point averages, and achievement of twelfth grade students. There were three research questions that were central to the study:

1. Is there a difference among groups (AVID-7, AVID-3, and AVID-0) with respect to course selection (as defined by the combined number of advanced standing and honors taken each semester)?
2. Is there a difference among groups (AVID-7, AVID-3, and AVID-0) with respect to twelfth grade weighted cumulative grade point average?
3. Is there a difference among groups (AVID-7, AVID-3, and AVID-0) with respect to English: Reading/Literature and Research Standards of Learning (SOL) end-of-course Test scale scores?

In this chapter, the results of the study are presented. The first section of the chapter includes background information related to the study, information on data collection procedures, an overview of the sample and the population, and the data analysis techniques employed in the study. The second section of the chapter includes descriptive statistics, the results of the analysis of variance (ANOVA), and a brief summary of the pertinent findings for each research question.

The ANOVA is a univariate inferential statistical procedure used to evaluate whether the group means on a dependent variable differs across levels of an independent variable (Green & Salkind, 2004). The dependent variables in this study are not multivariate in nature; therefore, inferences will be made for each dependent variable using one-way ANOVA. Three one-way

ANOVAs were used to test for mean differences between the dependent variables and the independent variable--AVID-7, AVID-3, and AVID-0. All statistics were conducted using SPSS 13.0, statistical analyses software package. The final section of the chapter will provide a summary and discussion of the research findings.

Data Collection Procedures

Essential to the data collection process was the identification of the AVID-7, AVID-3, and AVID-0 participants. To ensure comparability of the students in the study, stratified random sampling was used to select AVID-3 and AVID-0 participants. There were no special education or gifted students included in the AVID-7 group. Therefore, no special education or gifted students were included in the AVID-3 or AVID-0 groups. Students were enrolled continuously in the school district from grades 6 through 12 and graduated from the school district in June 2003 with a standard or an advanced studies diploma.

The AVID-7 students were selected for the Advancement Via Individual Determination (AVID) program based on the following criteria: average to above average standardized test scores, 2.0 to 3.0 cumulative grade point averages, positive attendance and discipline records. AVID class lists for 1996-2003 were obtained from the school district and used to identify AVID-7 participants. The sixth grade AVID students for 1996-1997 were entered into a database using the Statistical Package for the Social Sciences. To further delineate the AVID-7 students, the school district's student information database and the AVID program enrollment records were used to determine the students with consecutive years of AVID participation in grades 6 to 8, and participation of students in the ninth, tenth, eleventh and twelfth grade AVID program. The students who participated in the AVID program each year from grades 6 through 12 comprised the potential members of the AVID-7 group. There were 29 students who met the

criteria for the AVID-7 group. However, one student was later eliminated because of incomplete data.

The attrition of the original cohort, described in Table 17, indicated that a significant number of students (35.7%) exited the program at the end of the eighth grade. By the end of the tenth grade, 17.0% of the students remained in the program. In addition, 29 students were enrolled in the program non-continuously. These students exited the program for a semester or more and re-enrolled in the program afterwards. Nine ineligible students graduated in less than the traditional four years of high school or exited the school district for one or more semesters.

Table 17

Status of the Original Cohort

| Total Group | Exit Period | Attrition | Remaining Students |
|-------------|-------------------------------|-----------|--------------------|
| 394 | End of 6 th Grade | 72 | 322 |
| 322 | End of 7 th Grade | 69 | 253 |
| 253 | Withdrawals | 30 | 223 |
| | (from the school district) | | |
| 223 | End of 8 th Grade | 122 | 101 |
| 101 | End of 9 th Grade | 17 | 84 |
| 84 | End of 10 th Grade | 29 | 67 |
| 67 | Non-continuous | 29 | 38 |
| 38 | End of 11 th Grade | 9 | 29 |
| 29 | End of 12 th Grade | 0 | 29 |

There were 29 AVID-7 students eligible for the study. Of the 29 eligible students, one was eliminated because of incomplete data for one of the dependent variables.

The AVID-3 students were selected for the Advancement Via Individual Determination (AVID) Program based on the following criteria: average to above average standardized test scores, 2.0 to 3.0 cumulative grade point averages, positive attendance and discipline records. AVID-3 students were randomly selected for the study based upon high school attendance of the AVID-7 group. AVID class lists for 1996-2003 were used to identify AVID-3 participants. The sixth grade AVID students for 1996-1997 were entered into a database using the Statistical Package for the Social Sciences. The students in the AVID-3 group were enrolled in AVID for three consecutive years (from grades 6, 7, 8); did not enroll in AVID in grades 9, 10, 11, and 12; and were enrolled in the school district for grades 9, 10, 11, and 12. There were 122 students who met the criteria for the AVID-3 group. The AVID-7 group was composed of students who were not identified as having received special education and gifted education services. To ensure comparability with the AVID-7 students, students who received special education and gifted education services were eliminated from the potential AVID-3. The school district had well defined feeder patterns for middle and high schools. Therefore, high school attendance was used as a criterion for student selection to ensure that the participants in the study had similar experiences and curriculum exposure.

A similar data collection process was used to identify the AVID-0 students. A separate file in the database was developed for AVID-0 students. The file excluded the AVID-7 and the AVID-3 students and students who were enrolled in AVID for some period during grades 6 through 12. Because students who received special education or gifted services were not currently enrolled in AVID-7, students who participated in these programs were eliminated from

the study. In addition, students who were not enrolled in the school district continuously from grades 6 through 12 were eliminated from consideration in AVID-0. Of the 1,960 graduates in the school district, 991 were identified as potential participants in AVID-0. A stratified random sample of 28 students was conducted using a random table of numbers. Students were stratified according to high school attended to ensure comparability with AVID-7 and AVID-3 participants.

Sample and Population

The participants in the study included 84 high school students who graduated in June 2003. Table 18, Number and Percent of Total Sample and Independent Variables by Gender and Race/Ethnicity, provides descriptive data on the sample. The independent variable was groups with three levels: AVID-7, AVID-3, and AVID-0. The AVID-7 students were enrolled in the program for seven consecutive years from grades 6 through 12; the AVID-3 students were enrolled in AVID for three consecutive years from grades 6 through 8; and the AVID-0 students were never enrolled in the AVID program. The students in the study entered the sixth grade in 1996 and graduated from high school in June 2003.

A stratified random sample of AVID-3 and AVID-0 students was conducted and 28 students from each group were selected for the study. The participants were stratified on the basis of the high schools that the AVID-7 students attended. Students who attended similar high schools were more likely to received similar AVID instruction and curriculum as they matriculated. Students with missing data on the dependent variables were eliminated from the study. This selection strategy was employed to eliminate problems with unequal sample sizes for comparisons (Gall, Borg, & Gall, 1996).

Of the total group (AVID-7, AVID-3, and AVID-0) there were more female participants 48 (57.1%) than male participants 36 (42.9%). The students in AVID-7 and AVID-3 were also predominately female; however, the AVID-0 group was comprised of more males than females.

Table 18

Number and Percent of Total Sample and Independent Variables by Gender and Race/Ethnicity for 2003

| Variable | Total Sample | AVID-7 | AVID-3 | AVID-0 | Total District |
|-----------------------|--------------|------------|------------|------------|----------------|
| Gender | | | | | |
| Male | 36 (42.9%) | 10 (35.7%) | 11 (39.3%) | 15 (53.6%) | 14,267 (42.9%) |
| Female | 48 (57.1%) | 18 (64.3%) | 17 (60.7%) | 13 (46.4%) | 18,989 (57.1%) |
| Race/Ethnicity | | | | | |
| Black | 58 (69.0%) | 24 (85.7%) | 17 (60.7%) | 17 (60.7%) | 18,923 (56.9%) |
| White | 21 (25.0%) | 2 (07.1%) | 10 (35.7%) | 9 (32.1%) | 11,307 (34%) |
| Hispanic | 3 (03.6%) | 2 (07.1%) | 0 (00.0%) | 1 (03.6%) | 1,763 (5.3%) |
| Asian | 2 (02.4%) | 0 (00.0%) | 1 (03.6%) | 1 (03.6%) | 865 (2.6%) |
| Native Am. | | | | | 232 (0.7%) |
| Unspecified | | | | | 166 (0.5%) |

There were more Black students (69%) than White students (25%) in the total sample and in each level of the independent variable. Asian students (2) and Hispanic students (3) comprised approximately 6% of the sample. White students comprised a greater percentage of the sample for AVID-3 (35.7%) and AVID-0 (32.1%) than AVID-7 (7.1%).

In addition to race/ethnicity and gender, each level of the independent variable had certain distinguishing characteristics. When identifying students for the selection in the AVID

program, the Degrees of Reading Power (DRP) test scores were reviewed. The Degrees of Reading Power is a criterion and norm referenced assessment of fundamental reading comprehension. The standard DRP test measures a student’s ability to comprehend the meaning of increasingly more difficult text and can be used to match ability with appropriate materials. The test was developed by Touchstone Applied Science Associates, Incorporated in 1976. In this school district, the DRP tests were administered to elementary school students in the second, third, and fifth grade to assess students’ reading comprehension ability and to track their reading development over time. Several students in the study did not participate in DRP testing. In the AVID-7 group, DRP scores were missing for two students; in the AVID-0 group, DRP scores were missing for three students; and in the AVID-3 group all students’ scores were available.

Of the 1,960 graduates in the school district’s database, fifth grade DRP scores were available for 1,171 graduates. The DRP scores range from 1-91. Students were assessed on their reading comprehension and received scores that fell within three categories: below grade level

Table 19

Fifth Grade Degrees of Reading Power (DRP) Test Results

| Student Group | <i>n</i> | <i>M</i> | <i>SD</i> | Min | Max | Median | Mode |
|----------------|----------|----------|-----------|-----|-----|--------|------|
| AVID-7 | 26 | 59.38 | 5.64 | 49 | 70 | 60 | 62 |
| AVID-3 | 28 | 60.93 | 8.16 | 42 | 76 | 60.5 | 56 |
| AVID-0 | 25 | 59.32 | 8.08 | 43 | 73 | 59 | 61 |
| 2003 Graduates | 1,171 | 59.39 | 11.18 | 1 | 91 | 60 | 56 |

(1-44), within grade level (45-61), and above grade level (62-91). As noted in Table 19, the students in all groups had similar DRP scores with mean scores that ranged from 59.32 (*SD* =

8.08) to 60.93 ($SD = 8.16$). The mean DRP score for 2003 graduates was 59.39 ($SD = 11.18$). It must be noted that the AVID-3 group had the largest mean DRP score and the AVID-0 group had the lowest mean DRP score. The AVID-7 group had a lower mean DRP score ($M = 59.38$) than the mean DRP score of the 2003 graduates ($M = 59.39$). The mean DRP scores for the three groups of students in the study were similar.

Data Analysis

In analyzing the data for this quantitative study, several procedures were used. The first phase of the analysis entailed computing descriptive statistics (means and standard deviations) for each of the variables.

After descriptive statistics were collected, inferential statistics were used to test each null hypothesis. The overall null hypothesis stated that there was no statistically significant difference among group membership (AVID-7, AVID-3, and AVID-0) with respect to course taking patterns (the number of honors and advanced standing courses taken), weighted cumulative grade point averages, and English: Reading SOL scale scores. The inferential statistical technique used in the study was an analysis of variance (ANOVA). An ANOVA is a statistical procedure that compares the differences among groups and the amount of differences within groups (Gall, Borg, and Gall, 1996). Each null hypothesis was tested to determine if there were mean differences in AVID-7, AVID-3, and AVID-0. The univariate one-way ANOVA was an appropriate statistical technique to use in this study because it allowed the researcher to analyze mean differences; it assumed that the variances of the dependent variables were the same for all populations; it assumed that the cases represented random samples from the populations; and that the scores on the test variable were independent of each other (Green & Salkind, 2004).

During each analysis, the Levene's test for homogeneity of variance was performed. If the Levene's test for homogeneity of variance was statistically significant ($p = .05$), the Dunnett C post hoc test was conducted to determine where differences occurred among the groups. The Dunnett C post hoc test was chosen because it is a conservative test that does not assume equal variances across groups and controls for a Type I error (Green & Salkind, 2004).

Course Taking Patterns

Is there a statistically significant difference in group membership (AVID-7, AVID-3, and AVID-0) with respect to course selection? This was the research question investigated in the study. For the purpose of this study, upon graduation, student high school transcripts were analyzed and a tally of the number of combined honors and advanced standing courses were taken for each AVID-7, AVID-3, and AVID-0 student. Included in this count were the courses that students attempted and remained in for the entire semester.

The school district offered a wide variety of courses to middle and high school students. In middle school, the high school credit courses available to students were foreign language (Spanish, French, German, and Latin), Algebra I, Honors Geometry, and Summer Institute for the Arts. Of these courses, only Honors Geometry and Summer Institute for the Arts were weighted. As noted in Table 20, many middle school students earned high school credits before entering grade nine. AVID-7 and AVID-3 students earned more foreign language high school credits in middle school (100% and 92.9%, respectively) than AVID-0 students (57.1%). In addition, AVID-7 and AVID-3 students earned more mathematics credits in middle school than AVID-0 students. A small percentage of students earned a high school credit for participating in the Summer Institute for the Arts. Students must pay tuition to enroll in this summer course. The AVID-7, AVID-3, and AVID-0 students had comparable numbers of students who earned a

high school credit for the Summer Institute for the Arts course (14.3%, 14.3%, and 10.7%, respectively).

Table 20

Number and Percent of Students Earning High School Credits in Middle School

| | Foreign Language | | Mathematics | Summer Institute of the Arts |
|--------|------------------|--------------|--------------|------------------------------|
| | <i>n</i> | <i>n</i> (%) | <i>n</i> (%) | <i>n</i> (%) |
| AVID-7 | 28 | 28 (100.0%) | 18 (64.3%) | 4 (14.3%) |
| AVID-3 | 28 | 26 (92.95) | 13 (46.4%) | 4 (14.3%) |
| AVID-0 | 28 | 16 (57.1%) | 8 (28.6%) | 3 (10.7%) |

Course taking patterns are defined as the number of semesters of honors and advanced standing courses taken by students. The comprehensive high school curriculum included 26 advanced standing courses and 22 honors courses. The maximum number of combined honors and advanced standing courses earned by any students was 38. The mean honors and advanced standing courses earned was 14.86 ($SD = 10.67$). The AVID-7 students had the greatest number of combined honors and advanced standing courses ($M = 21.11$, $SD = 6.88$) and the AVID-0 students had the lowest number of honors and advanced standing courses ($M = 9.54$, $SD 10.66$). The standard deviations for the AVID-0 and AVID-3 were greater than the standard deviation for AVID-7 which indicated that the scores were widely dispersed around the mean. There were four AVID-3 students and eight AVID-0 students who did not take any honors courses in high school. All of the AVID-7 students earned credits for taking honors courses in high school.

However, few students in the study took advanced standing courses. For example, 64.3% of the AVID-7 students, 39.3% of the AVID-3 students, and 28.6% of the AVID-0 students were enrolled in advanced standing courses in high school.

Table 21

Number of Combined Honors and Advanced Standing Courses

| | <i>n</i> | <i>M</i> | <i>SD</i> | <i>Min</i> | <i>Max</i> |
|--------------|----------|----------|-----------|------------|------------|
| Total Sample | 84 | 14.86 | 10.67 | 0.00 | 38.00 |
| AVID-7 | 28 | 21.11 | 6.89 | 8.00 | 32.00 |
| AVID-3 | 28 | 13.93 | 10.87 | 0.00 | 38.00 |
| AVID-0 | 28 | 9.54 | 10.66 | 0.00 | 38.00 |

The first one-way ANOVA was conducted to evaluate the relationship between group membership and the number of combined honors and advanced standing courses earned during high school. The independent variable, group membership, included three levels: AVID-7, AVID-3, and AVID-0. The dependent variable was the combined number of advanced standing and honors courses taken each semester. For each subject in the group, the combined number of advanced and honors courses was determined by counting the number of high school credit bearing advanced standing and honors courses earned each semester. The results for the post hoc test are noted in Table 22.

The data indicated that there were statistically significant differences in the number of honors and advanced standing courses earned by students in the study, $F(2, 81) = 10.25, p > .01$. The effect size (*partial eta squared* = .202) indicated a strong relationship between group

membership and the combined number of advanced standing and honors courses, with group membership accounting for 20% of the variance in the number of advanced standing and honors courses earned by students (Green & Salkind, 2004).

Table 22

Multiple Comparisons for the Combined Advanced Standing and Honors Courses

| Group | Group | Mean Difference | Standard Error | Significance |
|-------|-------|-----------------|----------------|--------------|
| 7 | 0 | 11.5714* | 2.57985 | .000 |
| | 3 | 7.71786 | 2.57985 | .025 |
| 3 | 0 | 4.3929 | 2.57985 | .241 |
| | 7 | -7.1786* | 2.57985 | .025 |
| 0 | 3 | -4.3929 | 2.57985 | .241 |
| | 7 | -11.5714* | 2.57985 | .000 |

Note: The mean difference is significant at the .05 level.

Follow-up tests were conducted to evaluate pairwise differences among the means. The variance among the three groups ranged from 47.43 to 118.51. The Dunnett C post hoc test was selected because the test does not assume equal variances among the three groups. There was a significant difference in the mean number of combined advanced standing and honors courses for AVID-7 ($M = 21.10$) and AVID-0 ($M = 9.54$). In addition, significant differences were noted in the number of combined advanced standing and honors courses for AVID-7 ($M = 21.11$) and

AVID-3 ($M = 13.93$). There were no significant differences noted in the combined number of advanced standing and honors courses for AVID-3 ($M = 13.93$) and AVID-0 ($M = 9.54$).

Students with AVID membership gained more combined advanced standing and honors courses than non-AVID students. The relationship of the independent variable, means, and standard deviations can be readily observed in Figure 8.

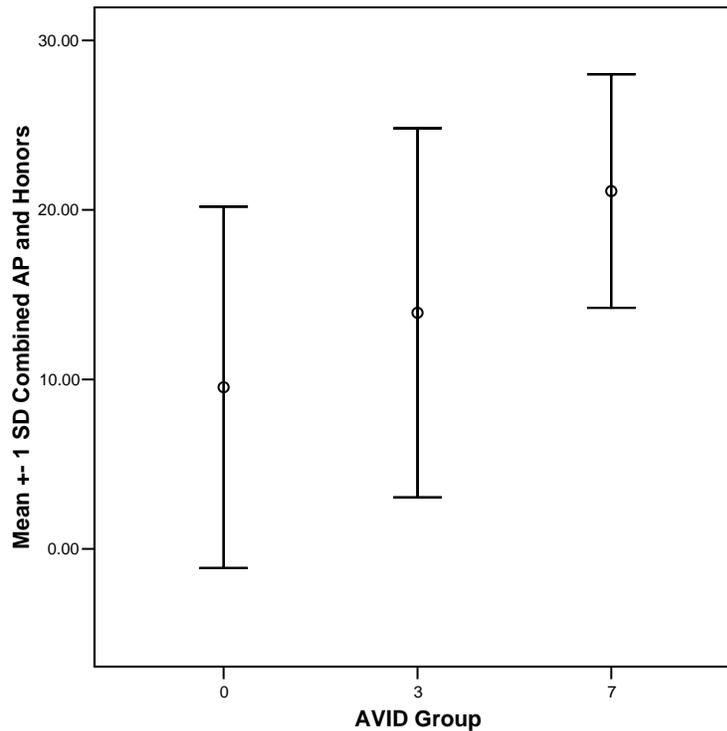


Figure 6. Mean and standard deviation (+1 and -1) for combined advanced standing and honors courses for AVID-7, AVID-3, and AVID-0.

An unanticipated finding was discovered when the advanced standing and the honors courses were analyzed separately. The AVID-7 students earned more advanced standing courses than the AVID-3 or the AVID-0 students. The AVID-7 ($M = 17.57$; $SD = 5.47$) and the AVID-3 ($M = 12.07$; $SD = 8.71$) students earned more honors courses than the AVID-0 ($M = 8.32$; $SD = 8.81$) students $F = 9.92$, $p < .05$. In analyzing the advanced standing courses, the AVID-7 ($M =$

3.54; $SD = 3.43$) students earned significantly more advanced standing courses than the AVID-3 ($M = 1.86$; $SD = 3.47$) and the AVID-0 ($M = 1.21$; $SD = 2.85$) students.

Foreign language and mathematics (Algebra I and Geometry) are courses that students can take in middle school for high school credit. In this school district, approximately 23% of

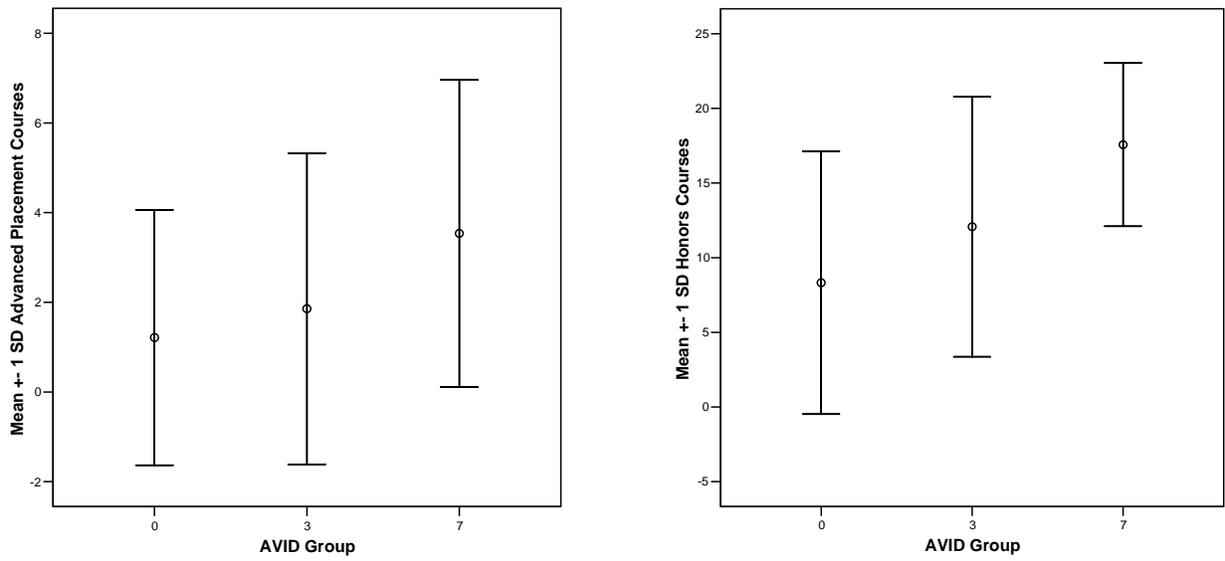


Figure 7. A comparison of the means and standard deviations of the advanced standing and honors courses displayed separately for the independent variables.

middle school students in 1998-1999 entered high school with Algebra I and/or Geometry high school credit. The students who participated in AVID earned more credits in foreign language and Algebra I and Geometry than other students district-wide. Of the 28 AVID-3 students, 46.43% earned Algebra I and/or Geometry credits as compared to 26 or 35.71% of the AVID-7 students. The majority of the AVID-7 (100%) and the AVID-3 (92.86%) of the AVID-3 students earned a foreign language credit prior to entering high school. The AVID-0 students earned significantly fewer credits in foreign language (15) and mathematics (8).

To be eligible to enroll in the higher levels of sequential courses, students must begin a foreign language course in middle school. If a student has not completed the fourth year of a foreign language, they cannot take an advanced standing course for that language such as

Advanced Placement Spanish. Therefore, earning a foreign language credit in middle school would allow a student to take an advanced level course in high school.

The Commonwealth of Virginia offers several types of high school diplomas. The two types of diplomas earned by students in this study were advanced studies diplomas and standard diplomas. In 2003, in order to earn the advanced studies diploma students were required to earn

Table 23

Credit Requirements for the Standard and Advanced Studies Diplomas

| | Standard Credits Required | |
|-------------------------------|---------------------------|--------------------------|
| | Standard Diploma | Advanced Studies Diploma |
| English | 4 | 4 |
| Mathematics | 3 | 4 |
| Laboratory Science | 3 | 4 |
| History and Social Science | 3 | 4 |
| Foreign Language | 0 | 3 |
| Health and Physical Education | 2 | 2 |
| Fine and Practical Arts | 1 | 1 |
| Electives | 6 | 2 |
| Total | 22 | 24 |

24 high school credits in prescribed disciplines as noted in Table 23. Students earning a standard diploma were not required to earn foreign language credits. To meet requirements for the standard diploma students were required to earn 22 high school credits. Students who participated in AVID-7 (82.14%) and AVID-3 (53.57%) earned a greater number of advanced

studies diplomas than non-AVID participants (46.43%). The AVID-7 and AVID-3 students earned more advanced studies diplomas than the AVID-0 participants and the AVID-7 students earned two times the number of advanced studies diplomas than the students in the total school district. The AVID-0 group exceeded the school district’s mean percentage of students earning an advanced studies diploma.

Table 24

Diplomas Type Earned by Number and Percentage for AVID-7, AVID-3, and AVID-0

| Student Group | Advanced Studies Diploma | Standard Diploma |
|------------------------|--------------------------|------------------|
| AVID-7 | 23 (82.14%) | 5 (17.86%) |
| AVID-3 | 15 (53.57%) | 13 (46.43%) |
| AVID-0 | 13 (46.43%) | 15 (53.57%) |
| School District Totals | 772 (41.39%) | 1,016 (54.48%) |

The first research question of the study focused on course taking patterns of AVID-7, AVID-3, and AVID-0 students. The findings of the study indicated that course taking patterns among these students differed significantly. AVID-7 and AVID-3 students earned more combined advanced standing and honors courses than AVID-0 students. In Figure 8, the mean and standard deviations are displayed for each group. The scores of the AVID-7 group were clustered closer to the mean; therefore, there was less variability in the scores for this group. An unanticipated finding of the study was noted when the advanced standing courses and the honors courses were analyzed separately. As noted in Figure 9, AVID-7 and AVID-3 students earned significantly more honors courses than AVID-0 students. In a comparison of the honors courses

taken by AVID-7 and the AVID-0 students, the mean score for the AVID-7 students ($M = 17.57$; $SD = 5.47$) doubled that of the AVID-0 group ($M = 8.32$; $SD = 8.81$). A similar pattern emerged when analyzing the data on advanced standing courses. The AVID-7 students earned a greater number of advanced standing courses than the AVID-3 and the AVID-0 students. The mean number of advanced standing courses for the AVID-7 group exceeded the mean of the AVID-3 group by 1.67 and the AVID-0 group by 2.33. These findings will be explored further in Chapter 5.

Weighted Cumulative Grade Point Average

Weighted cumulative grade point averages were computed for students in grades 9 through 12 at the end of each semester. The weighted cumulative grade point average was based on the grades students earned in courses for which high school credit was awarded (including failing grades, repeated courses, summer school, night school, and credit courses taken prior to grade nine). For the purpose of this study, the weighted cumulative grade point averages used were computed by the school district at the end of the second semester of the study participant's senior year.

The school district offered high school courses with varying levels of rigor and weighted credits. Course weighting was assigned upon the recommendation of the school district's curriculum committee and the approval of the School Board as noted in Table 25. All courses identified for advanced standing contained a mandated external evaluation component. International Baccalaureate courses and Advanced Placement (AP) courses were weighted with advanced standing; honors and Pre-International Baccalaureate courses received honors weight. A policy of the school district requires that students who do not participate in the external

evaluation for an advanced standing course receive honors weighted credit instead of advanced weighted credit.

The mean weighted cumulative grade point average for the 84 study participants was 2.64 (*SD* .57). Weighted cumulative grade point averages for the study participants ranged from 1.24 and 3.93. AVID-7 students earned a mean weighted cumulative grade point average of 2.93 (*SD*

Table 25

Scale of Course Weighting

| Grade | Advanced Standing | Honors | Standard |
|-------|-------------------|--------|----------|
| A | 5 | 4.5 | 4 |
| B | 4 | 3.5 | 3 |
| C | 3 | 2.5 | 2 |
| D | 2 | 1.5 | 1 |
| F | 0 | 0 | 0 |

Note: Information taken from the Directory of High School Courses: Guide for Students to Academic Options 2002-2003.

.42) which exceeded the mean weighted cumulative grade point averages for AVID-3 and AVID-0. AVID-3 and AVID-0 students had the lowest minimum cumulative grade point averages of 1.40 and 1.24 respectively.

The mean weighed cumulative grade point average for AVID-3 students exceeded the AVID-0 group by .16. The mode for AVID-7, AVID-3, and AVID-0 are respectively 3.35, 2.53, and 2.22. The mode or most reported weighted cumulative grade point average for each group is higher for AVID-7 students than for the other groups. In Table 26, the range of scores for each group is noted.

Table 26

Descriptive Statistics for Weighted Cumulative Grade Point Averages

| | <i>N</i> | <i>M</i> | <i>SD</i> | <i>Min</i> | <i>Max</i> |
|--------------|----------|----------|-----------|------------|------------|
| Total Sample | 84 | 2.64 | .57 | 1.24 | 3.93 |
| AVID-7 | 28 | 2.93 | .43 | 2.10 | 3.68 |
| AVID-3 | 28 | 2.60 | .63 | 1.40 | 3.93 |
| AVID-0 | 28 | 2.41 | .52 | 1.24 | 3.50 |

A closer analysis of the weighted cumulative grade point average can be observed by reviewing the data in Table 27. When the scores for each group were categorized in ranges, differences were readily observed. For example, there were more AVID-7 students (82%) in the combined highest ranges (3.0 and above, and 2.9 to 2.5) than AVID-3 students (61%) and

Table 27

Number and Percent of Students Earning Weighted Cumulative Grade Point Averages by Range of Scores

| Group | Range of Weighted Cumulative Grade Point Averages | | | |
|--------|---|-----------|-----------|---------|
| | 3.0 > | 2.9 – 2.5 | 2.4 – 2.0 | 1.9 < |
| AVID-7 | 12 (43%) | 11 (39%) | 5 (18%) | 0 (0%) |
| AVID-3 | 7 (25%) | 10 (36%) | 5 (18%) | 6 (21%) |
| AVID-0 | 3 (11%) | 9 (32%) | 10 (36%) | 6 (21%) |

AVID-0 students (43%). AVID-7 students (43%) had greater weighted cumulative grade point averages than any other group. The majority of the AVID-3 and AVID-0 students had weighted cumulative grade point averages than in the 2.9 to 2.5 range. In addition, AVID-3 and AVID-0 had the same percentage of students who earned weighted cumulative grade point averages below 1.9. The lowest weighted cumulative grade point average for AVID-7 students was a 2.1.

A one-way analysis of variance was conducted to evaluate the relationship between group membership and weighted cumulative grade point average. The independent variable, group membership included three levels: AVID-7, AVID-3, and AVID-0. The dependent variable was the weighted cumulative grade point average computed at the end of the twelfth grade. The null hypothesis indicated that there was no statistically significant difference among AVID-7, AVID-3, and AVID-0 with respect to weighted cumulative grade point average. The ANOVA was significant, $F(2, 81) = 6.84, p = .02$. The effect size (*partial eta squared* = .145) indicated a moderate effect, with weighted cumulative grade point average accounting for 15% of the variance of the dependent variable.

To discern where differences occurred in the independent variable, follow-up tests were conducted (see Table 28). These follow up tests evaluated pair wise differences among the means of AVID-7, AVID-3, and AVID-0. The variances among the three groups ranged from 18.48 to 39.39.

With the wide spread in variance, it was determined not to assume that the variances were homogeneous but to conduct post hoc comparisons. The Dunnett C test was selected as the most appropriate post hoc test to use because it does not assume equal variances among the three

Table 28

Multiple Comparisons for the Weighted Cumulative Grade Point Averages

| Group | Group | Mean Difference | Standard Error | Significance |
|-------|-------|--------------------|-------------------|--------------|
| 7 | 0 | .5207* | .14231 | .002 |
| | 3 | .3271 | .14231 | .077 |
| 3 | 0 | .1936 | .14231 | .401 |
| | 7 | -.3271 | .14231 | .077 |
| 0 | 3 | -.1936 | .14231 | .401 |
| | 7 | -.5207* | .14231 | .002 |

groups. The Dunnett C post hoc test indicated that there were statistically significant differences between AVID-0 ($M = 2.41$) and AVID-7 ($M = 2.93$). The results also indicated that there were no differences between AVID-3 ($M = 2.60$) and AVID-0 ($M = 2.41$) or AVID-3 ($M = 2.60$) and AVID-7 ($M = 2.93$). In Figure 10, the weighed cumulative grade point for AVID-3 and AVID-0 are in the lower quadrant of the graph. In addition to having a lower weighted cumulative grade point average, the AVID-3 and the AVID-0 groups have wider variance in scores. For example, the AVID-7 scores ranged from 2.10 to 3.68 (range 1.58); the AVID-3 scores ranged from 3.93 to 1.40 (range of 2.53) and the AVID-0 scores ranged from 3.50 to 1.24 (range of 2.28). The scores for the weighted cumulative grade point average for the AVID-7 group were not only

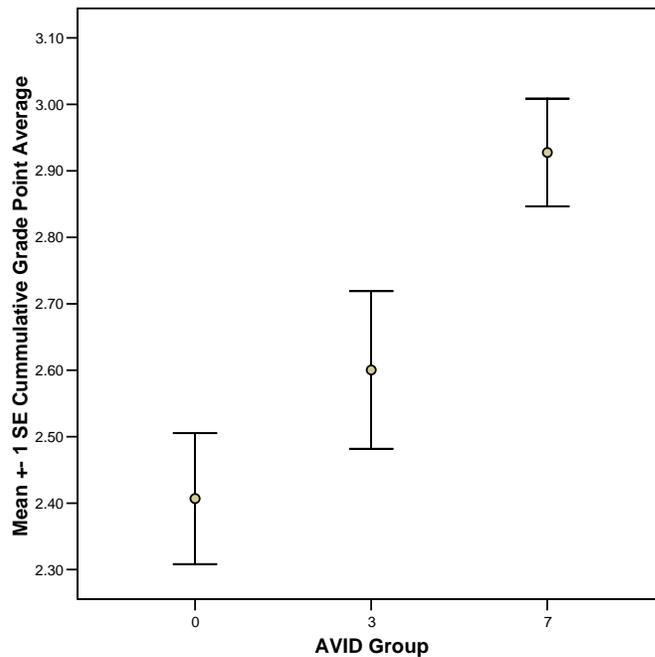


Figure 8. Means and Standard Deviations for Weighted Cumulative Grade Point Averages

greater than the other groups, but the scores were clustered closer to the mean and more similar than the scores for AVID-3 and AVID-0.

The second research question of the study focused on the weighted cumulative grade point averages of AVID-7, AVID-3, and AVID-0 students. The descriptive data revealed that the means for the independent variables differed. The AVID-7 and the AVID-3 students had greater mean weighted grade point averages than the AVID-0 students. However, after conducting the one-way ANOVA and post hoc testing, statistically significant differences were noted between the AVID-7 and the AVID-0 students. The post hoc testing yielded no statistically significant differences in the pair wise comparisons of AVID-7 and AVID-3 or AVID-3 and AVID-0. The standard deviation for the AVID-7 group was significantly lower than

the AVID-3 and the AVID-0. This indicates that the weighted cumulative grade point averages of the AVID-7 students were similar and closer to the mean score.

English: Reading/Literature and Research SOL Test

In the Commonwealth of Virginia, eleventh grade students are administered the English: Reading/Literature and Research Standards of Learning (SOL) Test. This assessment is an untimed multiple choice test that requires students to demonstrate their proficiency in three categories: understanding a variety of print materials; understanding the elements of literature; and locating and using information. For the Virginia Standards of Learning assessments, each student receives a scaled score ranging from 0-600. There are three levels of performance that students can earn on the Standards of Learning assessments. In order to pass an assessment, students must earn a scaled score of 400 or above. Students receive a pass proficient rating with a scaled score of 500 or above and a pass advanced with a mean scaled score of 600 or greater.

Table 29

Descriptive Statistics for English: Reading/Literature and Research SOL Test

| | <i>n</i> | <i>M</i> | <i>SD</i> | <i>Min</i> | <i>Max</i> |
|--------------|----------|----------|-----------|------------|------------|
| Total Sample | 84 | 460.24 | 45.27 | 374 | 585 |
| AVID-7 | 28 | 476.18 | 45.60 | 409 | 585 |
| AVID-3 | 28 | 454.86 | 42.29 | 382 | 569 |
| AVID-0 | 28 | 449.68 | 44.96 | 374 | 569 |

The total sample had a mean English SOL score of 460.24 (*SD* = 45.27). The AVID-7 minimum English SOL score was 409 which indicate that all of these students passed the test.

AVID-3 and AVID-7 students had mean English SOL scores of 454.86 ($SD = 42.29$) and 449.68 ($SD = 44.96$) respectively. The minimum scores for AVID-3 and AVID-0 were 374 and 382.

In a closer examination of the descriptive data, 100% of the AVID-7 students, 96% of the AVID-3 students, and 93% of the AVID-0 students passed the eleventh grade English SOL test. Only three students in the study failed to receive a passing scaled score of 400. In the total sample, 78.6% of the students scored within the pass level and 17.9% scored at pass proficient.

A one-way analysis of variance was conducted to evaluate the relationship between group membership and the scaled scores on the English SOL test. The independent variable, group membership, included three levels: AVID-7, AVID-3, and AVID-0). The dependent variable was the score earned by students on the English test.

Table 30

Performance Categories of Students on the English End of Course Test by Number and Percent

| Group | <i>n</i> | Pass Advanced | Pass Proficient | Fail | Total Passed |
|--------------|----------|---------------|-----------------|----------|--------------|
| | | 500-600 | 400-499 | <400 | |
| AVID-7 | 28 | 8 (28.6%) | 20 (71.4%) | 0 | 28 (100%) |
| AVID-3 | 28 | 4 (14.3%) | 23 (82.1%) | 1 (3.6%) | 27 (96.43%) |
| AVID-0 | 28 | 3 (10.7%) | 23 (82.1%) | 2 (7.2%) | 26 (92.86%) |
| Total Sample | 84 | 15 (17.9%) | 66 (78.6%) | 3 (3.6%) | 81 (96.4%) |

The ANOVA indicated no statistically significant relationship, $F(2, 81) = 2.81, p = .02$.

The effect size (partial eta squared = .065) indicates a weak relationship between group

membership and the English SOL test. The null hypothesis was accepted. The results indicated that AVID-7 ($M = 476.18$; $SD 45.60$), AVID-3 ($M = 454.86$; $SD 42.29$) and AVID-0 ($M = 433.02$; $SD 44.96$) scores on the English SOL test was not significantly different. Students earned comparable scores on the English SOL tests regardless of group membership.

Table 31

Multiple Comparisons for the English SOL Scaled Scores

| Group | Group | Mean Difference | Standard Error | Significance |
|-------|-------|--------------------|-------------------|--------------|
| 7 | 0 | 26.50 | 11.843 | .088 |
| | 3 | 21.32 | 11.843 | .204 |
| 3 | 0 | 5.18 | 11.843 | .909 |
| | 7 | -21.32 | 11.843 | .204 |
| 0 | 3 | -5.18 | 11.843 | .909 |
| | 7 | -26.50 | 11.843 | .088 |

In summary, the study focused on the achievement of AVID-7, AVID-3, and AVID-0 students as measured by the scaled score on the English Reading Literature and Research Standards of Learning Test administered to eleventh grade students in Virginia. The mean scaled score earned by all students in the study was 460.24. The mean scaled score for AVID-7 students was 476.19, which exceeded the mean scaled score for AVID-3 students by 21.32 points

and AVID-0 students by 26.51 points. The ANOVA indicated that there was no statistically significance in the differences of the scaled scores for AVID-7, AVID-3, or AVID-0. The majority of the students in the study (96.4%) passed the English SOL test. A higher percentage of AVID-7 (28.6%) and AVID-3 (14.3%) students scored Pass Advanced on the English SOL test than the AVID-0 (10.7%) students.

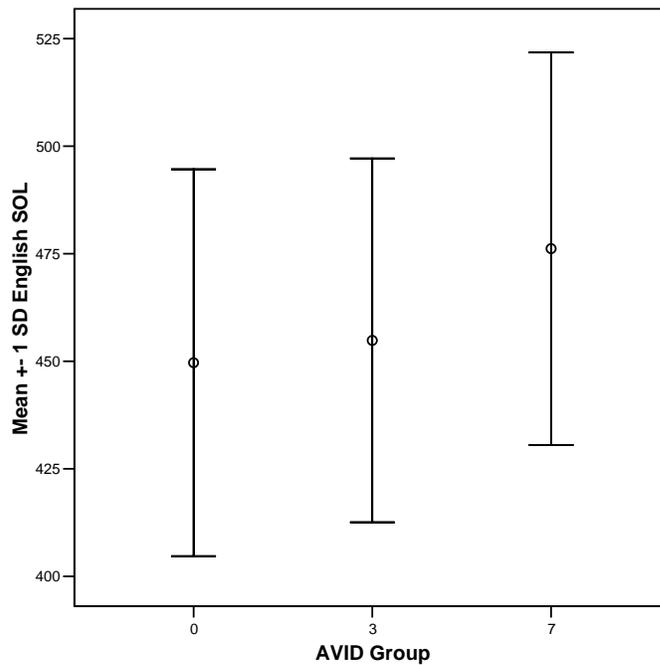


Figure 9. Means and Standard Deviations of English SOL test scores for study participants.

Chapter Summary

The results of the one-way ANOVA supported the overall research question which asked were students different as a result of participation in AVID. The students who participated in AVID for seven years (AVID-7) had higher weighted cumulative GPAs and accumulated more advanced standing and honors courses than students who did not participate in the program (AVID-0) or students who participated in the program during their middle school years only

(AVID-3). Students who participated in the program for three years (AVID-3) produced statistically significant results in the accumulation of advanced standing and honors courses only. There were no statistically significant differences among any of the groups in the study with respect to the scaled scores on the English end-of-test.

With respect to the major findings of this study, an essential question remains unanswered: Does participation in AVID have a positive impact on students? In Chapter 5 the findings of the study will be discussed and related to the overarching question on the impact of AVID participation on course taking, weighted cumulative grade point average, and English SOL scaled scores. This question is particularly germane considering the emphasis in the educational arena on accountability.

In addition to presenting conclusions and discussions concerning the findings of the study, information related to the intent of the AVID program will be explored in Chapter 5. The AVID program purports to be a college preparatory program that prepares students for eligibility to college. Are students prepared for college as a result of participating in the program? This question will be explored in Chapter 5. Implication and recommendations for school districts that are currently offering the AVID program and for school districts that might consider implementing the AVID program in the future will be discussed in Chapter 5.

CHAPTER V

SUMMARY, CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

Introduction and Summary

The purpose of this study was to explore the effects of Advancement Via Individual Determination (AVID) on the course taking patterns, weighted cumulative grade point averages, and English SOL scaled scores of 84 twelfth grade students. The study included seven year AVID participants (AVID-7), three year AVID participants (AVID-3), and non-AVID participants (AVID-0).

One of the major challenges facing schools today is the achievement gap between minority groups and Caucasians. This achievement gap often leads to low college attendance rates among minority students (NCES, 2000). A factor associated with lower rates of enrollment at colleges among minority students is the lack of academic preparation (Mehan, et al., 1994). Measures of academic achievement, such as grades and class rank, show severe under representation of Blacks, Latinos, and Native Americans among top students in high schools. Similar results for low income and minority students can also be observed in the College Board's Advanced Placement (AP) Program.

The achievement gap also manifests itself in the course taking patterns of students. The College Board's Advanced Placement (AP) Program is comprised of a rigorous set of college credit courses students may take in high school for college credit. The percentage of AP examinations taken by students in the United States who identify themselves with traditionally underrepresented ethnic groups has increased considerably since 1979; however, these students continue to lag behind other subgroups of the population (The College Board, 2002). For example, in 1979, the percentage of AP exams taken by students ranged from 3% Blacks, 2%

Hispanics, 5% Asian American, and 88% White/Caucasian. Thirteen years later in 2002, the number of minorities taking AP exams has increased, but the rate of participation for certain groups have shown only minimal growth. In 2002, AP participation increased slightly for all minority groups and decreased for White students: 4.4% for Blacks (an increase of 1.4%), 6% for Hispanics (an increase of 4%), 11% for Asian Americans (an increase of 6%), and 65.3% for White students (a decrease of 22.7%). When the race/ethnicity of AP participation is compared to the race/ethnicity of the school-aged population in 2002, the numbers become even more revealing. In 2002, the school-aged population was comprised of 17.2% Blacks, 17.1% Hispanics, and 4.2% Asian Americans, and 60.3% White/Caucasians. Blacks and Hispanics are underrepresented in AP participation and Asian Americans and Whites are overrepresented in AP participation. These statistics are important because the data suggests that students who take advanced placement courses are more likely to attend college than students who do not take these courses (College Board, 2000).

Advancement Via Individual Determination (AVID) is a college preparatory program that purports to assist students in meeting the academic qualifications necessary for college eligibility and success. AVID has been presented as a program that assists students with rigorous challenging curricula and prepares the students for entry and success in college (Mehan, Hubbard, Villanueva, 1994). However, the current research on the impact of AVID on students is inconclusive.

Slavin and Fashola (1998) reviewed four college preparatory programs designed to increase college attendance rates of low-income and minority students. In the review of AVID, Slavin and Fashola found that the program had positive effects for some students, but the researchers questioned the research design in the study conducted by Mehan, et al. In addition,

the Mehan, Hubbard, and Villanueva studies focused on the sociological impact of the program on education. Victory (1998) reported on the results of a causal comparative study of AVID and Gifted and Talented students and concluded that students in the Talented and Gifted program scored higher on the Stanford 9-TA mathematics and reading test than AVID students. The questionable aspect of the Victory study was the lack of comparability of students who receive gifted and talented services and AVID students. Guthrie and Guthrie (2000) in a longitudinal study of AVID students concluded that students who participated in middle school AVID had a significantly higher grade point average and credit accumulation than students with one year or no years of AVID experience. In this study, questions were also raised regarding the comparability of the participants.

There have been questions raised about the research design and the comparability of the study participants in previous AVID research (Slavin & Fashola 1998). There continues to be a need in the educational arena for rigorous research on the AVID program that focuses on the study of comparable non-AVID students with AVID students to determine program impact from an educational perspective. This study provides the first body of research that uses comparable groups to determine the effects of AVID participation. There were three research questions central to this study.

1. Is there a difference among groups (AVID-7, AVID-3, and AVID-0) with respect to course selection as measured by the number of combined advanced standing and honors courses?
2. Is there a difference among groups (AVID-7, AVID-3, and AVID-0) with respect to twelfth grade weighted cumulative grade point average?

3. Is there a difference among groups (AVID-7, AVID-3, and AVID-0) with respect to eleventh grade English Standards of Learning (SOL) scale scores?

Cumulative grade point average, course selection, and achievement are three variables that are often used by colleges as factors in the admissions process. Does AVID prepare students for eligibility and acceptance to college? The findings of this study will be used to address this overarching research question. This chapter presents a discussion of the findings, conclusions and implications for practice, and recommendations for practice and for further research.

Limitations and Delimitations

This study is limited to middle and high school students in one urban school district in southeastern Virginia. Several limitations within the research design of the study reduce the ability to generalize the results to a population other than the one studied. These limitations are maturation and experimental mortality. In addition, there was no measurement available to determine the comparability of the students in the study. This may limit the ability to generalize the results of this study to other groups.

The researcher delimited the study by targeting students who entered the program three years after the school district's implementation of AVID. This decision was made to provide time for the school district to refine the recruitment process and to select students in line with the program goals.

Discussion of the Findings

The purpose of this study was to investigate the effect of AVID participation on course selection, weighted cumulative grade point average, and English SOL scaled scores of twelfth grade students. The treatment groups were the AVID students (AVID-7 and AVID-3) and the control group was the non-AVID students (AVID-0).

In an analysis of the data, it was evident that there were a greater number of females in the AVID program than males. Over 60% of the AVID students in the study were female. Conversely, males were less likely to participate in the program and to remain in the AVID program throughout high school. Females entered the program in greater numbers and had a greater retention rate than males. The students in the program are required to write extensively on a variety of topics which may appeal to females rather than males. In addition, students in the middle and high school AVID program are required to manage and carry a notebook that was specifically designed for AVID students. Males could be less receptive to carrying the binder in school which may deter them from continuing in AVID in high school

AVID is a program designed “to motivate and prepare students from underrepresented linguistic and ethnic minority groups or low-income students of any ethnicity to perform well in high school and to seek a college education” (Mehan, et al., 1996, p. 14). In this study, students were recruited for participation in AVID during the fifth grade. Counselors and teachers targeted students of color and low-income students for enrollment in the AVID program beginning in the sixth grade level. Therefore, it is logical to expect that a high percentage of the AVID participants would be Black students, especially in a school district where the majority of the students were Black. It must be noted that during middle school a higher percentage of White students participated in the AVID program but many of these students did not continue in the AVID program during high school. In the sample, 35.7% of the AVID-3 students were White but only 7.1% of the AVID-7 students were White. It is evident that the students only involved in the middle school AVID program were more diverse than the students in the high school AVID program.

The findings in this study are consistent with the demographic findings in previous studies which indicate that students of color are “overrepresented” in AVID programs. For example, in the Mehan, et al. (1996) study conducted with students in California, Latinos (41%) and Blacks (30%) accounted for the majority of students in their study with Whites comprising a smaller percentage (29%) of the study population. The study by Victory (1998), also confirmed that more students of color are included in the AVID program. In Victory’s study 82.5% of the students were Black and 19.1% of the students were White. In addition, Watt, Powell, and Mendiola (2004) reported that the majority of the AVID students in Texas were Hispanic (51%) and Black (25%). Only 18.7% of the AVID students in Texas were White. These numbers were consistent with the data reported in AVID studies reviewed and indicate that minority students are more likely to enroll in AVID than White students. It must be noted that the group identified as the minority group is dependent on the state or region of the AVID program.

The findings of this study indicated that participation in AVID had a positive effect on the course selection of students. AVID students enrolled in more honors and advanced standing courses than non-AVID students. Additionally, the longer students remained in the AVID program the more honors and advanced standing courses they took. Research by Mehan et al. (1996) supports the finding in this study. Mehan et al. compared the credit attainment of students who participated in the AVID program for three years with students who participated in the AVID program for one year. Students who completed three years of the AVID program accumulated more credits than students who left the program within one year (Mehan et al.). These data support the finding that the longer students remain in AVID, the more likely they are to earn a higher number of credits. Additionally, Guthrie and Guthrie (1999) supported the finding that AVID students earn more credits than non-AVID students. Guthrie and Guthrie

reported that students with two years of middle school AVID, accumulated more credits than those students with no middle school AVID.

Of the 28 AVID-7 students, 100% earned a foreign language high school credit prior to entering the ninth grade and over 90% of the AVID-3 students earned a foreign language credit. AVID students also earned more mathematics credits in middle school than non-AVID students. Students who began earning foreign language and mathematics credits in middle school took higher levels of advanced standing foreign language and mathematics courses in high school which positioned these students to earn a more rigorous diploma. The two types of diplomas earned by students in this study were an advanced studies diploma and a standard diploma. There are more credit requirements for the advanced studies diploma (24) than the standard diploma (22). In addition, students must earn foreign language credits in order to earn an advanced studies diploma. AVID-7 and AVID-3 students earned more advanced studies diplomas than AVID-0 students. AVID students earn credits earlier, especially foreign language credits, and they earn more rigorous credits than non-AVID students.

Students who participated in AVID for seven years, grades 6 through 12, earned a significantly higher weighted cumulative grade point average than three-year AVID participants and non-AVID participants. Guthrie and Guthrie (2000) compared the grade point average (GPA) of students with two years of middle school AVID to the GPA of students who had only one year of AVID in middle school and found no significant differences. Guthrie and Guthrie's findings are consistent with the findings in the current study which indicate that students who were enrolled in AVID from grades 6 through 12 demonstrated a significantly higher weighted cumulative grade point average than students who were enrolled in the middle school program only. However, Guthrie and Guthrie reported that their findings regarding GPA indicated that

AVID students were in the middle academically. The students in Guthrie and Guthrie's study were only in the AVID program for one or two years in middle school. GPA of AVID students provided evidence AVID students were academically in the middle.

The one-way ANOVA indicated that the English SOL scaled scores for AVID-7, AVID-3, and AVID-0 were not statistically different. Although there were no statistically significant differences in the mean scaled scores of the groups of students at the .05 level, there certainly were differences in the performance of students on the English SOL. The mean scaled score for the AVID-7 group was 26 points higher than the mean score for non-AVID students and 21 points higher than the mean score for AVID-3 students. In addition, AVID students (98.21%) passed the English SOL at a higher rate than students in the school district (84.65%) and students state wide (86.19%). There were other differences noted in the English SOL scores. For example, one AVID-0 student and two AVID-3 students failed to pass the English SOL test. There were more AVID-7 students who earned Pass Advanced on the English SOL test than any other group. Watt, Powell, and Mendiola (2004) found that AVID students in Texas had higher pass rates on the end-of-course tests than their classmates. Their pass rate exceeded the state average by 21 and 12 percentage points respectively.

Conclusions and Implications for Practice

The goals of the AVID program are to increase academic success of students; increase opportunities for students to enroll in college preparatory courses at the high school level; provide support services for students enrolled in the program; and develop and encourage a positive attitude toward high school and higher education on the part of AVID students.

Results of this study indicate that AVID has been successful in meeting the goals of the program. Students with higher grade point averages can compete for college acceptances and

merit based scholarships. As these students enroll in and complete honors and Advanced Placement (AP) courses their academic profile is enhanced and they are more prepared for the rigor of college. These students may receive college credits for AP courses taken in high school and thus, realize savings in their tuition. In addition, because AVID students are academically prepared for college, they are less likely to require remediation.

Students in AVID pass the Virginia Standards of Learning Reading/Literature and Research test. The implication of this finding is that as of 2004, the year after the students in this study graduated, subsequent groups of students are required to pass this test prior to receiving a high school diploma. Students earn more advanced studies diplomas than standard diplomas leads to more college acceptances.

The AVID students are less likely to drop out of school and more likely to feel connected and supported by the school and the program. AVID selects students for inclusion in the program and places them in an elective course that meets regularly. AVID becomes a group identity for students because students carry the same notebook and spend time in class and on field trips together. In addition, the students participate in collaborative study groups and discussion groups with tutors. The peer relations that are developed in the AVID classroom provide students with a positive peer group that serves as a support system for the AVID students. The peer groups play an integral part in the academic success of students (Mehan, Villanueva, Hubbard & Lintz, 1996).

The study also revealed that females enroll and persist in AVID at higher rates than males. This is a positive finding from a female perspective because in certain areas of higher education, such as mathematics and science, females are underrepresented. AVID females that are academically prepared may choose to pursue majors in mathematics and science in college.

Without reducing the female participants, AVID must develop strategies to recruit and retain males in the program.

In conclusion, students, school counselors, administrators, and parents must understand that there are long term benefits of remaining in the program from grades six through twelve. AVID students can earn a college education and impact future generations of students. This places AVID students in a position to become productive citizens in our democratic society.

Recommendations for Practice

The results of this study indicated that participation in the middle school AVID program does not give students the full benefit of the intervention. The majority of students exit the program at the end of their eighth grade year. Students leave middle school prepared to access the higher level courses in high school, but if they are not participants in the high school AVID program, the grade point averages of these students suffer. In addition, students who exit the program do not graduate with advanced studies diplomas at the same rate as students who remain in the program during high school. School districts must focus their efforts on retaining eighth grade students in the program and utilize resources to combat program attrition throughout high school.

Males and low-income students are underrepresented in AVID classrooms. Program leaders, teachers, and counselors must find ways to recruit and retain more males and low-income students in the program. The AVID program was designed to meet the needs of these students and their families. The AVID elective class in high school would provide these students with a supportive environment to nurture their academic growth. Mehan et al. (1996) determined that the AVID support structure eliminated the correlation between family income and college. Over

90% of the AVID students in the school district under investigation in this study enroll in 4-year colleges and universities.

Finally, school districts must commit their resources to evaluate the effectiveness of their AVID programs. This evaluation should include expanding the view of a successful AVID program to include the AVID students' success once they have entered postsecondary education. The AVID mission includes ensuring that students are not only eligible and accepted to college, but that they also are successful in college. Program personnel must monitor the performance and persistence of AVID students in college and use the information to better prepare future students for postsecondary education.

Recommendations for Future Study

1. Conduct a comprehensive evaluation of the AVID program especially in school districts that have three to five years of AVID implementation to determine the program's effectiveness.
2. Investigate the attrition of students in AVID to determine ways to retain more students in the program from grades eight to nine and throughout high school.
3. Conduct qualitative research to determine the perceptions of students, teachers, counselors, and parents on the effectiveness of AVID.
4. Investigate the relationship of AVID on gender, race/ethnicity, attendance and socioeconomic status.
5. Expand the study to include the pass rates of students in the honors and advanced standing courses.
6. Study the impact of AVID participation on the SAT and the ACT.

7. Conduct an investigation that would ascertain the performance of AVID students on all Standards of Learning tests.
8. Conduct focus groups with current AVID students to allow them an opportunity to voice their opinion about the program and suggest ways to make it more effective.
9. Conduct focus groups with exiting seniors and former AVID students to determine their perception of the program.
10. Study the AVID curriculum to determine how it is delivered throughout the school district and identify areas where the curriculum could be strengthened.
11. Study the effect of the International Baccalaureate program and magnet programs in the district on AVID participation.
12. Conduct an in depth study of the performance of AVID students in the Advanced Placement (AP) program and include information on the performance of AVID students on AP examinations.
13. Conduct a follow up study to determine if the stronger students persist in the high school AVID program.
14. Conduct a cost-benefit analysis of the program to determine if the benefits justify the cost of the program.

Research Reflections

In 1837, Horace Mann, a founding father of public education, made a statement that captures the essence of the AVID program.

All children like all men, rise easily to the common level. There the mass stops; strong minds only ascend higher. But raise the standard, and, by spontaneous movement, the mass will rise again and reach it.

If educators raise the standards and provide the support that students need to excel, they will meet those standards. It takes more than spontaneous movement to elevate the mass and programs like Advancement Via Individual Determination can often serve as a catalyst to assist students in moving beyond the common level and ascending to academic success.

The findings of this study should prove useful to school districts that may currently have an AVID program or may be considering implementing a program. There are numerous students in our country and abroad who have the desire to attend college. Often, these students are from families with little knowledge of what students must do to become eligible for college attendance. Mahoney and Merritt (1993) found that students of color and low-income students are dependent on school based educators to provide them with guidance as they progress through the college admissions process. If their assertion is true, programs like AVID are in a position to provide invaluable support for these families and their students.

I began my doctoral journey many years ago. As I embarked on this journey, I was extremely exhilarated, but I was also somewhat apprehensive. I knew that the doctoral program would require time, energy, and scholarship, but I felt prepared. I expected the courses to be energizing and thought provoking, but I hoped that everything I might encounter in the program would be tempered by challenging, kind, and helpful professors. Fortunately, everything that I expected from the program came to fruition. The program required an enormous amount of time, energy and scholarship. The courses were interesting, exciting, and thought-provoking, and I met only challenging, kind, and helpful professors.

The dissertation process has not only enhanced my understanding of college preparatory programs, but it has given me a better understanding of the research process. I have learned the true meaning of tenacity and perseverance. I have learned that one never finishes writing

projects and that there are always ways to improve what one writes. In addition, I have learned the importance of language and communicating ideas accurately. The most profound insight that I have gained from this process is the importance of the people and relationships. My advisor, my family, my friends, and my colleagues would not allow me to forget that I was completing a dissertation. They were constantly finding strategies to give me the time I needed to work on my dissertation. It is the spirit of the people that surrounded me and my abiding faith that have helped me to bring perspective and appreciation to my work and my life.

References

- Alexander, K. L. & McDill E. L. (1976). Selection and allocation within schools: Some causes and consequences of our curriculum placement. *American Sociological Review*, 41, 963-980.
- Adelman, C. (1999). Answers in the tool box: Academic intensity, attendance patterns, and bachelor's degree attainment. Washington, DC: Office of Educational Research and Improvement, U.S. Department of Education. ERIC Document Reproduction Service No. 431 363
- Berkner, L. & Chavez, L. (1997). Access to postsecondary education for the 1992 high school graduates. Washington, DC: U.S. Government Printing Office.
- Borus, M. E. & Carpenter, S. A. (1984). Factors associated with college attendance of high school seniors. *Economics of Education Review*, 3(3), 169-176.
- Bridgeman, B., McCamley-Jenkins, L., & Ervin, N. (2000). Predictions of freshman grade-point average from the revised and recentered sat[r] I: Reasoning test (College Board Report No. 987443). New York, NY: College Board Publications.
- California Department of Education. (1998). California basic educational data system. Sacramento, CA: California Department of Education: Author.
- Coleman, J.S., Campbell, E.Q., Hobson, C. J., McPartland, J., Mood, A. M., Weinfeld, F. D., & York, R. L. (1966). Equality of Educational Opportunity. Washington D.C.: Government Printing Office.
- Davis, K. & Moore, W. E. (1945). Some principles of stratification. *American Sociological Review*, 10, 242-249.

- del Pinal, J. & Singer A. (1997). Generations of diversity: Latinos in the United States. *Population Bulletin*, 52(3), 1-48.
- Ethington, C. A. (1991). A test of a model of achievement behaviors. *American Educational Research Journal*, 28(1), 155-172.
- Finley, M. K. (1984). Teachers and tracking in a comprehensive high school. *Sociology of Education*, 57, 233-243.
- Freedman, J.B. (2000). *Wall of fame: One teacher, one class, and the power to save schools and transform lives*. San Diego: The Page Group, Inc.
- Gall, M. D., Borg, W. R., & Gall, J. P. (1996). *Educational research: An introduction*. 6th edition. White Plains, NY: Longman.
- Gandara, P. & Maxwell-Jolly, J. (1999). *Priming the pump: Strategies for increasing the achievement of underrepresented minority undergraduates* (College Board Report No. 987257). New York, NY: College Board Publications.
- Gamoran, A. (1986). Instructional and institutional effects of ability grouping. *Sociology of Education*, 59(4), 185-198.
- Gamoran, A. (1987). The stratification of high school learning opportunities. *Sociology of Education*, 60, 135-155.
- Garet, M. S. & DeLany, B. (1988). Students, courses, and stratification. *Sociology of Education*, 61, 61-77.
- Green, S. B. & Salkind, N. J. (2004). *Using SPSS for windows and macintosh: Analyzing and understanding data fourth edition*. Upper Saddle River, NJ: Pearson Prentice Hall.
- Guthrie, L. F. & David, J. L. (1994). Advancement via individual determination (AVID): Strategies for dissemination. Burlingame, CA: Center for Research, Evaluation, and

- Training in Education (CREATE).
- Guthrie, L. F. & Guthrie, G. P. (2000). *Longitudinal research on AVID 1999-2000: Final report*. Burlingame, CA: Center for Research, Evaluation, and Training in Education (CREATE).
- Heyns, B. (1974). Social selection and stratification. *American Journal of Sociology*, 79, 1434-1451.
- Hodgkinson, H. L. (1998). Demographics of diversity for the 21st century. *The Education Digest*, 64(2), 4-7.
- Hoffer, T. (1992). Middle school ability grouping and student achievement in science and mathematics. *Educational Evaluation and Policy Analysis*, 14(3), 205-227.
- Hubbard, L. A. (1999). College aspirations among low-income african american high school students: Gendered strategies for success. *Anthropology and Education Quarterly*, 30(3), 363-383.
- Hubbard, L. & Mehan, H. (1999). Scaling up an untracked program: A co-constructed process. *Journal of Education for Students Placed At Risk*, 4(1), 83-100.
- Hubbard, L. A. & Ottoson, J. M. (1997). When a bottom-up innovation meets itself as a top-down policy: The avid untracking program. *Science Communications*, 19(1), 41-55.
- Jencks, C. S. & Brown, M. D. (1975). Effects of high schools on their students. *Harvard Educational Review*, 45(3), 272-324.
- Jones, J. D., Vanfossen, B. E., & Ensminger M. E. (1995). School organizational effects. *Sociology of Education*, 68(4), 287-300.
- Jones, L. V., Burton, N. W., & Davenport, E. C. (1984). Monitoring the mathematics

- achievement of black students. *Journal for Research in Mathematics Education* 15(2), 154-164.
- Kane, T. J. (1994). College entry by blacks since 1970: The role of college costs, family background, and the returns to education. *Journal of Political Economy*, 102 (5), 878-911.
- Kane, J. & Spizman, L. M. (1994). Race, financial aid awards, and college attendance: Parents and geography matter. *American Journal of Economics and Sociology*, 53(1), 73-97.
- Kulik, C. C. & Kulik, J. A. (1982). Effects of ability grouping on secondary school students: A meta-analysis of evaluation findings. *American Educational Research Journal*, 19(3), 415-428.
- Lindquist, M. M. (Ed.). (1989). Results from the fourth mathematics assessment of the national assessment of educational progress. National Council of Teachers of Mathematics. Reston, VA.
- Lovelace, T. (1999). *The tracking wars: State reform meets school policy*. Washington, DC: The Brookings Institute.
- Mahoney, J. S. & Merritt, S. R. (1993). Educational hopes of black and white high school seniors in Virginia. *Journal of Educational Research*, 87(1), 31-38.
- Mehan, H., Hubbard, L., & Villanueva, I. (1994). Forming academic identities: Accommodation without assimilation among involuntary minorities. *Anthropology and Education Quarterly*, 25(2), 91-117.
- Mehan, H., Villanueva, I., Hubbard, L., & Lintz, A. (1996). *Constructing school success*. New York: Cambridge University Press.

- Mirel, J. & Angus, D. (1994), High standards for all? The struggle for equality in the American high school curriculum, 1890-1990. *American Educator*, 18(2), 4-9.
- National Commission on Excellence in Education. (1983). *A nation at risk: the imperative for education reform* (Publication No. 065 000001772). Washington, DC: U.S. Government Printing Office.
- National Center for Education Statistics. (2000). The condition of education (NCES Publication 2000-062). Washington, DC: U.S. Government Printing Office.
- Nevi, C. (1987). In defense of tracking. *Educational Leadership*, 44(6), 24-26.
- Oakes, J. (1987). Secondary school tracking: A contextual perspective. *Educational Psychologist*, 22, 129-153.
- Oakes, J. (1992). Can tracking research inform practice? Technical, normative, and political considerations. *Educational Researcher*, 21, 12-21.
- Peake, L. (1996). Pursuing excellence: A study of U.S. eighth-grade mathematics and science teaching, learning, curriculum, and achievement in international context: Initial findings from the third international mathematics and science study (NCES Publication No. 97198). Retrieved October 14, 2000, from <http://nces.ed.gov/pubs97/97198.pdf>.
- Perna, L. W. (2000). Differences in the decision to attend college among African Americans, Hispanics, and whites. *The Journal of Higher Education*, 71(2), 117-141.
- Reyes, L. H. & Stanic, G. M. A. (1988). Race, sex, socioeconomic status, and mathematics. *Journal for Research in Mathematics Education*, 19(1), 26-43.
- Rosenbaum, J. E. (1980). Track misperceptions and frustrated college plans. *Sociology of Education*, 53(2), 74-88.

- Rosenholtz, S. J. & Simpson, C. (1984). The formation of ability conceptions: Developmental trend or social construction. *Review of Educational Research*, 54(1), 31-63.
- Slavin, R. E. (1990). Achievement effects of ability grouping in secondary schools: A best-evidence synthesis. *Review of Educational Research*, 60(3), 471-499.
- Slavin, R. & Fashola, O. S. (1998). *Show me the evidence! Proven and promising programs for America's schools*. Thousand Oaks, CA: Corwin Press.
- Smith, J. (1996). Does an extra year make a difference? The impact on early low-income youth. *Educational Evaluation and Policy Analysis*, 19(4), 325-338.
- SSPS student version 13.0 for windows (2004). [Computer software]. Upper Saddle River, NJ: Prentice Hall, Inc.
- Swanson, M. C. (1989). Advancement via individual determination: Project avid. *Educational Leadership*, 46(5), 63-64.
- Swanson, M. C. (2000). Rigor with support: Lessons from avid. *Leadership*, 30(2), 26-27, 37-38.
- Thomas, G. E. (1980). Race and sex differences and similarities in the process of college entry. *Higher Education*, 9(2), 179-202.
- Turner, R. (1960). Sponsored and contest mobility and the school system. *American Sociological Review*, 25, 855-867.
- The College Board (1999). *Reaching the top. A report of the national task force on minority high achievement (Report Number 201635)*. New York: College Board Publications.
- The College Board (2002). AP Central: Percentage of AP Exams Taken by Students in the United States Identifying Themselves with Traditionally Underrepresented Ethnic

- Groups. Collegeboard.com. Retrieved October 2002, from <http://apcentral.collegeboard.com/article/0,3045,150-156-0-2058,00.html>.
- U.S. Department of Education, National Center for Education Statistics. Paving the way to postsecondary education: K-12 intervention programs for underrepresented youth, NCES 2001-205, prepared by Patricia Gandara with the assistance of Deborah Bial for the National Postsecondary Education Cooperative Access Working Group. Washington D.C. 2001. Retrieved May 2002, from <http://nces.ed.gov/pubs2001/2001205.pdf>.
- U.S. Department of Commerce, U.S. Census Bureau . Retrieved March 3, 2003, from <http://factfinder.census.gov/serlet:datasetMain>
- U.S. Department of Education. (2000). *The Condition of Education 2000* (NCES 2000-062). Washington, DC: U.S. Government Printing Office.
- Victory, J. M. (1998). *A causal-comparative study of the advancement via individual determination program on middle school student achievement and attendance*. Unpublished doctoral dissertation, Virginia Polytechnic Institute and State University.
- Virginia Department of Education. (1999). Virginia Standards of Learning Assessments: Standards of Learning (SOL) Tests Validity and Reliability Information Spring 1998 Administration. Richmond, VA: Author.
- Virginia Department of Education. (2000). Virginia Standards of Learning Assessments: Virginia Technical Report. Richmond, VA: Author. Retrieved from www.pen.k12.us/go/Sols/html
- Virginia Department of Education (2002). Report of graduates: 2000-2001 combined terms high school graduates by plan type. Retrieved October 10, 2002, from <http://www.pen.k12.va.us/VDOE/Publications/grads/gradp0001.html>

Virginia General Assembly. Code of Virginia Title 22.1-209.1:3. Retrieved February 13, 2001,

From <http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+TOC22010000013000000000000>

Watt, K.M., Powell, C.A., & Mendiola, I.D. (2004). Implications of one comprehensive school reform model for secondary school students underrepresented in higher education.

Journal of Education for Students Placed At Risk, 9(3), 241-259.

Welch, W. W., Anderson, R. E., & Harris, L. J. (1982). The effect of schooling on mathematics achievement. *American Educational Research Journal*, 19(1), 145-153.

Wheelock, A. (1992). *Crossing the tracks: How "untracking" can save America's schools*.

New York: The New Press.

Wilds, D. & Wilson, R. (1998). *Minorities in higher education: 15th annual status report*.

Washington, DC: American Council on Education.

APPENDIX

Table 32

Review of Literature on Topics Related to the Advancement Via Individual Determination Program

| Study Citation | Purpose of the Study | Methodology | Results/Findings | Implications |
|---|--|---|---|--|
| Gandara, P. & Maxwell-Jolly, J. (1999). <i>Priming the pump: Strategies for increasing the achievement of underrepresented minority undergraduates.</i> New York: College Board Publications Report No. 987257. | Commissioned by the College Board's National Task Force on Minority Task Force on Minority High Achievements to develop recommendations on how the number of Black, Latino, and Native American students who are academically very successful, can be increased. | Identified higher education programs and strategies that have the potential to help a large number of minority students excel. Conducted literature searches, used databases to identify programs which were documented. Contacted program directors. Eliminated programs with little documentation and no evaluation data. | Search yielded 20 programs as examples of the efforts being lodged nationwide. Selected programs based on their ability to be replicated, the rigor of evaluation data, documentation and generation of widespread interest. Approaches identified fell into two categories: -strategies for reducing the "inhospitality index" of colleges and universities -strategies geared toward stimulating exceptional achievement among minorities students. | Few of the programs identified to improve the academic outcomes for underrepresented minority students have undergone extensive external evaluation. Programs that engage students over their entire undergraduate career, offer opportunities for students to connect and repackage curriculum and provide support, use testing as a measure for teaching effectiveness, and placed the best faculty with the best teaching skills in first year programs are characteristics of successful programs. |

| Study Citation | Purpose of the Study | Methodology | Results/Findings | Implications |
|---|--|---|--|---|
| Guthrie, L. & David, J. (1994). Advancement via individual determination (avid): Strategies for dissemination. Burlingame, CA: Center for Research, Evaluation, Training in Education (CREATE). | To conduct a focused evaluation of AVID's implementation and dissemination strategies. To develop an understanding of what successful AVID programs are like and what schools need to implement AVID successfully. | Study involved San Diego County, where the program was first developed and four sites where the program was disseminated. Visited 15 high schools in 13 school districts. Interviewed AVID coordinators, AVID students, tutors, subject area teachers of AVID students. Site, district, and county administrators were interviewed. Empirical data was not included in the study. More descriptive than research based. | Conditions associated with successful AVID programs and schools: --skilled and committed teacher, school site team leadership, school leadership, adequate funding, access to quality professional development, access to effective tutors, support from district and/or county office Challenges to AVID implementation and success -Finding good tutors, lack of leadership for school wide change, and student selection. | -Intensive professional development for teachers and coordinators through AVID Summer Institute, training for regional directors, on-site staff development. -Use of data to determine the strengths and weaknesses and demonstrated success of the program. -Access to funding -Creating new partnerships |

| Study Citation | Purpose of the Study | Methodology | Results/Findings | Implications |
|--|---|--|--|--|
| Guthrie, L. & Guthrie G. (2000). Longitudinal research on AVID 1999-2000: Final report. Burlingame, CA: Center for Research, Evaluation, and Training in Education (Create). | To examine whether and to what extent middle grades AVID has an effect on students' high school performance, as measured by grade point averages, course taking patterns, and credit accumulation. The second strand of the study explored the impact of AVID beyond high school. | Descriptive study includes 2 cohorts of students with a sample size of 1158 students – 506 with middle school AVID and 652 without. In 1999-2000, accounted for 1029 students (89%), 476 students with middle school AVID and 549 without. Mobility of the student population accounted for the loss of 129 students. Most of the data were collected from transcripts or cumulative school records. Collected descriptive data for each of the schools in order to interpret possible program variations. Performance indicators: high school GPA (grade point average), credits earned. Examined the number of Advanced Placement (AP) courses taken. To measure AP enrollment, counted the number of AP courses in which students had enrolled. | -Students in AVID for both years of middle school earned a significantly higher GPA than those with no middle school AVID ($p = .01$) -Enrollment in algebra in middle school was the single most critical predictor in grade point average (GPA) and credit accumulation. -Students with two years of middle school AVID had a higher GPA than those with only one year of AVID or no AVID. -Credits earned by AVID students put them on track for UC or CSU acceptance, but standardized test scores were less impressive. -95% of students surveyed reported enrollment in 4-year or community college. -80% have been enrolled continuously in college since high school. | -Considerable research has been done on high school AVID, but very little systematic research has been conducted on the middle school AVID program. -Enrollment in middle school AVID is the key factor in AVID students' later success. -Students enrolled in a 2-year AVID program were more successful in terms of credit accumulation and GPAs than one year participants. Recommendations for program development: -Emphasize the development of test-taking skills. -Add time management strategies to the AVID high school curriculum. |

| Study Citation | Purpose of the Study | Methodology | Results/Findings | Implications |
|--|--|---|--|---|
| Heyns, B. (1974). Social selection and stratification. American Journal of Sociology, 79 1434-1451. | To develop and explore empirically the implications of academic stratification within schools. Examined the stratification patterns within schools to assess the role educational institutions play in social selection and the allocation of educational resources and educational outcomes. -To determine the degree to which curriculum assignment reflects social class background versus tested ability. | Analysis based on data collected by the Equality of Educational Opportunity survey conducted by James Coleman in 1966. Survey 15,384 twelfth grade and 15,894 ninth grade students at 48 urban high schools. Used regression and analysis of covariance. Variables included in the study were self reported by students. Dependent variables included verbal ability, father's occupation, father's education, number of siblings, grades, curriculum placement, and aspirations. | -Social class background measures are highly interrelated and together accounts for less than 10% of within-school variance in 12 th grade achievement. The principal determinant of curriculum placement and grades is the verbal achievement test score (direct effect .44). The effect of verbal ability on curriculum placement explains 17.6% of the variance (slightly less than 65% of the total variance explained. | -Educational stratification results from differential performance on achievement tests. -Although background is related to placement, it is almost entirely mediated by differential achievement. -To alter outcomes, questioning the criteria of placement is more relevant than focusing on the process. -Curriculum assignment differentiates and labels students academically. |

| Study Citation | Purpose of the Study | Methodology | Results/Findings | Implications |
|--|--|---|---|---|
| Mahoney, J. & Merritt, S. (1993). Educational hopes of black and white high school seniors in Virginia. <i>Journal of Educational Research</i> , 87(1), 31-38. | Exploratory study comparing college aspirations and expectations of Black and White high school seniors. Three research questions: Do Black students rely more heavily than White students on school counselors and teachers in making their post-high school plans? | Used a survey sponsored by the Virginia Department of Education. Surveyed 53,083 seniors. Used cross tabulations to display observed differences between Blacks and Whites and males and females. Used chi-square analysis to test for significant differences between the races. Established a significance level of .05 | The data revealed that Black men displayed lower aspirations to attend college. A higher proportion of Black seniors rather than White seniors, considered counselors to be important in helping them make their educational plans. | -Black students rely upon educators (counselors and teachers) in planning for the future. -Educators must examine the procedures that are used to exclude and include students in college preparatory curricula. -Both Black and White students place high levels of importance on parental encouragement to attend college |

| Study Citation | Purpose of the Study | Methodology | Results/Findings | Implications |
|---|--|--|--|--|
| Mehan, H. Villanueva, I., Hubbard, L., & Lintz, A. (1996). <i>Constructing school success</i> . New York: Cambridge University Press. | The Sociology Department and the Teacher Education Program at the University of California, San Diego. The study was funded by a grant from the Linguistic Minority Research Institute of the University of California and the Office of Educational Research and Improvement of the U.S. Department of Education to investigate the effectiveness of the AVID program in untracking low-achieving students. | Baseline data for the study was supplied by San Diego City Schools. Identified 353 students in 14 high schools who had completed 3 years of AVID during their high school careers when they graduated in 1990, 1991, and 1992. Identified 288 students who had entered AVID in the same academic year as the first group, but left the program after 1 year. These students were used as a comparison group. Interviewed 248 of the program completers and 146 of the student who left the program after one year. Conducted case studies on the 14 high schools. The statistical procedures used in the study were not mentioned. | Students who participate in AVID for 3 years accumulated a better college eligibility record than students who left the program within 1 year. Students who completed 3 years of AVID enrolled in 4-year colleges than the students who completed 1 year of AVID. Students with 3 years of AVID enroll in college in greater proportion than students who complete 1 year of AVID regardless of family income level. | Research concluded the capital that students bring with them when they enter the AVID program is less important than what they collect while they are in the program. The researcher used this theory to justify a closer investigation of the educational practices that lead to the success of the AVID students. The authors focused on the social processes of untracking and the inner workings of the program. |

| Study Citation | Purpose of The Study | Methodology | Results/Findings | Implications |
|---|---|--|--|--|
| Mirel, J. & Angus, D. (1994). High Standards for all? The struggle for equality in the American high school curriculum, 1890-1990. American Education 18(2), 4-9. | Investigate the trends in high school course taking since the 1920s to provide insight on the current debate about national goals and standards. Hypothesizes that national goals and standards can serve to equalize the educational quality for all students. Further hypothesize that early curricular differentiation had negative effects on the education of large number of American young people, especially, working class and black students. | Analyzed a series of national surveys of high school course-taking conducted by the U.S. Office of Education. Used surveys from 1928, 1934, 1949, 1961, and 1973. The survey grew out of a group of USOE studies beginning in the 1890s. | -Since 1890s debate on whether all students should follow an academic or a differentiated program of study that included vocation and general tracks. -Reforms in the 1970s and early 1980s reversed the decline in academic course-taking. -By 1990 more students were taking academic courses. - In past decade, minority students increased their amount of academic course-taking at a faster rate than white students. High school dropout rate has declined; however, gains such as these have not resulted in increasing college enrollments by blacks. | -Increases in academic course-taking among minorities have not led to increases in college enrollments, especially among black students. -Between 1976 and 1988, the proportion of black 18- to 24-year-olds going to college fell from 22.6% to 21.1% of the age group. For white the percentage rose from 27.1 to 31.3. -Researchers surmise that the decline in black enrollment at colleges may be related to economic factors rather than educational preparation (p. 9). |

| Study Citation | Purpose of the Study | Methodology | Results/Findings | Implications |
|--|---|--|--|---|
| Slavin, R. & Fashola, O. (1998). Show me the evidence! Proven and promising programs for America's schools. Thousand Oaks, CA: Corwin Press. | To identify programs show a significant impact on dropouts, college attendance and school performance. To establish the degree to which the programs reviewed meet the criteria established by the researchers. | Critiqued programs based on set standards/criteria: rigorously evaluated, extensively replicated, and serving students placed at risk. Reviewed program and provided descriptive data on the rigor of evaluations used to assess program effectiveness. Empirical evidence not provided. | Six programs met the evaluation standards: AVID, SCORE, Upward Bound, ALAS, and Coca-Cola Valued Youth Program. All programs had a substantial impact on student outcomes, four of the six were widely disseminated programs (AVID, SCORE, Upward Bound, and Coca-Cola Valued Youth Program). Reviewed the AVID study conducted by Mehan et al (1996). Noted concerns in the comparison groups used in the study. Study partially met the criteria for evaluation standards. | Common themes of the selected programs -Creating bonds between students and teachers (small group intervention and/or mentoring -Create groups that students will want to affiliate -Connecting students to an attainable future -Provide academic assistance -Give students status and recognition within the school for academic efforts -The largest impact of participation in AVID occurs in lower achieving groups. |

| Study Citation | Purpose of the Study | Methodology | Results/Findings | Implications |
|---|---|---|--|---|
| <p>Victory, J.M. (1998). A causal-comparative study of the advancement via individual determination program on middle school student achievement and attendance. Unpublished doctoral dissertation, Virginia Polytechnic Institute and State University</p> | <p>To determine if the AVID program improves student achievement and attendance of middle school students. Research questions, (1) Is there a statistically significant interaction among gender, race/ethnicity (Blacks and Whites), and group membership (AVID, Talented and Gifted) with respect to Stanford Normal Curve Equivalent (NCE) achievement after controlling for initial differences in socioeconomic status; and (2) Is there a statistically significant interaction among gender, race/ethnicity (Blacks, Whites), and group membership (AVID, Talented and Gifted) with respect to attendance after controlling for initial differences in socioeconomic status?</p> | <p>Participants were AVID and Talented and Gifted students. Data was collected on 398 students beginning with the 1995 school year and ending with the 1996-1997 school year. Analyzed the data using two three-way analysis of covariance (ANCOVAs).</p> | <p>Statistically significant differences between race/ethnicity and group membership. White students who were members of the Talented and Gifted program scored higher than Black students who were members of the AVID program with respect to basic NCE total scores, NCE reading total scores, language total NCE scores, mathematics NCE total scores. Attendance data indicated no statistically significant differences when comparing gender, race/ethnicity, and group membership.</p> | <p>The researcher indicated that programs such as AVID, which are financially demanding need to be evaluated more frequently. Indicated that many of the AVID students in the study had low standardized test scores when they began the study. Suggested better adherence to the student selection process. The researcher felt that if the initial selection of the students was congruent with the AVID criteria, the research comparison results in this study may have been different.</p> |

| Study Citation | Purpose of the Study | Methodology | Results/Findings | Implications |
|---|---|---|--|---|
| Watt, K.M., Powell, C.A., Mendiola, I.D. (2004). Implications of one comprehensive school reform model for secondary school students underrepresented in higher education. <i>Journal of Education for Students Placed At Risk</i> , 9(3), 241-259. | To determine how AVID students performed in comparison to other students on the Texas report card student performance indicators. To determine if AVID has influenced the student performance profiles of Texas high schools. | Student data was collected for 10 high schools that implemented AVID during the 1999-2000 academic year. A standardized data collection form was developed and distributed to schools. The researchers analyzed test scores, attendance rates, advanced course enrollment patterns, graduation plans, and school accountability ratings over a 3-year period. | The majority of the AVID students in Texas were Hispanic and African American. The majority of Texas high school AVID students were female. AVID students attended school at a rate of 5 percentage points higher than non-AVID students. In 2002, AVID students passed the Algebra end-of-course exams at higher rates (nearly 12 percentage points) than their classmates. The AVID students also outscored their classmates and other high school students in Texas in the reading and math portions on the TASS. Found that 87% of all AVID students were enrolled in college preparatory courses. Students' participation in AP course increased. | Students enrolled in the AVID elective class are out-performing other students in the same school, regardless of demographic subgroup, on course completion rates, passing rates on state exams, and school attendance rates. AVID moves students through more demanding courses and makes the college admission process transparent. |