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A study of the performance of students who take developmental courses in the community college

Sims, Janette Lowman, Ed.D.

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300 N. Zeeb Rd.
Ann Arbor, MI 48106

A STUDY OF THE PERFORMANCE OF STUDENTS WHO TAKE DEVELOPMENTAL COURSES IN THE COMMUNITY COLLEGE

by

Janette Lowman Sims

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Approved by

Ernest W Lee

Dr. Ernest W. Lee
Dissertation Advisor

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of the Graduate School at the University of North Carolina at Greensboro.

Dissertation Advisor Ernest W Lee
Dr. Ernest W. Lee

Committee Members Sarah M. Robinson
Dr. Sarah M. Robinson

R. Bruce Banks
Dr. R. Bruce Banks

John VanHoose
Dr. John J. Van Hoose

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The purpose of this study was to attempt to discern if there is a relationship between the admission/placement test scores of developmental students in English, reading comprehension, and mathematics in the community college and the developmental students' final overall GPA at graduation. This relationship is determined by comparing the developmental students' entering scores on the admission/placement tests with their final overall GPA at graduation from the community college of their choice in their chosen field of study.

The study was concerned only with graduated students who were designated as developmental after taking the admission/placement tests at Catawba Valley Community College, Davidson County Community College, Surry Community College, and Sampson Technical College.

A linear regression analysis was used to determine the relationship between the admissions/placement test scores and the final overall GPA at graduation.

The analysis showed no specific relationship between developmental courses in reading comprehension, English, and mathematics and the developmental students' final overall GPA at graduation. The data did show that generally, the higher the admission/placement tests scores the higher the final overall GPA.

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CHAPTER I

INTRODUCTION

The United States is the only country in the world in which all of its people, regardless of age, sex, color, or religion, can pursue their dream of higher education. The community colleges are open to all individuals regardless of their educational backgrounds. The open door policy of the community colleges has provided an opportunity to pursue higher education for "millions of people who had previously found the doors of selective universities closed." (Access, 1987, p. 38) A commitment to nonselective admissions is not enough to ensure success to all students who enter the community colleges. Therefore, to prepare students for success, it is imperative that their entry-level skills and abilities be determined. Students who are identified as having deficiencies in reading, English, and/or mathematics can then be channeled into and benefit from developmental course work in those identified areas. "How well a community college succeeds with ensuring access should be measured by the number of students who achieve their educational goals, rather than the number of students who enter the institution." (Access, 1987, p. 39)

Background Information

In keeping with the philosophy of the North Carolina Department of Community Colleges, current community college admission procedures

reflect the "Open Door" policy. And, unlike most senior colleges, the community college does not impose restrictive standards for admission.

Admission to the community college is open to individuals 18 years of age or older regardless of race, color, creed, sex, handicap, or national origin. Persons under 18 years of age are admitted if they already are high school graduates. Admission to the community college does not necessarily mean admission to the curriculum or program desired by the applicant. Test data, previous education, interest, and personal desire of the applicant are reviewed with each applicant to assist the applicant in selection of appropriate courses and program of study. Where specific educational deficiencies are found, counselors endeavor to channel the student into developmental courses to effectively prepare the student for admission to the program desired by the student.

Each person applying for first-time admission to an associate degree program, a certificate program, or a diploma program must complete the appropriate admission/placement tests designated by the individual community college. The results of the admission/placement tests are reviewed by a school counselor and the student. Some of the certificate programs and most diploma programs do not require admission/placement tests, but all regular credit technical and college transfer programs do require admission/placement tests. Admission to different curriculums require different admission/placement scores. For example, at Catawba Valley Community College, students wishing to enter the Associate Degree in Nursing program are required to have at

least a twelfth-grade reading level. At Davidson County Community College, nursing and pharmacy student are required to score 23 on the arithmetic admission/placement test and business students only need to score 21 on the same test. Validation scores based on the statistics collected by the individual community college are used to determine if the student should be placed in developmental course work before attempting credit course work.

Students who are designated as developmental students at the time of their admission to the community college are required to take developmental English, reading comprehension, and/or developmental mathematics. Most developmental students recognize their educational deficiencies and register for and complete developmental English, reading comprehension, and/or developmental mathematics before attempting credit courses. The success rate of developmental students has not been determined. Therefore, a study is needed to ascertain whether or not developmental students, after completing developmental course work, are successful enough in their credit course work to graduate from the community college with an associate degree, a certificate, or a diploma in their chosen field of study.

Purpose of the Study

The purpose of this study is to attempt to determine if there is a relationship between the developmental studies courses in English, reading comprehension, and mathematics in the community college and the developmental students' final overall GPAs at graduation. By comparing

the developmental students' entering scores on the admission/placement tests with their ability to maintain satisfactory GPAs and thereby graduate from a community college with the associate degree, certificate, or diploma desired, it can be determined whether arelationship exists between developmental studies courses and final overall GPA.

This study will attempt to determine whether placement of students in developmental English, reading comprehension, and/or developmental mathematics courses yields worthwhile results. The successful graduation, in the field of their choice, of the developmental students who take developmental English, reading comprehension, and/or developmental mathematics courses prior to enrolling in credit courses is the means by which success is defined.

Significance of the Study

To be able to predict the success of students who are designated as being developmental students by their scores on the admission/placement tests and take developmental course work, this study will confirm the need of developmental course work in the community college. If developmental students are allowed to take credit course work without previously taking developmental course work and successfully complete the credit course work, then there is little reason to require developmental students to take developmental course work before attempting credit course work.

This study will be useful in that it will attempt to show that

developmental students can successfully complete credit English and credit mathematics courses as well as other curriculum credit courses after completing developmental course work. And from this data, an administrative decision can be made as to the need of a developmental program in the community college.

Research Hypothesis

The hypothesis of this study is that developmental students who perform at a higher level on the admission/placement tests will have a higher grade point average at the time of graduation from the community college of their choice.

Scope and Limitations

This is a study of developmental students who entered the community college and graduated with an associate degree, a certificate, or a diploma. Because of their success, this study is limited to only those students who took the admission/placement tests, scored in the individual community college's designated range for developmental work, and graduated from the community college with an associate degree, certificate, or diploma in their chosen field.

Since the average age of the students enrolled in the community college is 28+, a large percentage of the students have been away from formal education for a number of years (see Table 1) and, therefore, have forgotten a lot of the basic English and basic mathematical skills learned at an earlier age. Also, there are larger numbers of females

and foreign students enrolled in the community college than ever before (see Table 2). Therefore, age, sex, race, handicap, and national origin are not considered as factors in this study. The community college has a large number of students who transfer in from other community colleges or senior colleges. There are a few students who are already graduates of senior colleges and enter the community college for specific training either to up-grade or to change occupations. These transfer students do not take the admission/placement tests and are not included in this study. The study is concerned only with graduated students who were designated as developmental students after taking the admission/placement tests at the following four community colleges: Catawba Valley Community College, Davidson County Community College, Sampson Technical College, and Surry Community College.

Testing varies in the community colleges. Some certificate programs and most diploma programs do not require admission/placement tests, but all regular credit technical and college transfer programs do require admission/placement tests. Admission to different curriculums require different admission/placement scores. For example, at Catawba Valley Community College, students wishing to enter the Associate Degree in Nursing program are required to have at least a twelfth-grade reading level. At Davidson County Community College, nursing and pharmacy student are required to score 23 on the arithmetic admission/placement test and business students only need to score 21 on the same test.

The ways that the admission/placement test scores are recorded are just as varied. Even though Catawba Valley Community College and Davidson County Community College both use the Nelson-Denny Reading test, Catawba Valley Community College records the raw score which ranges from the lowest score of 1 to the highest score achievable of 172. Davidson County Community College records the standard test score which ranges from the lowest score of 260 to the highest score achievable of 339.

The course content in developmental English and developmental mathematics and the exit exam for each course have been normed by the English and mathematics faculty of each community college in this study. Each and every student taking developmental English, reading comprehension, and developmental mathematics is exposed to the same material. For example, at Catawba Valley Community College, in developmental mathematics, the students review basic addition, subtraction, multiplication, and division of whole numbers, fractions, decimals, and percents. Each student takes the same exit or final exam for the course. Each course is self-paced and a student must pass the test on one section of the course content before going on to the next section. The student must pass all of the tests in the course in order to exit the course.

Other limitations occur in the way in which each community college records the grades for developmental courses. Grades recorded for the developmental courses varied. Catawba Valley Community College recorded numeric grades, Davidson County Community College recorded S

for satisfactory completion of the courses, Sampson Technical College recorded letter grades, and Surry Community College recorded P for passing.

Definition of Terms

Developmental Student. Developmental students are those students who have shown marked deficiencies in English, reading comprehension and/or mathematics by scoring in the designated range of scores on the admission/placement tests. Also, validation statistics from each community college have shown that the students scoring in the range specified by the college needs developmental course work in English, reading comprehension, and/or mathematics.

Developmental English. In developmental English the skills taught are sentence structure (fragments, run-on, comma splice), punctuation, basic grammar, spelling, and single paragraph writing (reason, process, cause/effect). Students receive credit for completing developmental English, but the credit hours do not count toward their degree.

Developmental Mathematics. In developmental mathematics the skills taught are basic addition, subtraction, multiplication, and division of whole numbers, fractions, decimals, and percents, conversions using both English and metric units, and an introduction to algebra. Students receive credit for completing developmental mathematics, but the credit hours do not count toward their degree.

Credit English. An English course for which upon the completion of the course those hours count toward the total hours needed in the

degree, certificate, or diploma program of the student.

Credit Mathematics. A mathematics course for which upon completion of the course those hours count toward the total hours needed in the degree, certificate, or diploma program of the student.

Success. Success is defined as the achievement of a designated developmental student in acquiring an overall GPA of 2.0 or above in credit course work sufficient for graduation with an associate degree, certificate, or diploma in the desired curriculum.

Conclusion

By having an open door policy, the community colleges accept students with varied educational backgrounds. It is because of this educational variety that the community colleges test and place students in academically appropriate courses. Academically weak students are placed in developmental reading, English, or mathematics courses to prepare them for credit course work. The quality of the educational experience in the community college "can come about only by demanding standards of achievement from students, faculty, and administrators. Access is not enough." (Eaton, 1988, p. 41)

Due to regional factors, all community colleges do not serve the same type of pupil; therefore, each community college designs its own admission/placement test battery to meet the needs of its people. The prototype of the changing student population has ensued the development of sequences of remedial and developmental courses and programs suitable to the skill level of the students enrolled in the various

regional community colleges. It is essential that the community colleges protect the academic identity of their institutions, while at the same time preparing the underprepared students for collegiate work. "An academic model of community college education cannot preclude the remedial and developmental student." (Eaton, 1988, p. 43)

According to Judith S. Eaton (1988), president of the Community College of Philadelphia, Pennsylvania, and others the community colleges':

> ...new model for developmental education includes mandatory testing and placement, a sequential programmatic approach to developmental and remedial studies, computerized tracking of student performance, and staff developmental to ensure faculty sensitivity to student progress as they move from developmental to collegiate coursework (p. 43).

Other educators/authors agree that "all community, technical, and junior colleges should provide a comprehensive and systematic assessment program for all students." (Access, 1987, p. 39) Along with the assessment program, the community colleges should provide a supportive develpomental education program to assist students in achieving their educational goals.

CHAPTER II

CONCEPTUAL FRAME OF REFERENCE AND REVIEW OF LITERATURE

Overview

One of the most phenomenal developments that has occurred in the educational world during the period following World War II has been the growth of the two-year colleges--namely the community colleges and technical institutes. In 1971 it was reported that there were more than 1,000 community and junior colleges in this country, with an enrollment in excess of 2.1 million students. It was also established that up to 280 additional community colleges will be established during this decade (Knowles, 1971).

The community colleges and technical institutes offer academic, cultural, and occupational training opportunities for all who can profit from their programs. This democratization of higher education has resulted in the "open door" admission policy which means that any high school graduate or person 18 years of age or older is eligible to become a student in the community college. Concomitant with this open admission policy is the implicit promise that the community college will provide successful learning experiences for all its students (Roueche and Kirk, 1972).

In contrast, in China where the population exceeds one billion, less than 8 percent of its high school graduates attend the

university, but 99 percent of those students who attend the university graduate. Upon graduation from the university, the government guarantees the students jobs and these graduates form the elite of the Chinese system (Rigik, 1988).

The Chinese government wants to keep the population below 1.2 billion by the year 2000; therefore, "if a couple has had more than one child since 1978, none of the family can go to college" (Rigik, 1988, p. 55). Also, in China, no one over forty can receive a college degree. Whereas in this country education is open to anyone of any age. In North Carolina, because of the belief that education is a lifelong process, adult students sixty-five and older receive a tuition waiver allowing them to attend the community colleges at no cost for tuition.

The Chinese counterpart of the American community college, the polytechnics, are two- and three-year colleges designed to train local technicians. The Chinese plan to have about 100 polytechnics by 1990. The government does not guarantee jobs for graduates of these schools. These students, like most American community college students, do not live on campus, and must pay a modest tuition. There were only 7,000 students enrolled in the ten polytechnics in 1981, but by 1990, aided by the World Bank project, polytechnics plan to enroll 45,000 in seventeen such colleges (Rigik, 1988, p. 57).

Community Colleges in the United States

At the turn of the century, there were no public junior/community colleges in this country. After World War I, rapid growth occurred. By 1915, there were nineteen institutions that could be classified as public junior/community colleges with an enrollment of about 600 students and by 1930, there were 178 institutions with an enrollment of 45,000 students. In another ten years, by 1940, there were 261 institutions with an enrollment of 168,000 students and by 1950, there were 329 institutions with an enrollment of 450,000 students.

There has been uneven development of the public junior/community colleges within the states and regions of this country. The dispersion of the institutions varies from almost none in New England to a prominent number in California. In 1950, the California system had sixty institutions with an enrollment of about 250,000 full and part-time students, which was more than fifty percent of the national enrollment at that time. Also in 1950, New York, Illinois, Michigan, Texas, Missouri, Georgia, Mississippi, and Washington were the only states to have an enrollment of more than 10,000 students in their public junior/community colleges (Clark, 1960).

The United States has 1,200 community colleges nationwide. These two-year colleges serve as the primary source of educational opportunity to minorities and disadvantaged students, as well as a major provider of employee training and development programs to business and government.

For almost two decades authors have referred to the community

college or two-year college students as "new," "non-traditional," "high-risk," "culturally disadvantaged," and "remedial." In essence, they were describing students who were older, had academic deficiencies, were from low socioeconomic backgrounds, had poor high school records and standardized test scores, and represented a disproportionately high number of minority students (Thurston, 1983).

The recommendation was made in 1973 in Toward a Learning Society, a Report and Recommendations by the Carnegie Commission on Higher Education, that "if colleges and universities are to provide education for the new learner (adults, part-time students), they must either remove certain barriers that currently exist, or provide alternative ways for such persons to participate in their educational programs." (Toward a Learning Society, 1973, p. 80). This commission has been fulfilled by the community college with its open door policy.

Community colleges are diverse institutions that respond to local needs in the community and to the diverse student population whatever the geographic location. The effective community college has a strong sense of purpose, understands its community, is student centered, links its resource allocations to its purpose and priorities, values development and renewal of human resources, and is characterized by collaboration (McClenney, 1988).

As George B. Vaughan puts it, "When we look at our colleges, we must remember that to this day, the United States is the only nation in the world to commit itself to universal higher education. At the heart and soul of this commitment is the public community college."

(Vaughan, 1988, p. 25).

Community Colleges in North Carolina

North Carolina has, as with the rest of the nation, experienced dramatic growth patterns in the developing of community colleges and technical institutes. In 1962 the State Board of Education approved twenty-four Industrial Education Centers that later became community colleges and technical institutes (Department of Community Colleges, Progress Report, 1971). Thirteen years later there were fifty-seven institutions in the North Carolina Community College System with a total enrollment in excess of 400,000 students (Department of Community Colleges, Biennial Report, 1974). Continuing to grow, twenty-five years later, the North Carolina Community College System has fifty-eight institutions serving 650,000 students (Annual Enrollment Report 1986-87). An awakened social conscience during the decade of the 1960's plus technical advances in many fields resulted in a national commitment to extend post-secondary education opportunities to every American citizen. Thus, the Carnegie Commission on Higher Education has described the member institutions of the American Junior College System as "comprehensive" learning facilities.

The open door policy of North Carolina's Community College System provides that its member institutions offer academic, cultural, and occupational training opportunities for all who can profit from their programs. In 1964 Dr. W. Dallas Herring, Chairman of the Board of Education, stated as follows, the philosophy of the open door

institution:

> The only valid philosophy for North Carolina is the philosophy of total education: a belief in the incomparable worth of all human beings, whose claims upon the State are equal before the law and equal before the bar of public opinion, whose talents (however great or however limited or however different from the traditional) the State needs and must develop to the fullest degree. That is why the doors to the institutions in North Carolina's System of Community Colleges must never be closed to anyone of suitable age who can learn what they teach. We must take the people where they are and carry them as far as they can go within the assigned function of the system. (Department of Community Colleges, Progress Report, 1971, pp. 3-4)

The North Carolina State Board of Education adopted the following policy statement relative to the role of the open door institution:

> The Community College System has been established to fill an educational opportunity gap between the high schools, the four-year colleges, and the State University System. The filling of this gap requires open door admission of both high school graduates and others who are eighteen years old and older but not high school graduates. The provision of educational opportunity for this broad range of curriculum offerings, including college level, high school level, and for some elementary level studies. The State Board of Education is completely committed to maintaining the unique, comprehensive roll of the institutions in the Community College System, and is opposed to any consideration of a community college as an embryonic four-year college. (Department of Community Colleges, Policy Manual, 1967, No. 2.022)

According to the United States Department of Labor projections, by the year 2000 North Carolina will experience an insufficient number of skilled workers. The economy is expected to create 760,000 new jobs, but only 550,000 workers will be available to fill them. Nine out of

ten potential workers in the year 2000 will be women and minorities who may lack experience or formal education. By the year 2000, given the current trends, more than sixty percent of the workers in North Carolina will have only a high school education. It is calculated that eighty percent of the new jobs in the year 2000 in North Carolina will be in service industries requiring more that thirteen years of formal education (Johnston, 1987).

North Carolina's community colleges will be the vehicle by which the under-educated potential workers become educated. Developmental programs

> "that teach underprepared students effective cognitive and processing skills necessary to become successful learners [will] ... target ... students who want to enter transfer programs and career/occupational programs or who want to be functional on the job and in day-to-day life in our rapidly changing society." (Access, 1987, p. 38)

Community College Trends

Our society is in a transition from the "industrial age" to what is sometimes called the "information age" brought on by the computer. In the near future, basic competencies for workers will include problem solving, abstract reasoning, and interpretation and synthesis of unfamiliar data. By the year 2000, the average new job will require an education of at least 13.5 years or more (Johnston, 1987).

The role of the community college today, as never before, is becoming a more and more important factor as businesses are incurring increasing costs due to a work force that is ill-equipped to perform

the task of employment and/or to effectively manage their own personal economic affairs. This situation provides a unique challenge to the community colleges to provide the skills required for productivity as a wage earner: skills such as reading , writing, and computation.

According to the Executive Summary of the National Study of Community Colleges in Consumer Education (1988) conducted by the American Association of Community and Junior Colleges, each year approximately 2.5 million persons enter our work force with limited skills in reading, writing, and mathematical problem solving. Nearly 72 million American adults lack a high school diploma, with 27-29 million of this group considered as being functionally illiterate for their roles as wage earners.

Faced with this dilemma, some industries are turning to the community college for assistance. For example, fast food restaurants such as Burger King, faced with an annual employment turnover rate of 200-300 percent as well as related retraining cost of about $1,500 per turnover, have turned to the community college for assistance. Burger King, in cooperation with Henry Ford Community College, is offering to pay the tuition cost for any of its employees in exchange for having those employees stay on the job throughout their college years. The benefits to the fast food industries are that their turnover is reduced to about 58% and their productivity is increased by 3%.

Davis (1982) argues that the present-day American education is, on an average, ill-equipped in terms of pedagogy, curriculum, or school organization to teach literacy. He says:

> Now we as a profession have to get down to the serious business and begin to grapple with how to solve the very human problem of teaching more kids and more adults how to read and write, preferably to free them from the illusion that power and prestige rightly belong to those who have acquired or inherited fluency in superficial language codes. That, in our profession, at least as I see it, is the new frontier. (Davis, 1982, p. 47)

Maxine Greene, a long-time critic of traditional education views the new frontier like this:

> The world we inhabit is palpably deficient: there are unwarranted inequities, shattered communities, unfulfilled lives. We cannot help but hunger for traces of utopian visions, of critical or dialectical engagements with social and economic realities. And, yet, when we reach out, we experience a kind of blankness.... How are we to ... break with the given, the taken-for-granted--to move towards what might be, what is not yet? (Greene, 1986, p. 427)

This deficiency in public education is being passed on to the community colleges. Many students are ill-equipped for post-secondary education. They lack skills in reading comprehension, writing correct English sentences, and computing basic consumer mathematical problems. These skills are considered necessary to cope with the "social and economic realities" (Greene, 1986, p. 427) of the world.

Union County College in Cranford, New Jersey, has created a high school for minority students on its campus. Dr. Norman P. Will, Senior Professor of English, works with both fifteen-year-old black and Hispanic high school freshmen and with college honors students from seventeen to eighteen years of age. Dr. Will sees "that the two-year college can be a vanguard of American Education if we enact the insight of critical theory and if we refuse to hold out old promises based on

old premises about what education can and should do for people." (Will, 1988, p. 11)

Macdonald (1965) proposed education to be conceptualized by the interaction of four systems: teaching, learning, instruction, and curriculum. He defined curriculum as a plan of action that guides instruction. Students in the community college expect to have teaching occur from professional experts in the field of study. In turn, the students learn from the teaching that takes place. After or during the teaching-learning process comes instruction where the students apply what they have learned from the teaching. Finally, the curriculum is complete when the completed plan of action culminates at graduation.

Curriculum implies ordering the structure of knowledge, particularly knowledge derived from inquiry. It is implicit in the analysis by Phenix (1962) and explicit in that of Schwab (1964) that disciplines are structured both conceptually and methodologically. Curriculum items, presumably, assume their significance and meaning from their relationships one to another and to the mode of inquiry which verifies the relationship.

In the community college, in certain course sequences there is a real need for the traditionalist approach because of the predefined order of learning. Students must have certain basic mathematical skills (addition, subtraction, multiplication, and division) before advancing to higher levels of mathematics (algebraic word problems and calculus).

Kneller (1984) states that "education is a process through which

knowledge, values, and skills are transmitted and acquired" (p. 4). He talks about "linguistic analysis" or "ordinary language philosophy" as being the teaching-learning mode most congenial to educational philosophers. He writes of a language game as being the way in which words are used in some communal activity (p. 5). To participate in the language game students must understand the vocabulary being used in the game. For example, if students do not understand the meaning of the word quotient in mathematics, they can not participate in the game of division. Also, if the students do not understand the language game of algebra, they can not understand the game of chemistry or physics.

Developmental students have difficulty in participating in the language game because they lack skills in reading comprehension, writing complete English sentences, and computing mathematical problems. Only after completing developmental course work can developmental students correct their language weaknesses so that they can successfully participate in the language games.

Pierre Bourdieu (1977), Basil Bernstein (1977), and others evaluate education as a vehicle of cultural transmission and say that the dominant educational role in society is classification and framing. Classification refers to the strengths and weaknesses that exist between different categories. Framing refers to the pedagogical relationships between teachers and students.

The community colleges' offer an education to anyone who can benefit from the courses they offer; therefore, Henry A. Giroux (1983) in discussing classroom pedagogy and citizenship says:

> If citizenship's education is to be emancipatory, it must begin with the assumption that its major aim is not "to fit" students into existing society; instead, its primary purpose must be to stimulate their passions, imaginations, and intellects so that they will be moved to challenge the social, political, and economic forces that weigh so heavily upon their lives. In other words, students should be educated to display civic courage, ... (p. 201).

Agnes Heller (1976) comments on civic courage by saying that students should think and act as if they were living in a real democracy. Maxine Greene (1978) agrees that students must learn an epistemology that will allow them to effuse different subject areas making them more knowledgeable of the world around them. This epistemology will allow them to pose new questions and assist in problem solving.

The adult students in the community colleges, as well as else where, need to be able to articulate the elements that cause them pain and joy. They need to be able to read between the lines of natural science and social culture and be able to perceive the difference between the two. They need to become the directors of their lives--to live life to the fullest in love, work, and play. The teaching philosophy that encourages this kind of education meets the needs of the whole person.

This kind of pedagogy is consistent with the demands of a participatory democracy. For Henry Giroux and Peter McLaren, critics of contemporary technological models for teaching, there is a need for teaching that "seeks to recapture the ideal of critical democracy that commands respect for individual freedom and social justice" (Giroux,

1986, p. 224). Our society cannot afford to continue to teach passive non-thinking students who refuse to get involved in society.

Maxwell C. King (1988-89), president of Brevard Community College, Florida, and Seymour H. Fersh discuss the place for international education in the community colleges by asking the questions: "...to what extent, in what ways, and for what purpose should international education become an integral part of community college instruction and services." (p. 28)

In the early 1980's, less than 75 community colleges were members of an international education consortia and a large number of presidents and trustees did not support international education in their colleges. Today, more local communities are becoming influenced internationally by the increase of the United States' involvement in global affairs in trade and industry and the increase of foreign companies' arrival in the United States with investments. This international exchange of trade has changed the perspective and reversed the thinking of many community college presidents and trustees who now endorse the international dimension for the community colleges.

About one-third of all foreign students enrolled in American colleges at the undergraduate level are enrolled in the community college (King, 1988-89). Foreign government officials, industrialist, and educators tour the community colleges to learn more about how workers are trained and educated for specific trades, such as furniture manufacturing at Catawba Valley Community College.

International education should in its progressive sense refer to

all programs, projects, studies, and activities that help students learn and care more about the world outside of their own communities. These activities should cultivate the students' understanding of different cultures enhancing their "wisdom and affinity with humanity." (King, 1988-89, p. 28)

International education must come with a commitment from the administration for financial support (Ebersole,1988-89). Programs evolving English as a second language and developmental courses must be established for the foreign students enrolled in the community colleges. The possibility of faculty exchange must be considered in the financial budget for international education. It is because of the large financial expenditures that "many community college administrators may believe that their institutional efforts in the international arena must be severely limited." (Prast, 1988-89, p. 31)

CHAPTER III

METHODOLOGY

The Study Sample

The population used in this study was the 1988 graduates from selected community colleges in North Carolina who showed deficiencies in basic English, reading comprehension, and/or mathematics. After taking the admission/placement test, these students were designated as developmental students by the community college they were entering.

The North Carolina community colleges participating in this study were Catawba Valley Community College, Davidson County Community College, Sampson Technical College, and Surry Community College.

General Characteristics of the Community College Population

The community college, unlike most senior colleges, does not impose restrictive standards for admission. Admission to the community college is open to individuals 18 years of age or older regardless of race, color, creed, sex, handicap, or national origin.

In 1986-87, the average age of the students enrolled in North Carolina community colleges was 28+ (see Table 1). A large percentage (56.76 percent) of North Carolina community college students are older students, ages 25 through 49, who have been away from formal education for a number of years and have anxiety about "fitting in" to college life (see Table 1). Some of these older students have forgotten a lot

of the basic English and basic mathematics learned at an earlier age; therefore, they score poorly on the admission/placement test. One example would be mothers who have stayed home with the children and now that the children are either in public school, college, or married, they want to work outside the home. Since they have been at home, they have few skills to offer an employer. Many turn to the community college for assistance in learning saleable skills.

Of the 1986-87 total enrollment in curriculum programs in the North Carolina Community College System, 57.3 percent of the students were female and 42.7 percent were male. In the four community colleges selected as sites for this study, 79.3 percent of the students were white and 20.7 percent were non-white (see Table 2).

During their high school years, many students do not prepare to go to college. Then, half way through their senior year, they decide to go to college. The senior colleges have specific admission standards which some high school students cannot comply with at graduation. These students have educational deficiencies. The community college is the only vehicle they have to get into a senior college. Of the 1986-87 total curriculum enrollment in the North Carolina Community College System, 21.16 percent were 21 years of age or less (see Table 1).

The enrollment varies among the community colleges, but there are small numbers of Asians, Hispanics, and other nationalities enrolled in the community colleges. These students have language problems that are exhibited in reading comprehension, English writing skills, and word problems in mathematics (see Table 2).

Table 1

North Carolina Community College System Curriculum Program Student Enrollment by Age for 1986-87

Student Age	Total	Percent
<= 17	1,056	0.47
18	2,937	1.30
19	13,204	5.83
20	16,468	7.27
21	14,257	6.29
22	11,751	5.19
23	11,031	4.87
24	9,813	4.33
25 - 29	40,660	17.95
30 - 34	33,438	14.76
35 - 39	25,245	11.14
40 - 44	17,968	7.93
45 - 49	11,278	4.98
50 - 54	6,926	3.06
55 - 59	4,346	1.92
60 - 64	2,545	1.12
65 - 69	1,924	0.85
70 & Older	1,688	0.75

Table 2

Race and Sex Enrollment for 1986-87 for Catawba Valley Community College, Davidson County Community College, Surry Community College, and Sampson Technical College

College Name	White Male	White Female	Black Male	Black Female	Indian Male	Indian Female	Other Male	Other Female
CVCC	1864	2529	142	126	2	4	26	20
DCCC	1683	2099	121	186	2	5	13	8
SCC	1962	2762	222	105	4	3	17	7
STC	382	686	99	283	5	16	4	4

Description of the Setting

The data collected for this study is from Catawba Valley Community College, Davidson County Community College, Surry Community College, and Sampson Technical College. The data consist of admission/placement scores of the designated developmental students in reading, English, and mathematics and their corresponding GPA values for each college. The data presentation for this study is done by developmental subject and subdivided by college.

From the one hundred and fifty-eight students who graduated from Catawba Valley Community College in May 1988 only eighty-one had reading comprehension, English, and mathematics admission/placement test scores recorded (see Appendix A). Of those seventy-seven May 1988 graduates who did not have reading comprehension, English, and mathematics admission/placement test scores, some were transfer students and others were students who had returned to Catawba Valley Community College after dropping out of college. Only those students who had reading comprehension, English, and/or mathematics admission/placement test scores recorded are included in this study.

From the one hundred and sixty-eight students who graduated from Davidson County Community College in May 1988 only sixty-one had reading comprehension, English, and/or mathematics admission/placement scores recorded (see Appendix A). Of those sixty-one, twelve were required to take reading comprehension, eleven were required to take developmental English, and fifty-nine were required to take developmental mathematics. There were thirty-six students who had

developmental course work grades of S, but no admission/placement test scores. Of those May 1988 graduates who did not have reading comprehension, English, and mathematics admission/placement test scores, some were transfer students and others were students who had returned to Davidson County Community College after dropping out of college. Only those students who had reading comprehension, English, and/or mathematics admission/placement test scores are included in this study.

The Comparative Guidance and Placement Program (CGP) is used by Surry Community College for admission/placement of their students. The Comparative Guidance and Placement Program is a comprehensive system of information gathering and interpretation designed to meet the counseling and placement needs of community colleges and vocational-technical institutes. Central scoring and reporting or local scoring can be done. Of the sixty-five students in the graduating class of May 1988 at Surry Community College, ten were designated as needing reading comprehension, eight were designated as needing developmental English, and ten were designated as needing developmental mathematics.

The purpose of the present assessment and placement program at Sampson Technical College is to assign entering students to particular courses or curriculum programs in order to provide as close a match as possible between the students' skills and the course requirements. Because students entering Sampson Technical College differ considerably in achievement, developmental courses are offered during the first quarters the students are enrolled. The procedures used to determine

instructional placement are to review students' academic grades, to examine the standardized achievement test results, to administer computerized interest inventories, to review the placement test results, and to have pre-admission interviews. The assessment program is designed to serve the needs of the institution's open admissions policy.

The goal of the institutional assessment program is to serve students more effectively by collecting and analyzing information relevant to the students' educational and career decisions. The assessment process presents a broad base of information to assist students in program choices and to aid the college in curriculum design and planning.

The assessment program of the college is designed to identify academic deficiencies which may hinder the successful completion of students' chosen programs and to place the students in courses designed to remove these deficiencies. These corrective steps aid in the retention of students at Sampson Technical College.

The present admission/placement tests used at Sampson Technical College are the Comparative Guidance and Placement Program (CGP) and the Nelson-Denny Reading Test form C. This battery of tests is required for all students.

Table 3

Developmental Student Summary for Reading, English, and Mathematics for Catawba Valley Community College, Davidson County Community College, Surry Community College, and Sampson Technical College

SUBJECT	CVCC	DCCC	SCC	STC
READING				
Tested and Took Developmental	19	2	12	33
Not Tested But Took Developmental	29	11	0	2
TOTAL READING STUDENTS	48	13	12	35
ENGLISH				
Tested and Took Developmental	21	6	49	37
Not Tested But Took Developmental	11	11	0	3
TOTAL ENGLISH STUDENTS	32	17	49	40
MATHEMATICS				
Tested and Took Developmental	36	3	24	38
Not Tested But Took Developmental	8	22	0	3
TOTAL MATHEMATICS STUDENTS	44	25	24	41

Collection of Data

The first step in collecting the data was to contact the systems programmer on the state-wide PRIME computer network at Catawba Valley Community College. She explained that the computer system files on entrance scores were purged after graduation each year, but student records of accumulated course grades were stored on hard disk. She provided data from the stored files on the 1987 graduates. It was from this accumulation of data that certain data was chosen to be included in this study, namely, the admission/placement scores in reading, English, and mathematics, the developmental courses and grades, and the final overall GPA.

Since securing the data would be much easier from the computer, she provided a list of North Carolina community colleges who were using the PRIME system and suggested certain colleges who from her experience had knowledgeable programmers who could access the data needed for this study. Seven community colleges were chosen from her list. Letters were sent to the seven North Carolina community colleges and technical colleges asking for the following information on their 1988 graduates:

1. Each student's social security number for identification and the student's entrance test scores in English, reading, and mathematics.

2. The date, course number, course title, and course grade for each developmental English, reading, and/or developmental mathematics course taken by each student.

3. Each student's final overall GPA and the type of degree received at graduation.

4. The name of the placement tests used and the college's criteria for a student to be placed in a developmental course (for example, the cut-off scores used to place a student in developmental English, reading comprehension, and/or developmental mathematics).

To verify the validity of the request for student data from the seven community colleges, Dr. Ernest W. Lee provided an accompanying letter stating that the data was to be used only for dissertation purposes and the actual data would be destroyed at the completion of the dissertation. One of the seven community colleges wanted written permission from "an authority" before releasing student data and is not included in the study. After a visit to one college campus and several telephone calls to others, three community colleges and one technical college responded with data on their 1988 graduates.

The data received was from different geographic regions in North Carolina. Catawba Valley Community College located in Hickory is in western North Carolina. Davidson County Community College located in Lexington is in central North Carolina. Sampson Technical College located in Clinton is in southeastern North Carolina. Surry Community College located in Dobson is in northwestern North Carolina.

The organization of the data received from the four community colleges ranged from complete transcripts on each graduate to concise data (social security number, admission/placement test grades, developmental course grades, GPA, and type of degree received) on each

graduate. Catawba Valley Community College and Davidson County Community College furnished data on both their May 1988 graduates and their August 1988 graduates. Only the May 1988 graduates are used in this study.

Grades recorded for the developmental courses varied. Catawba Valley Community College recorded numeric grades, Davidson County Community College recorded S for satisfactory completion of the courses, Sampson Technical College recorded letter grades, and Surry Community College recorded P for passing. Each school had its own battery of tests. Some tests were professionally developed and some faculty developed, and the cut-off scores used to designate a student as developmental varied from school to school as did the way that the scores were recorded. Both Catawba Valley Community College and Davidson County Community College used the Nelson-Denny Reading Test form E, but Catawba Valley Community College recorded the raw scores and Davidson County Community College recorded the standard scores.

After the data was received, it was sorted and placed on a computer spreadsheet (VP Planner) for analysis (see Appendix A). A correlation and linear analysis via Statistic Analysis, a computer software program, was run on the admission/placement scores in reading vs GPA, English vs GPA, and mathematics vs GPA for each of the four community colleges participating in this study.

CHAPTER IV

FINDINGS OF THE STUDY

In this chapter the data on the developmental students from Catawba Valley Community College, Davidson County Community College, Surry Community College, and Sampson Technical College is reported. These profiles are broken down by subject, reading, English, and mathematics. An overview of the testing procedures at each community college is included with the data, tables, and figures.

Reading

Catawba Valley Community College

The Nelson-Denny Reading Test form E is used for reading placement at Catawba Valley Community College. Students who receive a raw score of 99, grade-equivalent 13.9, receives advance placement in reading comprehension. A raw score in the range of 98 through 69, grade-equivalent range 13.8 through 10.6, places students in developmental reading, RED 099, which is the upper level reading comprehension course with no reading laboratory period assigned. A raw score in the range of 68 through 62, grade-equivalent 10.5 through 9.7, places students in developmental reading, RED 098, and students are required to attend a reading laboratory for one hour each week. A raw score of 61 or below, grade-equivalent 9.6 through 3.7, places students in developmental reading, RED 098, and the students are required to attend a reading

laboratory for three hours each week. The assigned reading laboratories are in addition to the reading course class hours each week.

To exit the reading comprehension course, students take the Nelson-Denny Reading Test form F and must receive a minimum score of 69, grade-equivalent 10.5. The exit requirements are the same for students taking either one reading laboratory or three reading laboratories.

An examination of the scores of the twenty-three May 1988 graduates who advanced placed in reading comprehension by scoring 99 or above on the Nelson-Denny Reading test shows that the higher the reading level the higher the final overall GPA (see Table 4 and Figure 1). The students' mean reading comprehension raw score was 124.348 which translates to a grade equivalent of 16.0 on the Nelson-Denny scale. The standard deviation for this group, 18.8395, was the largest of all of the reading comprehension data groups recorded at Catawba Valley Community College for the May 1988. Although this was not the largest group of students, the range of scores on the reading comprehension test showed the largest variance of any of the groups.

The mean for the final overall GPA, 3.10104, was the highest for any of the reading comprehension groups (see Table 4). The GPA standard deviation for the group, 0.4175, was the lowest for any of the reading comprehension groups which shows a small variance for this group.

By scoring 99 or above on the Nelson-Denny Reading test and

receiving advance placement in reading comprehension when entering Catawba Valley Community College, these students continued to rank higher than their fellow students by earning a higher final overall GPA at graduation. The larger variance in the admission/placement test scores shows more dispersion in the scores of the group as they began their studies, but the smaller variance in the final overall GPA shows less dispersion at graduation (see Table 4).

From Figure 1 it can be seen that thirteen of the twenty-three students' scores fell in the upper two quadrants, which was in the reading score range of 99 through 169 and the GPA range of 3.08 through 3.97. This represents over fifty percent of the students in this group at Catawba Valley Community College.

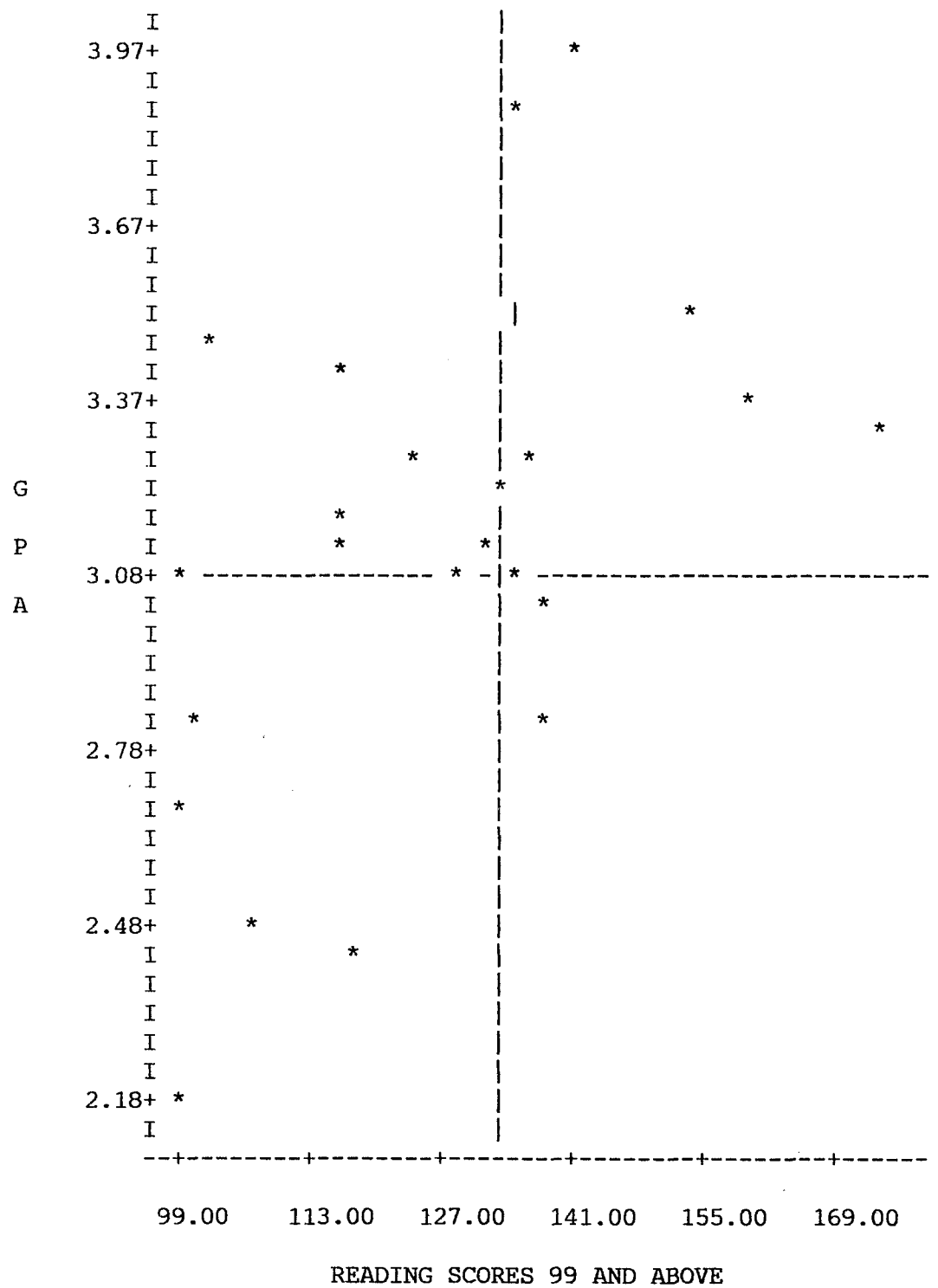
Table 4

Correlation and Linear Regression of the Reading Scores of 99 and Above as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Catawba Valley Community College

Reading Scores:		Final Overall GPA:	
Mean	= 124.348	Mean	= 3.10104
Standard Deviation	= 18.8395	Standard Deviation	= 0.4175

Number of pairs (N)	= 23
Correlation coefficient (R)	= 0.483
Degrees of Freedom (DF)	= 21
Slope (M) of Regression Line	= 0.0107106
Y intercept (B) for the Line	= 1.7692

Figure 1. Reading comprehension scores of 99 and above vs final overall GPA for the May 1988 graduates of Catawba Valley Community College. Each * represents a student.



The next Catawba Valley Community College group with reading scores of 98 through 69 reveals a different trend in the relationship between the reading comprehension test score and the final overall GPA. An examination of the slope of the regression line in Figure 2 of the forty-six May 1988 graduates who scored in the range of 98 through 69 on the Nelson-Denny Reading test shows very little, if any, change in GPA with respect to the reading comprehension. The slope of the regression line from Table 5 is approaching zero with a value of 0.000119431. The slope approaching zero produces a straight line graph (see Figure 2) meaning there is very little relationship between the students' GPA and their reading comprehension admission/placement test scores. The points for reading comprehension scores vs GPA are almost evenly scattered in Figure 2. The mean reading comprehension score of 84 has a grade-equivalent of 12.4. A standard deviation of 8.35525 in the reading comprehension test scores shows some variance, but not as much as the previous group of students who scored 99 and above on the reading admission/placement test.

The final overall GPA mean of 2.97933 with a standard deviation of 0.48102 shows little variance even though the variance is slightly larger than the previous group of students who scored 99 and above on the reading comprehension admission/placement test. The correlation coefficient of 0.002 shows that there is no significant relationship between the reading scores and the GPA values.

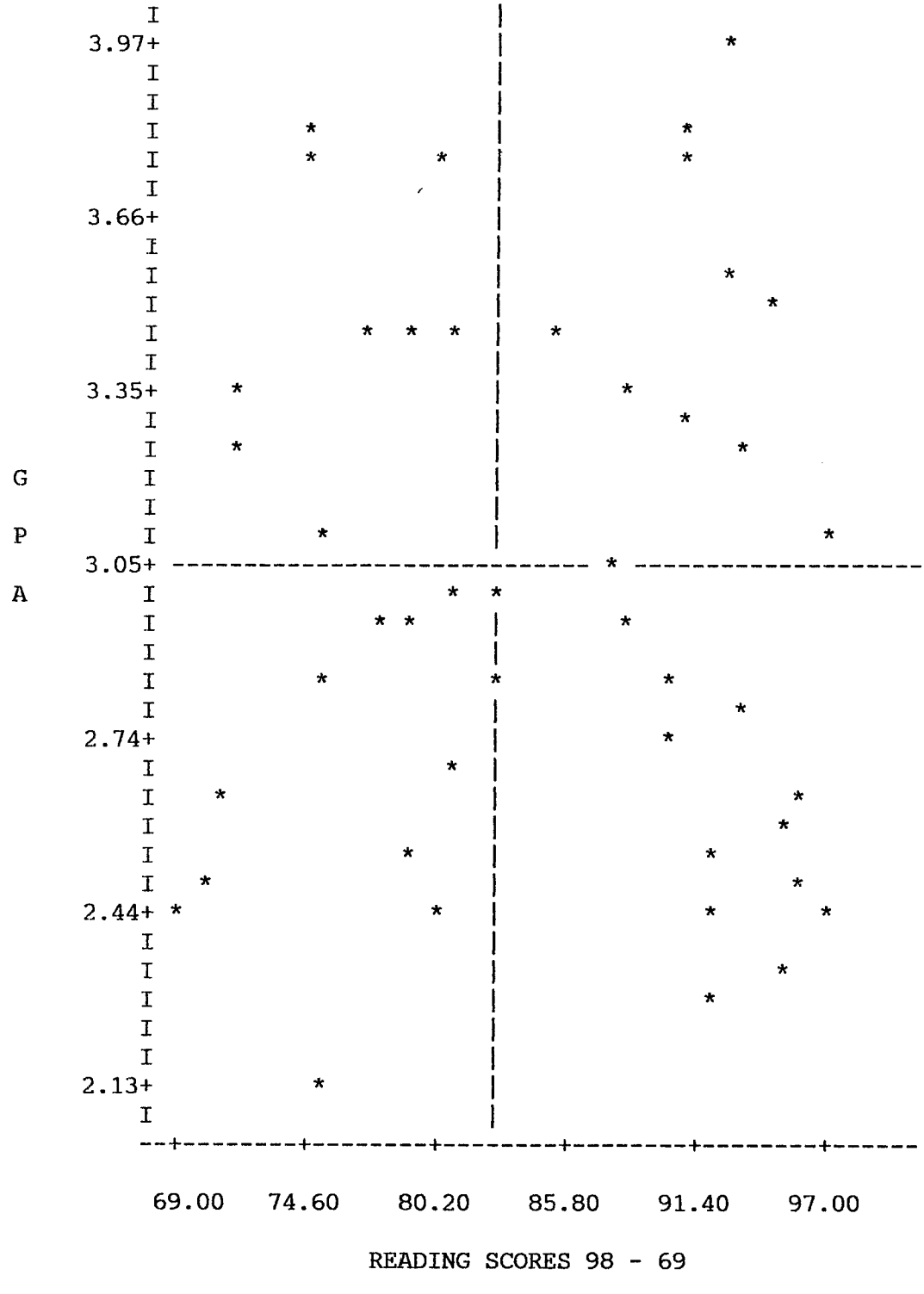
Table 5

Correlation and Linear Regression of the Reading Scores of 98 Through 69 as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Catawba Valley Community College

Reading Scores:		Final Overall GPA:	
Mean	= 84.5652	Mean	= 2.97933
Standard Deviation	= 8.35525	Standard Deviation	= 0.48102

Number of pairs (N)	= 46
Correlation coefficient (R)	= 0.002
Degrees of Freedom (DF)	= 44
Slope (M) of Regression Line	= 0.000119431
Y intercept (B) for the Line	= 2.96923

Figure 2. Reading comprehension scores of 98 through 69 vs final overall GPA for the May 1988 graduates of Catawba Valley Community College. Each * represents a student.



An examination of the scores of the eleven May 1988 graduates at Catawba Valley Community College who scored in the range of 68 through 62, grade-equivalency range of 10.5 through 9.7, shows a final overall GPA mean of 2.94836 and a standard deviation of 0.572394 with a correlation coefficient of 0.294 (see Table 6).

A look at Figure 3 shows that only three students, two with lower reading scores and one with a higher reading score, attained a GPA of below 2.3. All of the other students in this group gained in GPA rating.

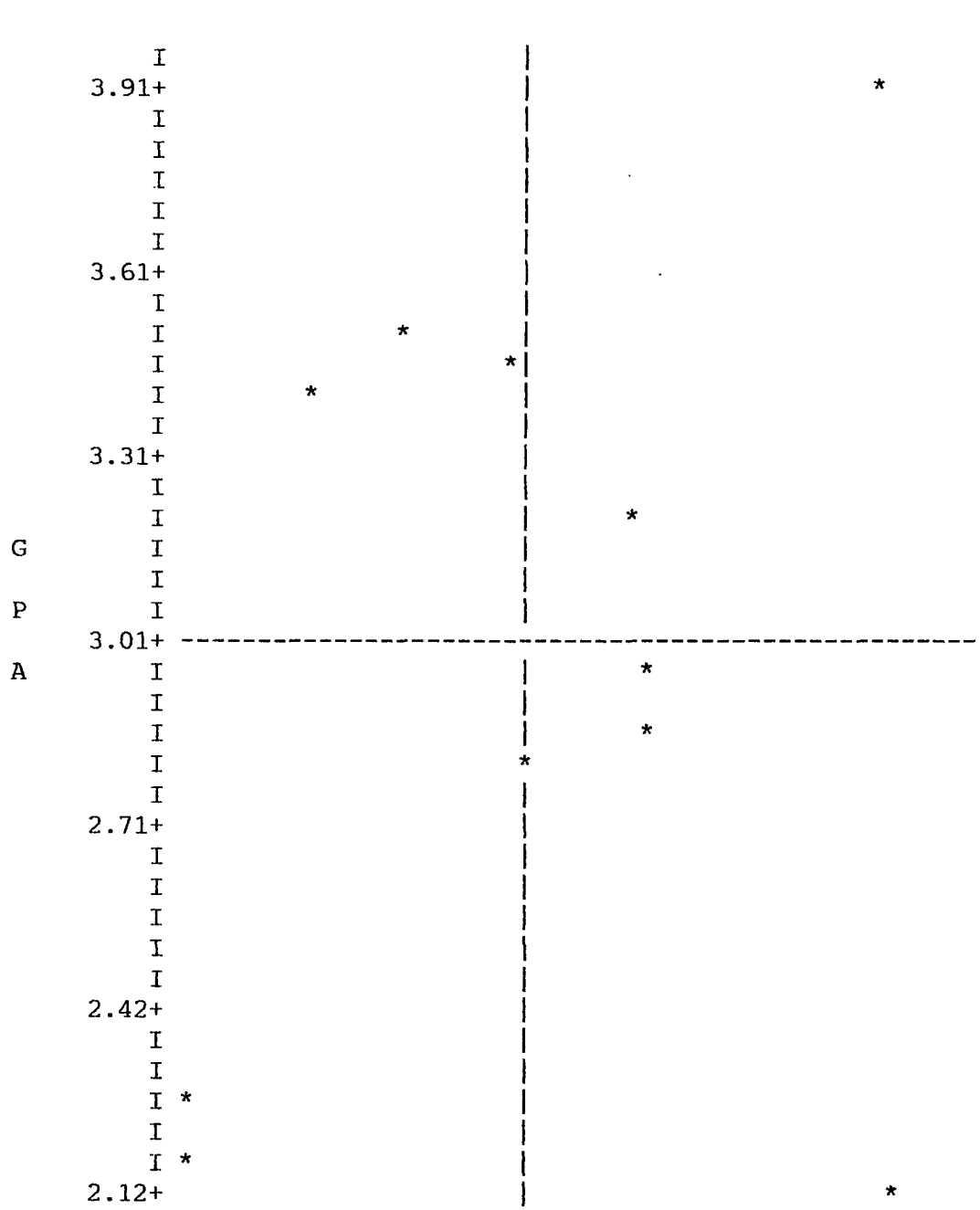
Table 6

Correlation and Linear Regression of the Reading Scores of 68 Through 62 as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Catawba Valley Community College

Reading Scores:		Final Overall GPA:	
Mean	= 65	Mean	= 2.94836
Standard Deviation	= 1.99979	Standard Deviation	= 0.57239

Number of pairs (N)	= 11
Correlation coefficient (R)	= 0.294
Degrees of Freedom (DF)	= 9
Slope (M) of Regression Line	= 0.084153631
Y intercept (B) for the Line	= -2.52162

Figure 3. Reading comprehension scores of 68 through 62 vs final overall GPA for the May 1988 graduates of Catawba Valley Community College. Each * represents a student.



The last reading group from Catawba Valley Community College was the smallest and an examination of the scores of the nine May 1988 graduates who scored 61 or below on the Nelson-Denny Reading test shows the range of raw scores to be 60 through 32 with the grade-equivalency range of 9.4 through 4.2. The mean reading score of 48.5556 has a grade-equivalent of 7.4 (see Table 7). In order to exit the course with a grade-equivalent of 10.5, the lower grade-equivalent students with grade-equivalents of 4.2 gained a possible 6.3 grade levels during the reading comprehension course and the mean gained a possible 3.1 grade levels. The final overall GPA mean of 2.93411 shows that this group of students are well above the minimum GPA of 2.0 for graduation. The correlation coefficient of 0.087 is small and shows that there is almost no significant relationship between the reading scores and the GPA value in this group (see Figure 4).

By speculation, consider the type of students in this group, we may find older students who have been out of school for a number of years and have a great deal of test anxiety to go along with the anxiety they feel in going back to school. These students would not do well on the admission/placement tests. After getting into the routine of school life, they would go the extra mile and do very well in their credit course work. Since developmental course work does not count toward graduation or the calculation of their GPA, these students would have an excellent chance to attain a higher overall GPA at graduation.

Given this assumption, without developmental work in reading comprehension, it is doubtful that this group of students would have

graduated from Catawba Valley Community College with a degree, certificate, or diploma in their chosen field.

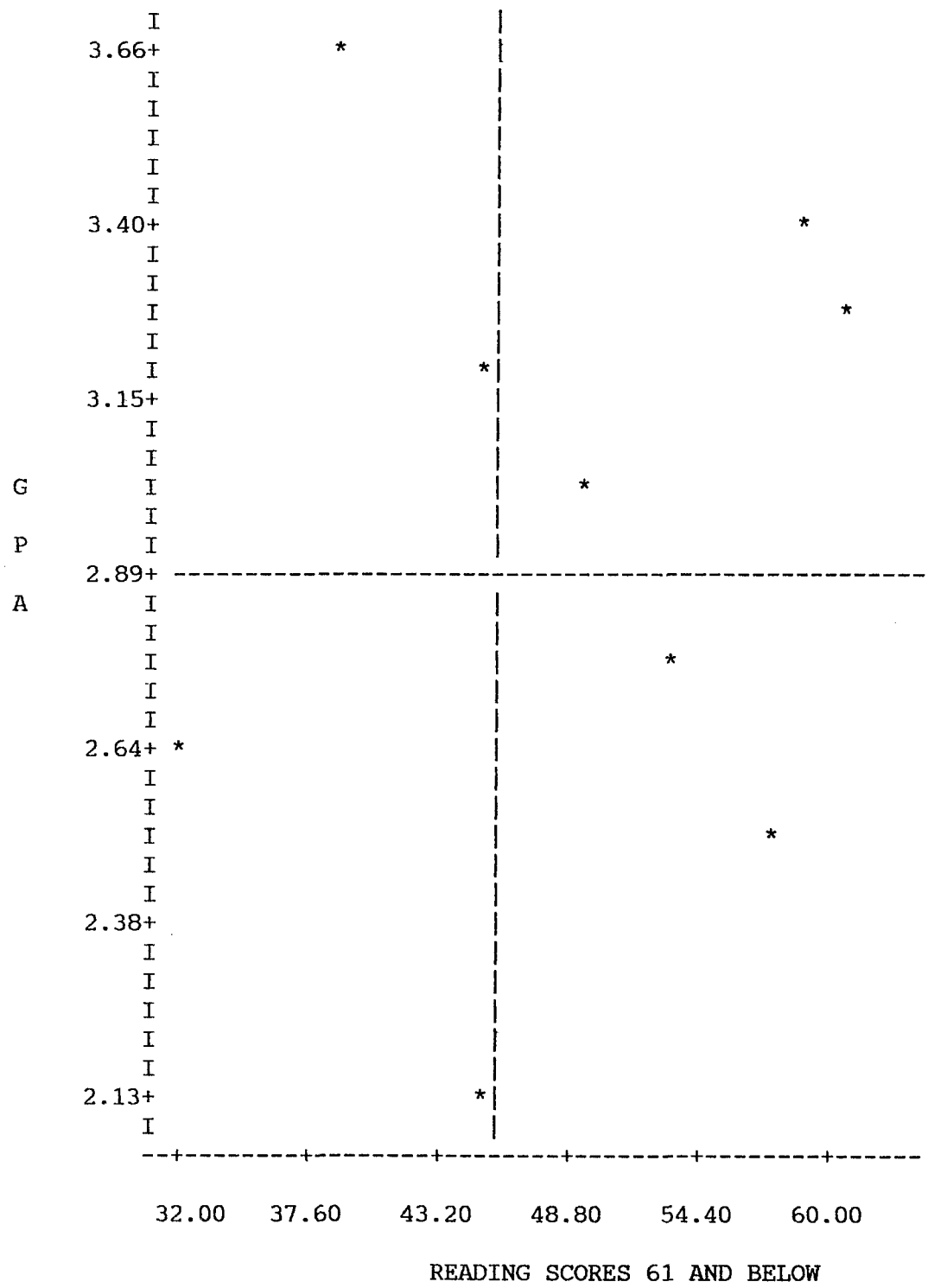
Table 7

Correlation and Linear Regression of the Reading Scores of 61 and Below as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Catawba Valley Community College

Reading Scores:		Final Overall GPA:	
Mean	= 48.5556	Mean	= 2.93411
Standard Deviation	= 8.95813	Standard Deviation	= 0.46024

Number of pairs (N)	=	9
Correlation coefficient (R)	=	0.087
Degrees of Freedom (DF)	=	7
Slope (M) of Regression Line	=	0.004454861
Y intercept (B) for the Line	=	2.7178

Figure 4. Reading comprehension scores of 61 and below vs final overall GPA for the May 1988 graduates of Catawba Valley Community College. Each * represents a student (some students have the same scores and are not represented).



Davidson County Community College

The Nelson-Denny Reading Test form E is used for reading placement at Davidson County Community College. Students who receive a raw score of below 72 are designated as developmental and are required to take developmental reading, REA 091, a reading improvement course. The admission/placement scores recorded are the standard test scores not the raw scores. The raw score of 72 is equivalent to the standard test score of 295 and grade-equivalent of 11.0.

Of the twelve students designated as developmental, the standard test scores ranged from 295 through 278, grade-equivalent range of 11.0 through 5.8 respectively. The final overall GPA mean of 2.80117 with a standard deviation of 0.41973 and correlation coefficient of 0.19 shows no significant relationship between the reading scores and the final overall GPA (see Table 8 and Figure 5). The students need to attain a grade-equivalent of 11.1 to exit the developmental reading comprehension course, which means that the lower students would need to gain 5.3 grade levels to exit the course.

In speculation, these students may be older people who have decided to return to school. They may be housewives who need to learn a skill in order to obtain a job to fill the void left when the children leave home. Or, they may be people who want to change their occupations and learn new skills. Whatever the reason, these students have anxieties about returning to school and, therefore, have difficulty taking tests causing them to score lower on the admission/placement test.

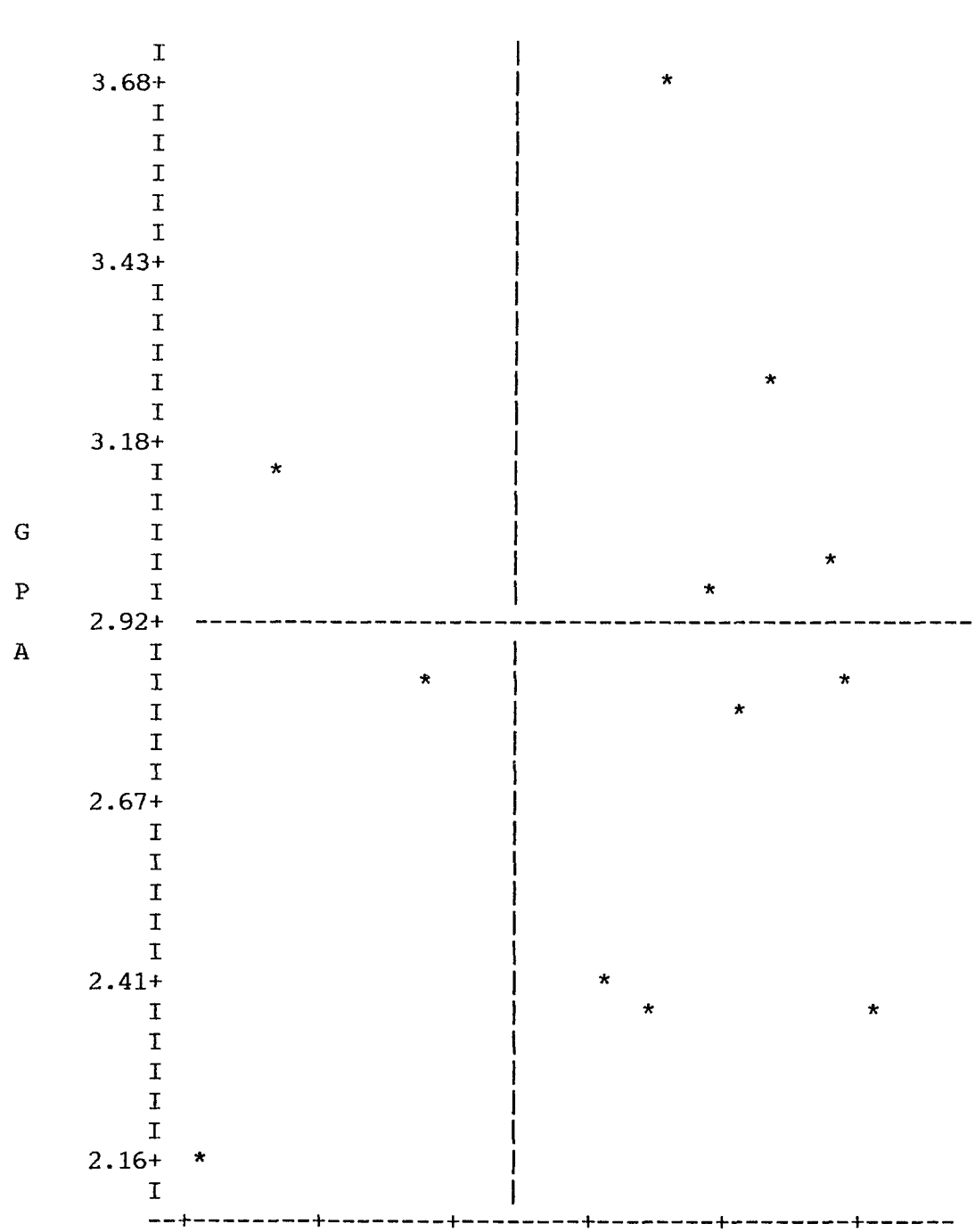
Table 8

Correlation and Linear Regression of the Reading Standard Scores Less Than 295 as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Davidson County Community College

Reading Standard Scores:		Final Overall GPA:	
Mean	= 289.167	Mean	= 2.80117
Standard Deviation	= 5.34879	Standard Deviation	= 0.41973

Number of pairs (N)	= 12
Correlation coefficient (R)	= 0.19
Degrees of Freedom (DF)	= 10
Slope (M) of Regression Line	= 0.0149095
Y intercept (B) for the Line	= -1.51017

Figure 5. Reading scores less than 295 vs final overall GPA for the May 1988 graduates of Davidson County Community College. Each * represents a student.



Surry Community College

For students at Surry Community College to be designated as developmental in reading, the students must score below 41 on the admission/placement test. Ten students scored within the range of 35 through 39. There was no information available to determine the grade level range for these students nor was there information to determine the type of score recorded. Therefore, taking the scores as given and comparing them to the GPA, the final overall GPA mean of 2.7431 and standard deviation of 0.545942 with a correlation coefficient of 0.4 shows no significant relationship between the reading scores and GPA values (see Table 9 and Figure 6).

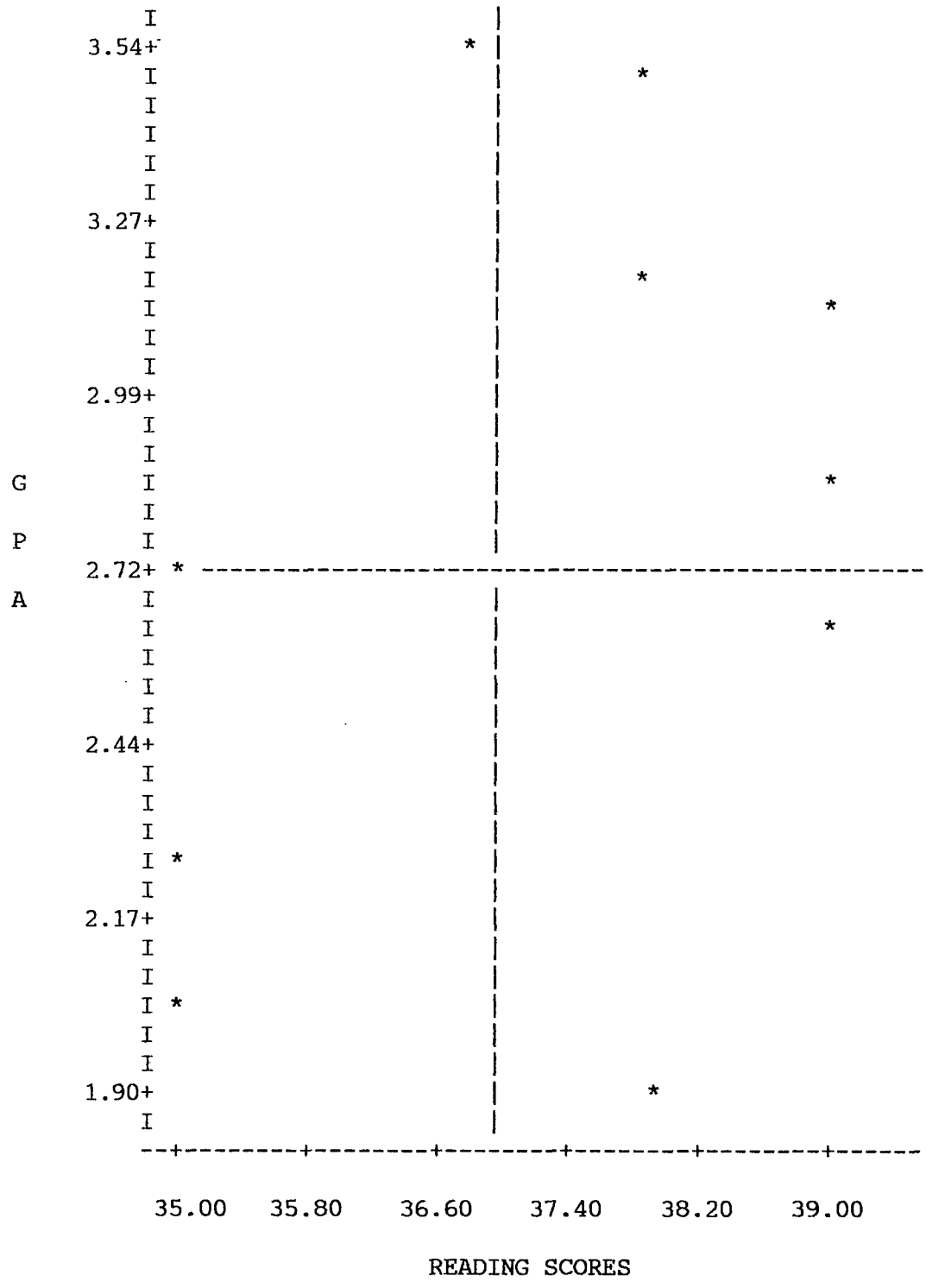
Table 9

Correlation and Linear Regression of the Reading Scores Less Than 41 as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Surry Community College

Reading Standard Scores:		Final Overall GPA:	
Mean	= 37.3	Mean	= 2.7431
Standard Deviation	= 1.61572	Standard Deviation	= 0.54594

Number of pairs (N)	= 10
Correlation coefficient (R)	= 0.4
Degrees of Freedom (DF)	= 8
Slope (M) of Regression Line	= 0.13524737
Y intercept (B) for the Line	= -2.3016

Figure 6. Reading scores less than 41 vs final overall GPA for the May 1988 graduates of Surry Community College. Each * represents a student.



Sampson Technical College

Students at Sampson Technical College must score below 12.0 on the Nelson-Denny Reading test to be designated as developmental students in reading. Of the fifty-two May 1988 graduates, twenty-seven scored less than 12.0 and were designated as being developmental students in reading. The 12.0 is the grade-equivalent on the Nelson-Denny Reading test.

The reading mean was 9.7 with a standard deviation of 1.7. The students on the lower end with a 6.2 grade level had to gain 5.8 grade levels to attain a 12.0 grade level. The correlation coefficient of 0.201 shows that there is little, if any, relationship between the reading scores and the accumulated final overall GPA (see Table 10 and Figure 7).

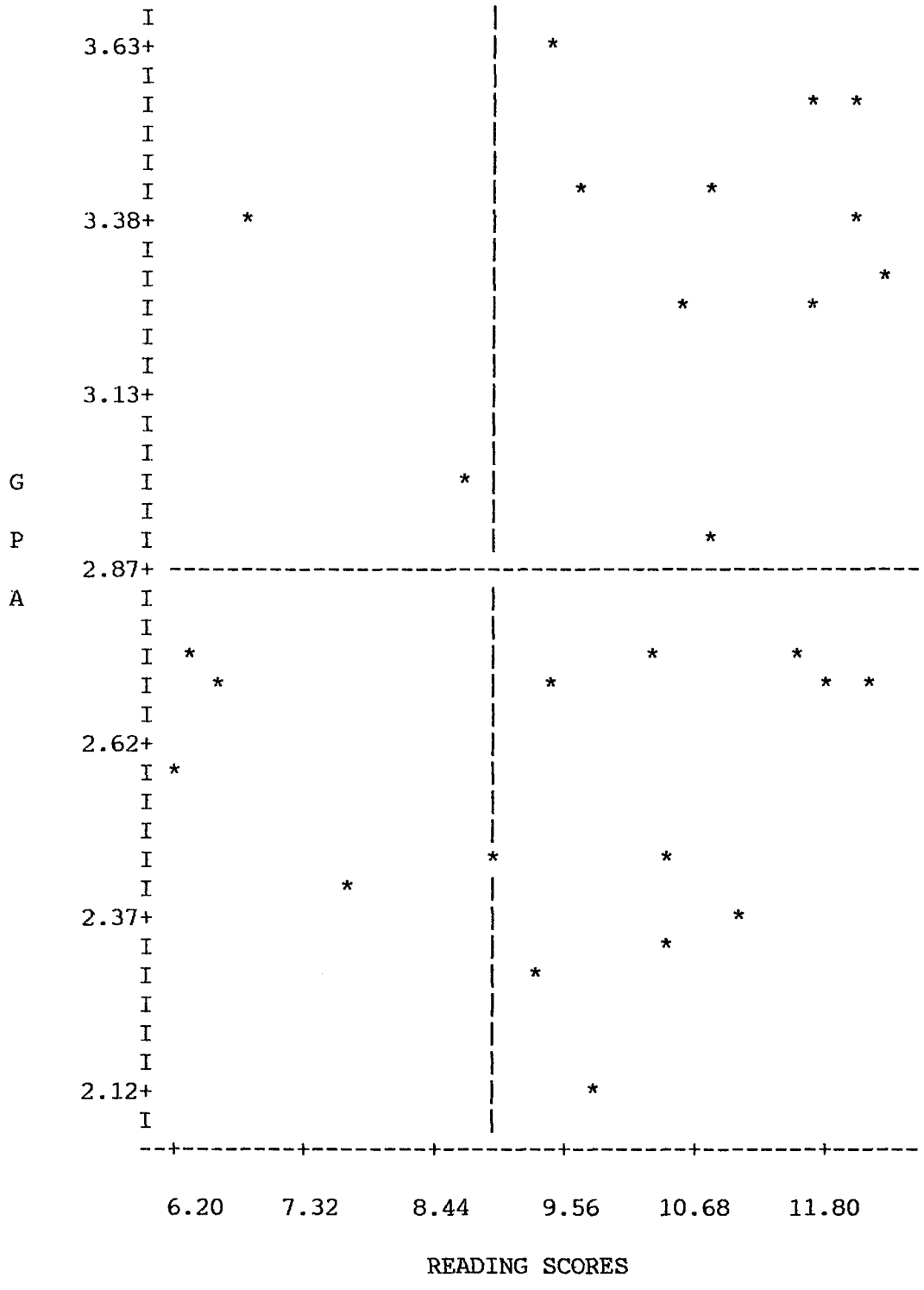
Table 10

Correlation and Linear Regression of the Reading Scores Less Than 12 as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Sampson Technical College

Reading Standard Scores:		Final Overall GPA:	
Mean	= 9.74074	Mean	= 2.8741
Standard Deviation	= 1.72268	Standard Deviation	= 0.44925

Number of pairs (N)	= 27
Correlation coefficient (R)	= 0.201
Degrees of Freedom (DF)	= 25
Slope (M) of Regression Line	= 0.0523843
Y intercept (B) for the Line	= 2.36381

Figure 7. Reading scores less than 12 vs final overall GPA for the May 1988 graduates of Sampson Technical College. Each * represents a student.



English

Catawba Valley Community College

The admission/placement test used for placement in English at Catawba Valley Community College is the Assessment and Placement Services (APS) for Community Colleges which is tailored to the unique needs of the community college. This battery of instruments provides an effective means of assessing the writing skills of incoming students. The test does not require a writing sample from the student, but determines the writing skills by means of sentence structure identification. It was designed for efficient local scoring which provides the school counselors and academic advisors with immediate information on weaknesses incoming students may have.

Students scoring less than 24 on the English admission/placement test are designated as developmental and are required to take developmental English, ENG 099. In the developmental English course students learn the basics in English grammar and writing skills.

The correlation coefficient for the English scores and the GPA's (0.401) shows that there is little significant correlation between the English scores and GPA (see Table 11 and Figure 8).

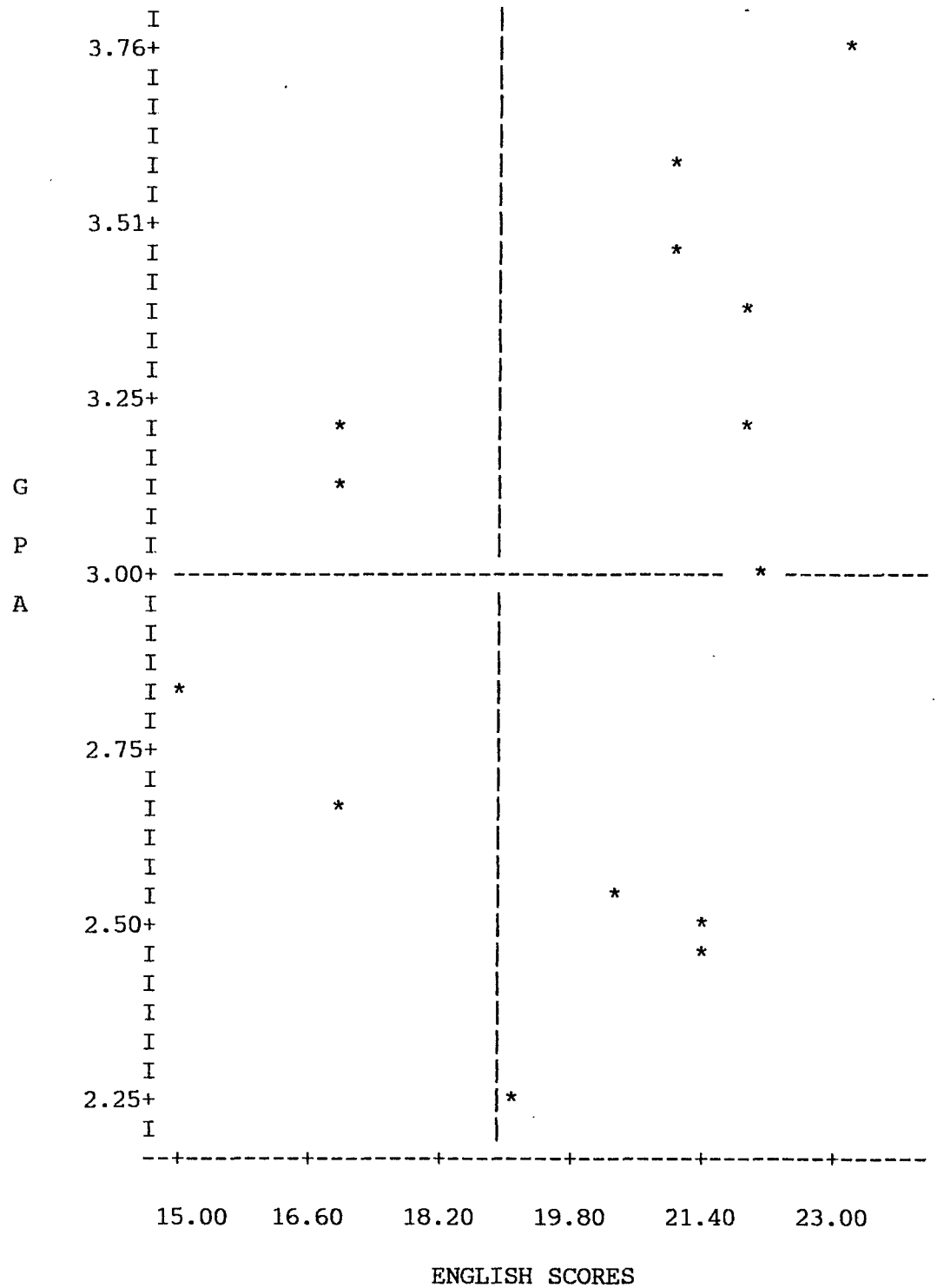
Table 11

Correlation and Linear Regression of the English Scores Less Than 24 as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Catawba Valley Community College

English Scores:		Final Overall GPA:	
Mean	= 20.0625	Mean	= 3.03206
Standard Deviation	= 2.27675	Standard Deviation	= 0.44584

Number of pairs (N)	= 16
Correlation coefficient (R)	= 0.401
Degrees of Freedom (DF)	= 14
Slope (M) of Regression Line	= 0.0784317
Y intercept (B) for the Line	= 1.45853

Figure 8. English scores of 24 and below vs final overall GPA for the May 1988 graduates of Catawba Valley Community College. Each * represents a student (some students have the same scores and are not represented).



Davidson County Community College

The admission/placement test used at Davidson County Community College is a writing test designed and prepared by the faculty. The English faculty ascertained by their experience with the typical students entering Davidson County Community College the writing skills necessary for their students and designed the writing test around that needs assessment. Because the English faculty scores the tests, it may take longer to get the results of the tests to the school counselors and academic advisors than it would if the tests could be machine scored.

Scoring for the writing test ranges from 2 to 12 in whole numbers with no decimals. Students who score below 6 are designated as developmental and are required to take developmental English courses, ENG 091 and ENG 092. Students who score 6 on the English test and whose reading test scores are below 72 are also designated as developmental and are required to take ENG 091 and ENG 092. The student data used for this study was 5 and 6. Only one of the eleven students included in the data scored 6 on the English test and above 72 on the reading test.

With the limitations of the data used, there is no way to determine any correlation between the writing skills of the students and their final overall GPA with a correlation coefficient of 0.286 (see Table 12 and Figure 9).

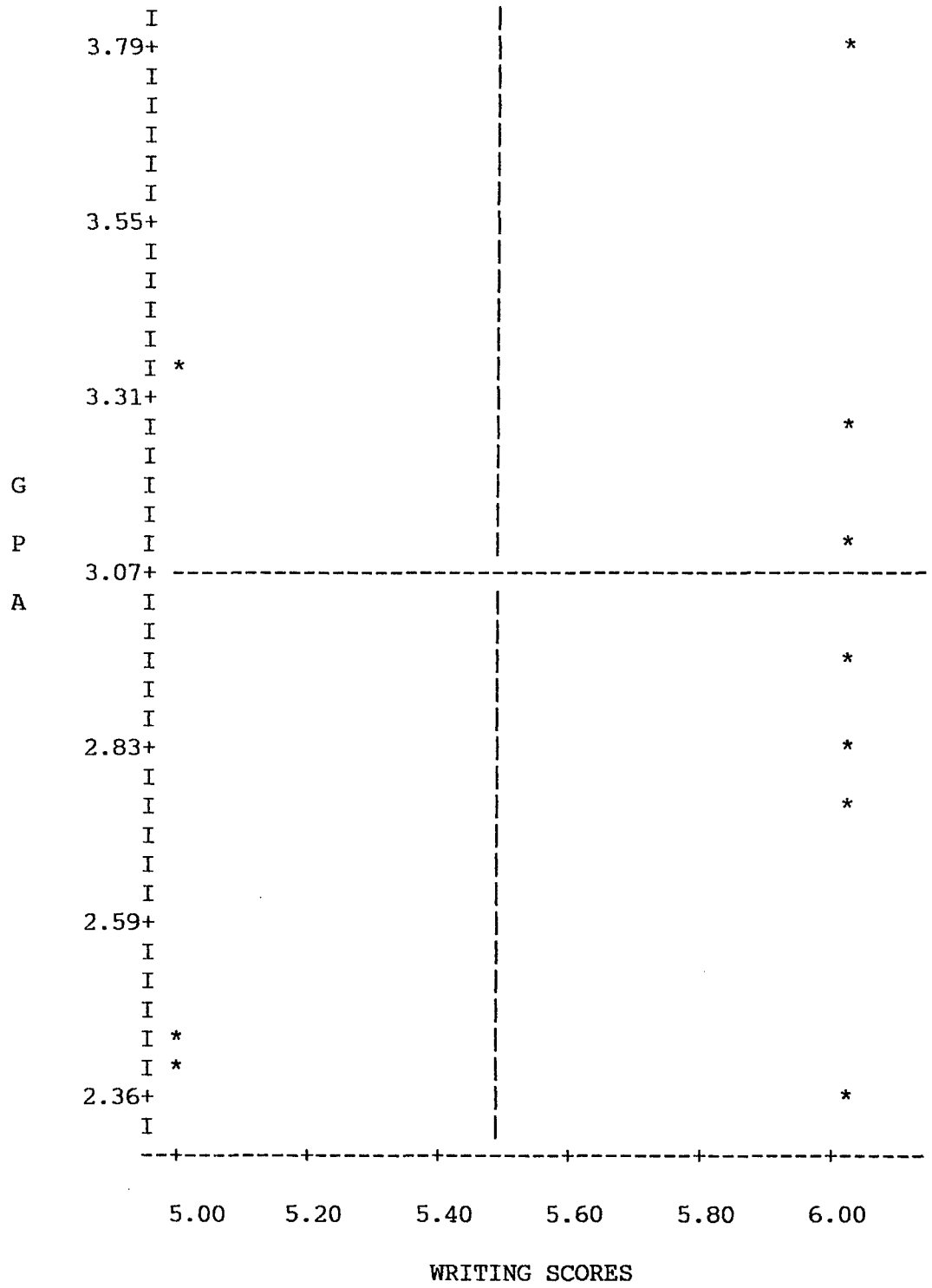
Table 12

Correlation and Linear Regression of the Writing Scores 6 and Below as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Davidson County Community College

English/Writing Standard Scores:		Final Overall GPA:
Mean	= 5.72727	Mean = 2.902
Standard Deviation	= 0.445367	Standard Deviation = 0.42339

Number of pairs (N)	= 11
Correlation coefficient (R)	= 0.286
Degrees of Freedom (DF)	= 9
Slope (M) of Regression Line	= 0.271785
Y intercept (B) for the Line	= 1.34541

Figure 9. Writing scores 6 and below vs final overall GPA for the May 1988 graduates of Davidson County Community College. Each * represents a student (some students have the same score and are not represented).



Surry Community College

Of the sixty-nine graduates at Surry Community College, eight were designated as being developmental students in English. These students were required to take specific sections of developmental English, ENG 101, ENG 102, and/or ENG 103.

The final overall GPA mean was 2.723 and the standard deviation was 0.493115 with a correlation coefficient of 0.081 (see Table 13). Since the correlation coefficient is small, the relationship is almost non-exist between English scores and GPA values. The slope of the regression line (0.0114687) supports the diminutive relationship between the English scores and the final overall GPA (see Figure 10).

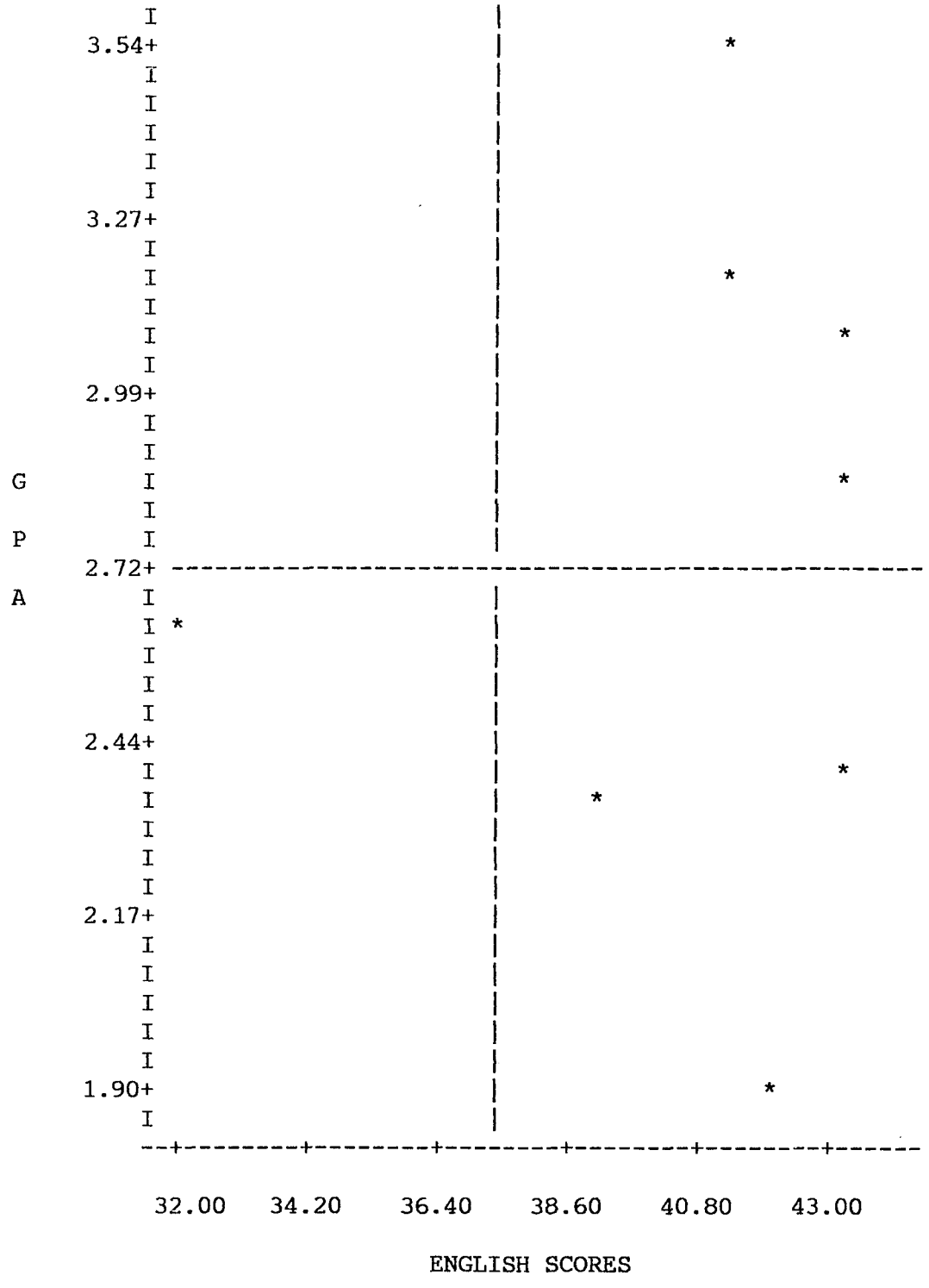
Table 13

Correlation and Linear Regression of the English Scores Less Than 44 as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Surry Community College

English Standard Scores:		Final Overall GPA:	
Mean	= 40.5	Mean	= 2.723
Standard Deviation	= 3.46411	Standard Deviation	= 0.49312

Number of pairs (N)	= 8
Correlation coefficient (R)	= 0.081
Degrees of Freedom (DF)	= 6
Slope (M) of Regression Line	= 0.0114687
Y intercept (B) for the Line	= 2.25852

Figure 10. English scores less than 44 vs final overall GPA for the May 1988 graduates of Surry Community College. Each * represents a student.



Sampson Technical College

The Written English Expression part of the Guidance and Placement Program is used as the admission/placement test for English at Sampson Technical College. A score of less than 51 designates students as being developmental in English.

Thirty-four students were designated as developmental students in English. The final overall GPA mean of 2.93 and standard deviation of 0.477766 with a correlation coefficient of 0.372 shows a very small relationship between the English scores and the final overall GPA (see Table 14 and Figure 11).

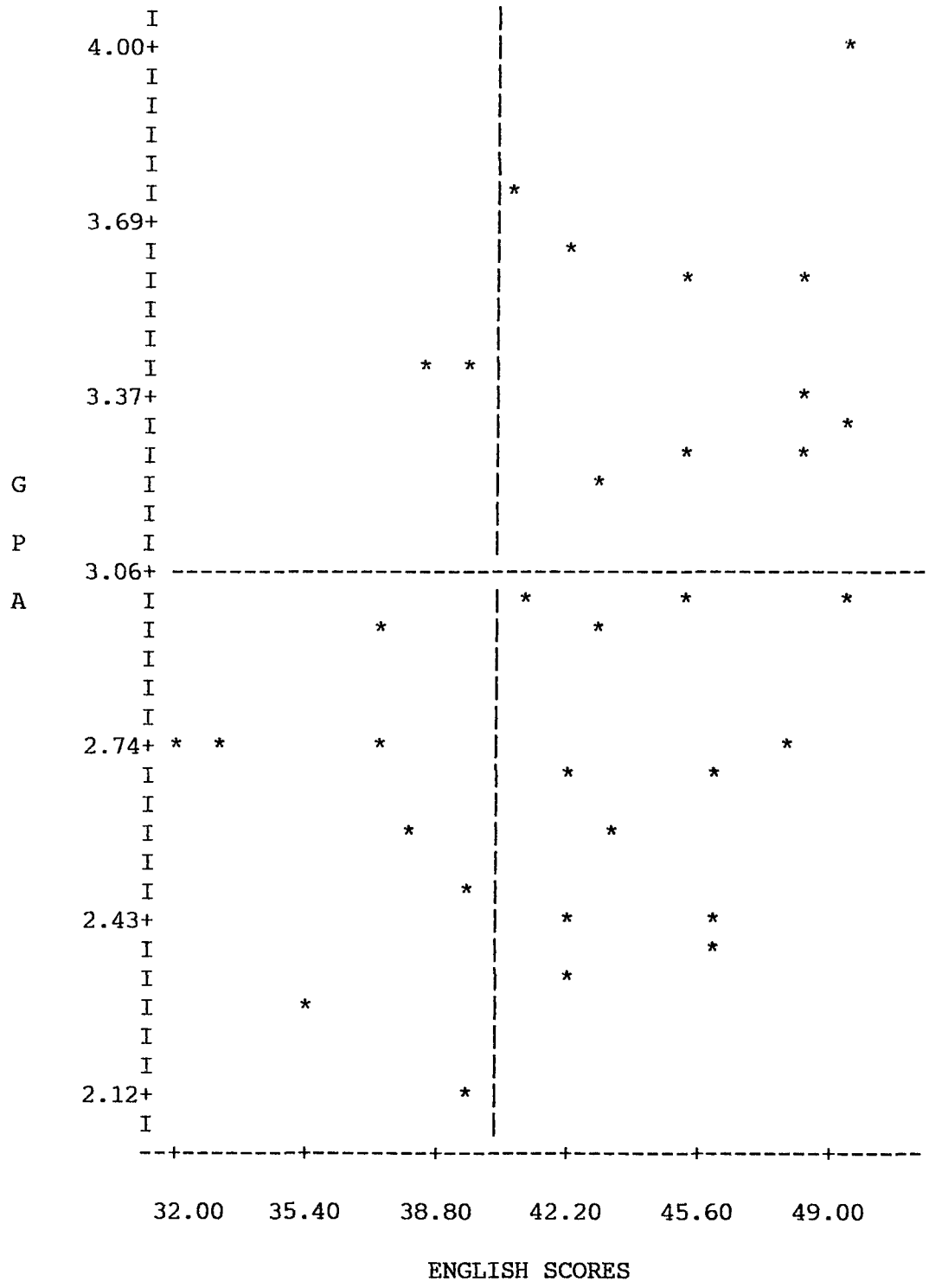
Table 14

Correlation and Linear Regression of the English Scores Less Than 51 as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Sampson Technical College

English Standard Scores:		Final Overall GPA:	
Mean	= 42.5294	Mean	= 2.93
Standard Deviation	= 4.72318	Standard Deviation	= 0.47777

Number of pairs (N)	= 34
Correlation coefficient (R)	= 0.372
Degrees of Freedom (DF)	= 32
Slope (M) of Regression Line	= 0.0376013
Y intercept (B) for the Line	= 1.33084

Figure 11. English scores less than 51 vs final overall GPA for the May 1988 graduates of Sampson Technical College. Each * represents a student.



Mathematics

Catawba Valley Community College

The admission/placement test used for placement in mathematics at Catawba Valley Community College is the Assessment and Placement Services (APS) for Community Colleges which is tailored to the unique needs of the community college. This battery of instruments provides an effective means of assessing the mathematics skills of incoming students. It was designed for efficient local scoring which provides the school counselors and academic advisors with immediate information on weaknesses incoming students may have. By being aware of mathematical weaknesses, the school counselors and academic advisors can place students into appropriate developmental mathematics courses, as well as, other credit courses dealing with mathematics.

At Catawba Valley Community College, the cut-off scores designating developmental students in mathematics vary with the curriculum that students plan to enter. The business curriculum has a cut-off score of 17. College transfer and the engineering curriculums have a cut-off score of 10. The environmental and life science curriculum and the health and human resources curriculum have a cut-off score of 30. The furniture curriculum has no required cut-off score. They require MAT 113 as the beginning math course for all of their students regardless of the admission/placement test score in mathematics.

As a general rule, it takes developmental students at least two quarters to exit the developmental mathematics courses, MAT 098 and MAT

099. Students who did not take algebra in high school may take four quarters to exit the courses. In MAT 098, students review basicaddition, subtraction, multiplication, and division of whole numbers, fractions, percents, and decimals. Also included in MAT 098 is metric conversions and an introduction to algebra. In MAT 099, students begin with simple algebra, go through word problems, algebraic fractions and radicals, two-variable equations, and finally, quadratic equations. The range of admission/placement scores used in this study includes 10 through 30 which is the range among the different curriculums. The final overall GPA of 2.85958 with a standard deviation of 0.49002 along with the correlation coefficient of 0.109 shows there is no significant relationship between the mathematical skills of the students and their final overall GPA (see Table 15 and Figure 12).

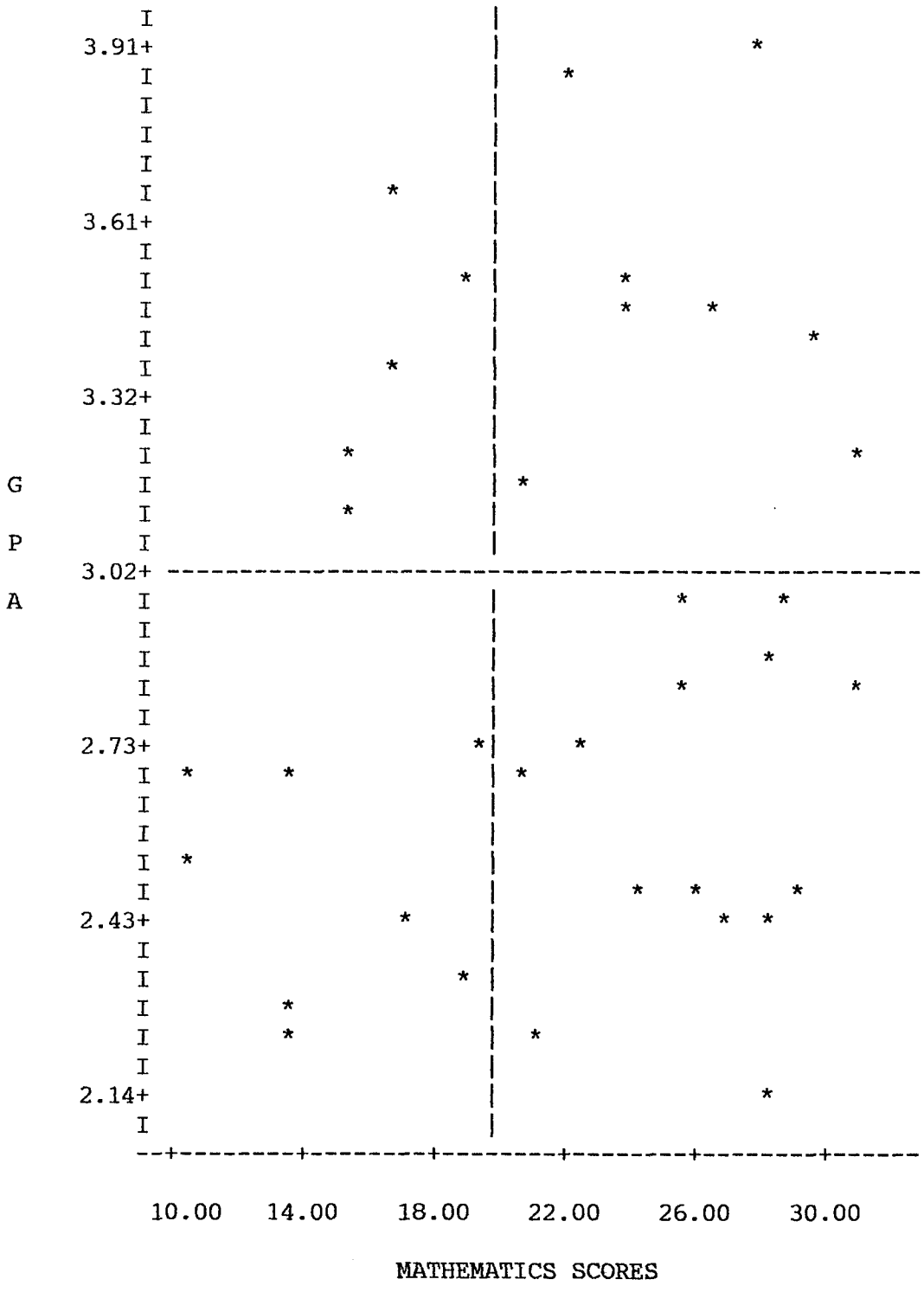
Table 15

Correlation and Linear Regression of the Mathematics Scores 10 through 30 as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Catawba Valley Community College

Mathematics Scores:		Final Overall GPA:	
Mean	= 21.5833	Mean	= 2.85958
Standard Deviation	= 5.95995	Standard Deviation	= 0.49002

Number of pairs (N)	= 36
Correlation coefficient (R)	= 0.109
Degrees of Freedom (DF)	= 34
Slope (M) of Regression Line	= 0.00894914
Y intercept (B) for the Line	= 2.66643

Figure 12. Mathematics scores of 10 through 30 vs final overall GPA for the May 1988 graduates of Catawba Valley Community College. Each * represents a student (some students have the same scores and are not represented).



Davidson County Community College

The Descriptive Tests of Mathematics Skills form A is use by Davidson County Community College for admission/placement in mathematics. They test on three different levels, arithmetic skills, elementary algebra, and intermediate algebra. The scaled scores are recorded and the number correct is used to determine placement. A number correct score of 23 (114 scaled score) or higher at the arithmetic skills level is required for the nursing and pharmacy technology programs. A number correct score of 21 (112 scaled score) or higher at the arithmetic skills level is required for business programs. If the number correct score at the arithmetic skills level is below that required for the program students wish to enter, the students are designated as being developmental and are required to take developmental mathematics, MAT 081. At the elementary algebra level, students who score 15 (207 scaled score) or below are required to take developmental mathematics, MAT 091, and at the intermediate algebra level, students who score 11 (305 scaled score) or below are required to take developmental mathematics, MAT 091 or MAT 093. A look at Figure 13 shows the grouping of scores in these three levels at the left, center, and right of the figure.

The final overall GPA mean of 3.05719 has a standard deviation of 0.566543 with a correlation coefficient of 0.226. This shows that there is no significant correlation between the mathematics test scores and the GPA values (see Table 16).

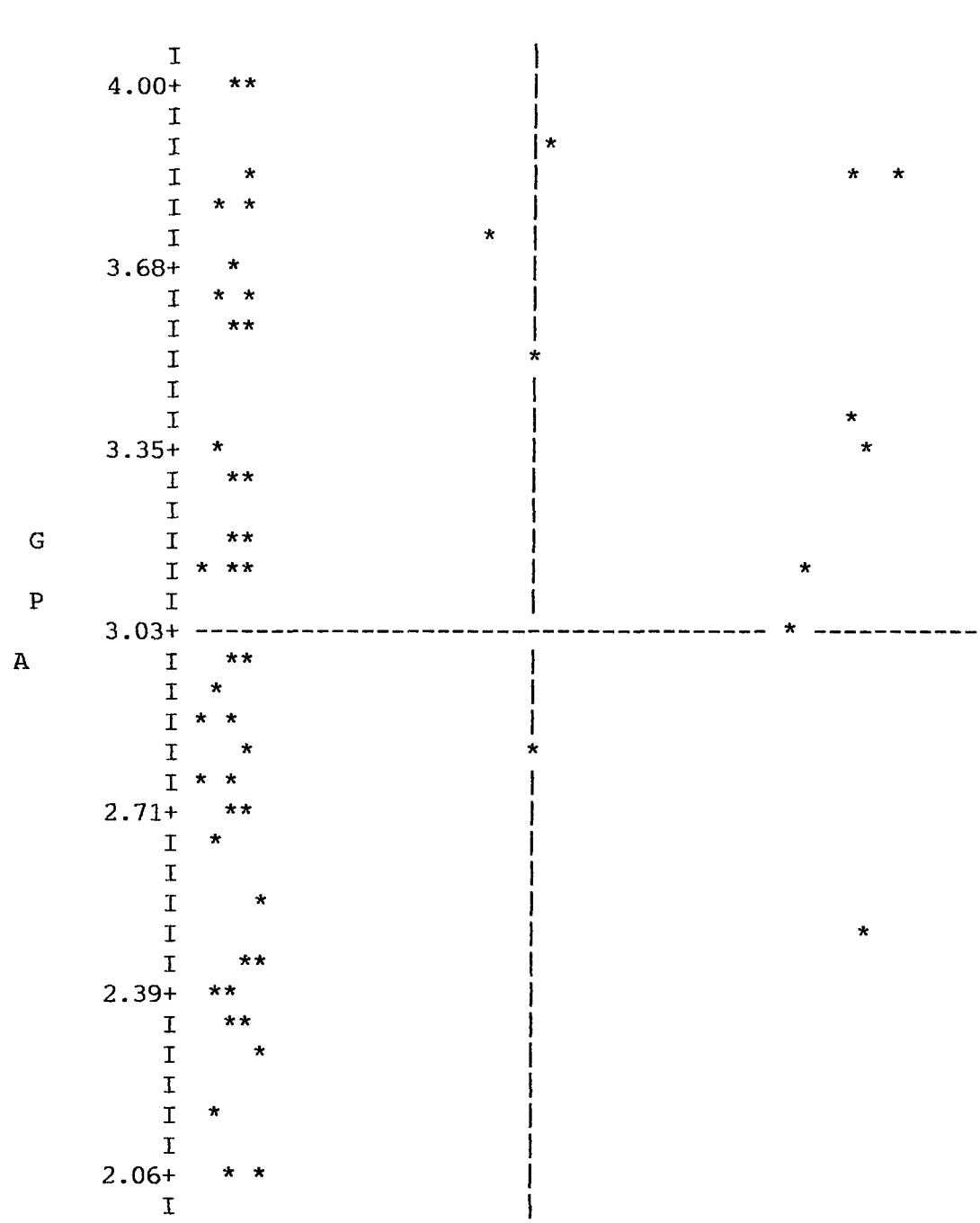
Table 16

Correlation and Linear Regression of the Mathematics Scaled Scores as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Davidson County Community College

Mathematics Scaled Scores:		Final Overall GPA:	
Mean	= 147.864	Mean	= 3.05719
Standard Deviation	= 63.6983	Standard Deviation	= 0.56654

Number of pairs (N)	= 59
Correlation coefficient (R)	= 0.226
Degrees of Freedom (DF)	= 57
Slope (M) of Regression Line	= 0.00201437
Y intercept (B) for the Line	= 2.75933

Figure 13. Mathematics scaled scores vs final overall GPA for the May 1988 graduates of Davidson County Community College. Each * represents a student (some students have the same scores and are not represented).



Surry Community College

Three different test forms, C, D, and E, are used at Surry Community College in admission/placement for mathematics students. Each form has its own cut-off score, form C requires a score of 48 or below, form D requires a score of 47 or below, and form E requires a score of 46 or below. For this study, 46 was used as the cut-off score.

A look at the final overall GPA of 2.7548 and standard deviation of 0.549012 with a correlation coefficient of 0.234 shows no significant relationship between the mathematics test scores and the final overall GPA values (see Table 17 and Figure 14).

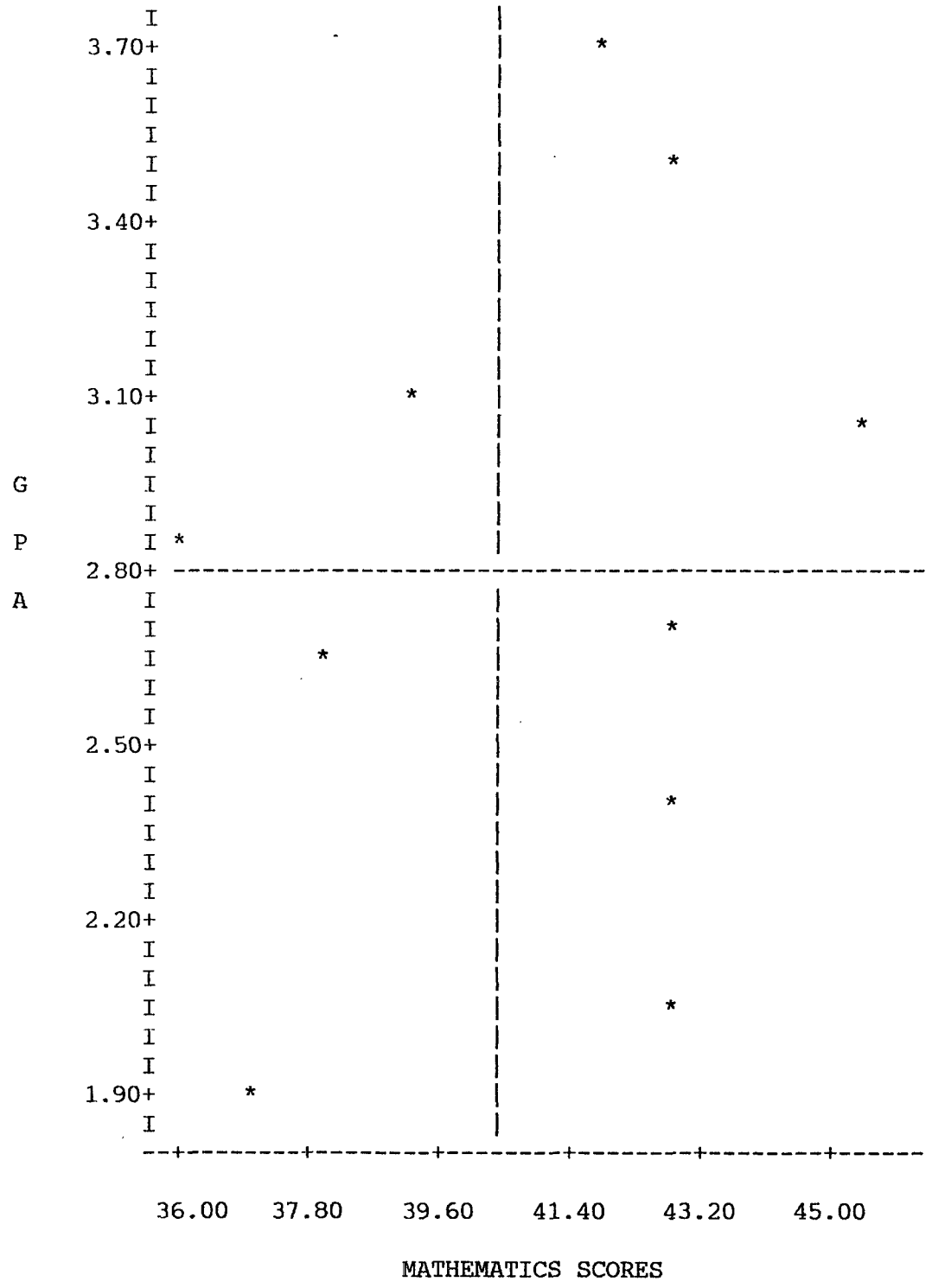
Table 17

Correlation and Linear Regression of the Mathematics Scores Less Than 46 as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Surry Community College

Mathematics Scores:		Final Overall GPA:	
Mean	= 40.9	Mean	= 2.7548
Standard Deviation	= 2.94791	Standard Deviation	= 0.54901

Number of pairs (N)	= 10
Correlation coefficient (R)	= 0.234
Degrees of Freedom (DF)	= 8
Slope (M) of Regression Line	= 0.0435527
Y intercept (B) for the Line	= 0.973495

Figure 14. Mathematics scores less than 46 vs final overall GPA for the May 1988 graduates of Surry Community College. Each * represents a student.



Sampson Technical College

The Computation and Elementary Algebra parts of the Comparative Guidance and Placement Program are required for all incoming students at Sampson Technical College. Cut-off scores vary with each curriculum. As a general rule, students who receive 45 or below on the admission/placement test are required to take a 99 level developmental course. Students who receive 46 through 50 are required to take a 100 level developmental course. Students who make 51 or above are exempted from developmental mathematics; therefore, 50 was used as the cut-off score for this study.

The final overall GPA mean was 2.88849 and the standard deviation was 0.458742 with a correlation coefficient of 0.472 which shows no significant relationship between the mathematics scores and the GPA value (see Table 18 and Figure 15).

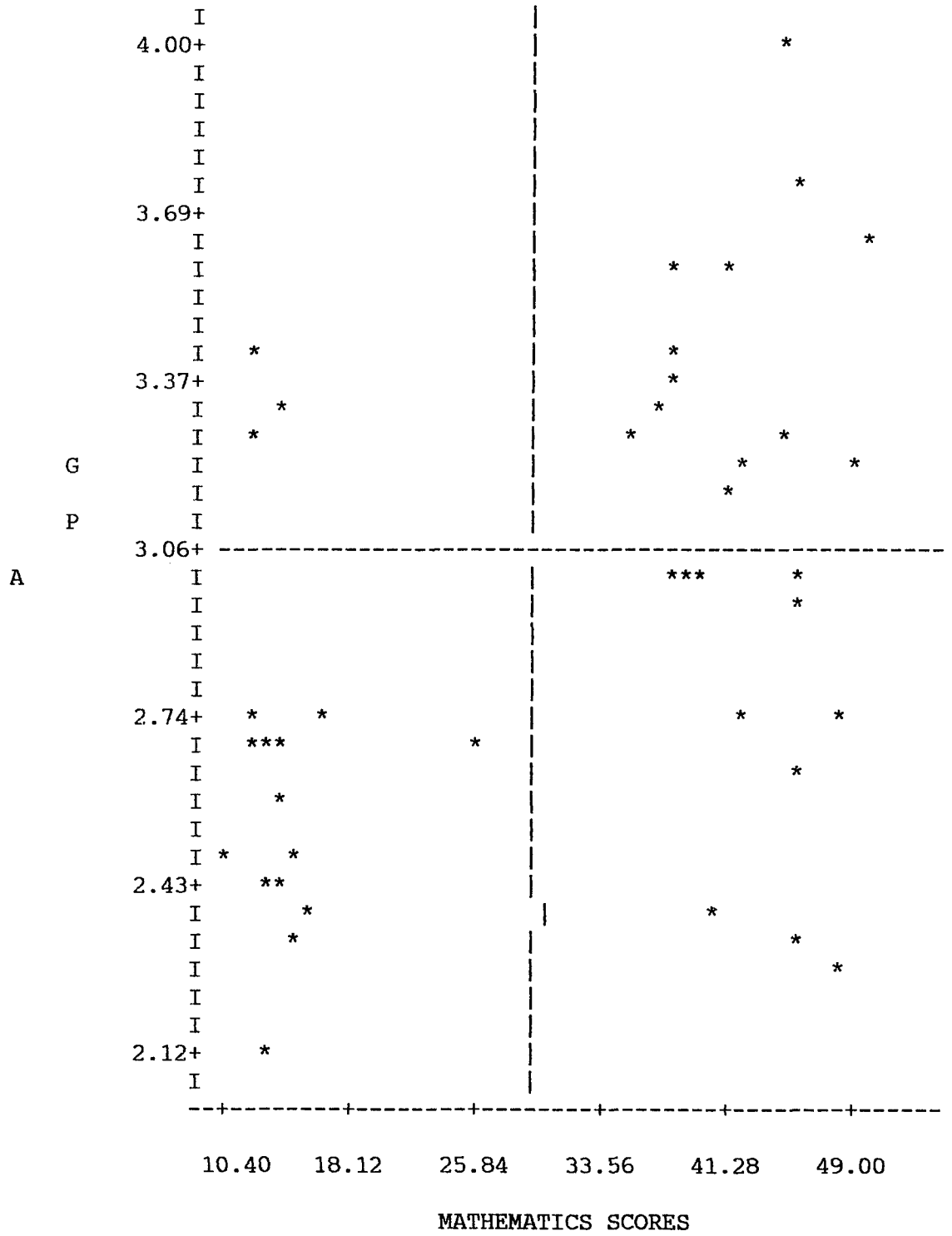
Table 18

Correlation and Linear Regression of the Mathematics Scores Less Than 51 as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Sampson Technical College

Mathematics Scores:		Final Overall GPA:	
Mean	= 29.8535	Mean	= 2.88849
Standard Deviation	= 14.8305	Standard Deviation	= 0.45874

Number of pairs (N)	= 43
Correlation coefficient (R)	= 0.473
Degrees of Freedom (DF)	= 41
Slope (M) of Regression Line	= 0.0145926
Y intercept (B) for the Line	= 2.45285

Figure 15. Mathematics scores less than 51 vs final overall GPA for the May 1988 graduates of Sampson Technical College. Each * represents a student (some students have the same scores and are not represented).



Additional Findings

Since the study dealt with the admission/placement test scores and the students' corresponding GPA and because of the results of the study, it was decided to compare the grades received in reading comprehension, developmental English, and developmental mathematics with the GPA. The only suitable numeric data was from Catawba Valley Community College. The other community colleges recorded letter grades.

After running a correlation and linear regression on the developmental scores in reading, English, and mathematics reported from Catawba Valley Community College, reading and English show low correlation between developmental scores and final overall GPA. Mathematics reveals a moderate correlation between developmental scores and final overall GPA.

Table 19 shows the correlation coefficient for developmental reading grades and GPA to be 0.338. The scatter graph, Figure 16, shows a clustering of scores in the upper right-hand corner of the graph.

The correlation coefficient for developmental English grades and the final overall GPA is 0.393 (see Table 20). This shows a low relationship between the two values. The scatter graph (Figure 17) shows higher concentration on the right side of the graph.

For developmental mathematics and GPA, the correlation coefficient is 0.531 (see Table 21). A moderate relationship between developmental mathematics grades and GPA is shown by this value. The

concentration of scores is in the lower half of the graph (see Figure 18).

In summary, the results showed little relationship between developmental reading comprehension grades and final overall GPA. There was little relationship between developmental English grades and GPA. The relationship between developmental mathematics grades and GPA was moderate. Since there was no significant relationship between the developmental grades and the GPA, there must be other variables assisting developmental students in their course work.

Table 19

Correlation and Linear Regression of the Developmental Reading Grades as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Catawba Valley Community College

Reading Grades:		Final Overall GPA:	
Mean	= 90.5676	Mean	= 3.01065
Standard Deviation	= 5.8288	Standard Deviation	= 0.51565

Number of pairs (N)	= 37
Correlation coefficient (R)	= 0.338
Degrees of Freedom (DF)	= 35
Slope (M) of Regression Line	= 0.0298649
Y intercept (B) for the Line	= 0.305854

Figure 16. Developmental Reading Grades vs Final Overall GPA for the May 1988 Graduates of Catawba Valley Community College. Each * represents a student.

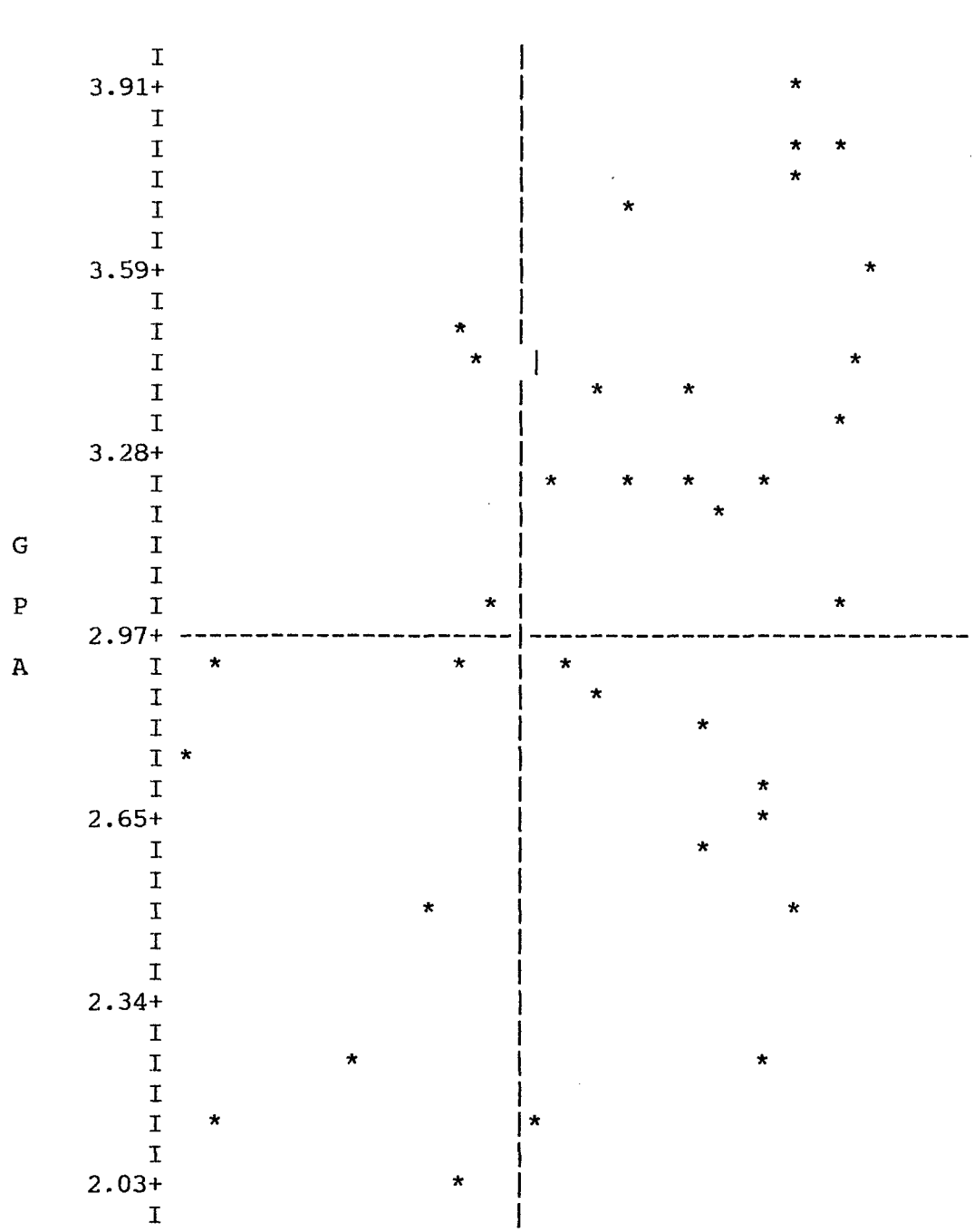


Table 20

Correlation and Linear Regression of the Developmental English Grades as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Catawba Valley Community College

English Grades:		Final Overall GPA:	
Mean	= 87.875	Mean	= 2.98888
Standard Deviation	= 6.95398	Standard Deviation	= 0.44755

Number of pairs (N)	= 32
Correlation coefficient (R)	= 0.393
Degrees of Freedom (DF)	= 30
Slope (M) of Regression Line	= 0.0252832
Y intercept (B) for the Line	= 0.767114

Figure 17. Developmental English Grades vs Final Overall GPA for the May 1988 Graduates of Catawba Valley Community College. Each * represents a student.

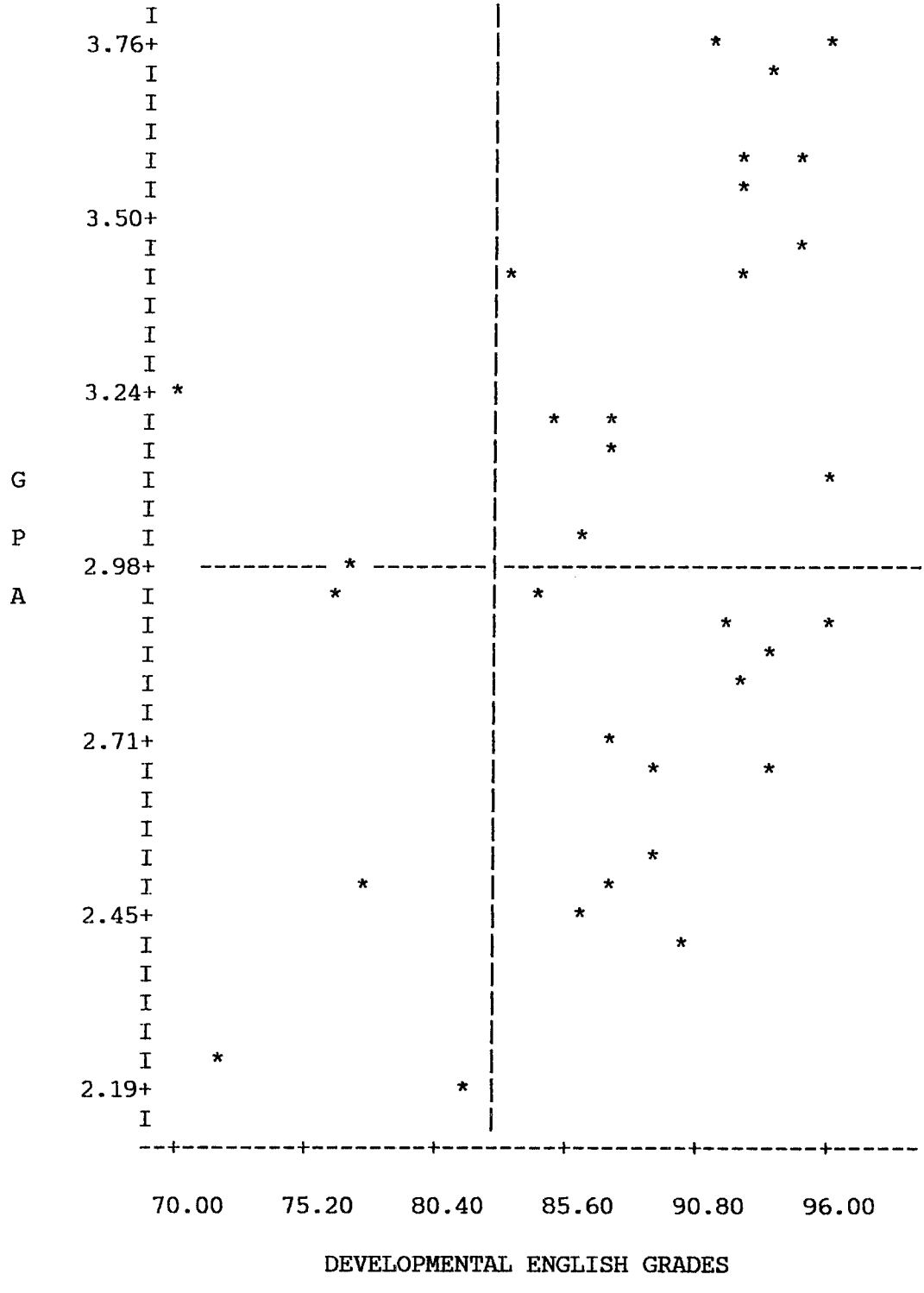


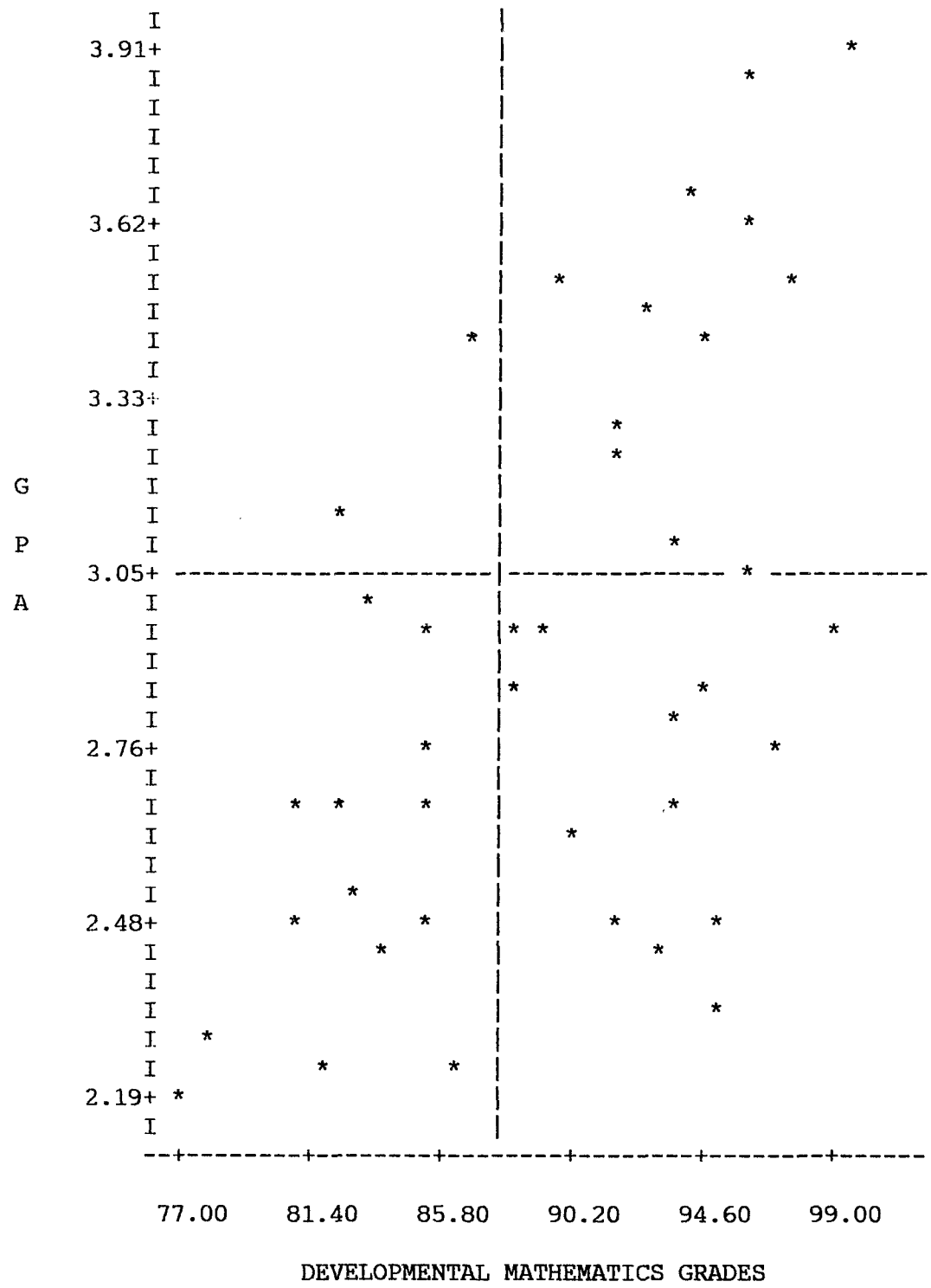
Table 21

Correlation and Linear Regression of the Developmental Mathematics Grades as Compared to the Corresponding Final Overall GPA for May 1988 Graduates at Catawba Valley Community College

Mathematics Grades:		Final Overall GPA:	
Mean	= 89.439	Mean	= 2.87859
Standard Deviation	= 6.00419	Standard Deviation	= 0.46645

Number of pairs (N)	= 41
Correlation coefficient (R)	= 0.531
Degrees of Freedom (DF)	= 39
Slope (M) of Regression Line	= 0.0412868
Y intercept (B) for the Line	= -0.814067

Figure 18. Developmental Mathematics Grades vs Final Overall GPA for the May 1988 Graduates of Catawba Valley Community College. Each * represents a student.



Testing the Hypothesis

Each of the four community colleges uses an assessment and placement program to determine instructional placement. The assessment programs are designed to serve the needs of each individual community college. The procedures and tests vary among the four community colleges. Goals of the individual institutional assessment programs are to serve each institution's typical students more effectively by collecting and analyzing information relevant to the students' educational and career decisions.

At Catawba Valley Community College, out of one hundred and fifty-eight May 1988 graduates, 42.8 percent of the May 1988 graduates were required to take reading comprehension, 10 percent were required to take developmental English, and 22.8 percent were required to take developmental mathematics (see Table 22). Of the one hundred and sixty-eight May 1988 graduates at Davidson County Community College, 7.1 percent were required to take reading comprehension, 6.5 percent were required to take developmental English, and 35.1 percent were required to take developmental mathematics (see Table 22).

At Surry Community College, out of sixty-nine May 1988 graduates, 14.5 percent were required to take reading comprehension, 11.6 percent were required to take developmental English, and 14.5 percent were required to take developmental mathematics (see Table 22). Of the fifty-eight May 1988 graduates at Sampson Technical College, 51.9 percent were required to take reading comprehension, 65.4 percent were required to take developmental English, and 82.7 percent were required

to take developmental mathematics (see Table 22).

Because the data reveals (see Table 23) that there is low to little correlation between the entry scores and exit (at graduation) GPA, it must be concluded that other variables are involved in the success of developmental students. Therefore, it can be concluded that there existed some variable or variables not tested in this study that brought the developmental students from being below average (having academic weaknesses) up to being slightly above average with the average mean GPA for this study being 2.8787 (2.0 being average).

Table 22

Percentage of May 1988 Student Graduates Taking Developmental Reading, English, and Mathematics by College.

College Name	Total Graduates	Reading Percent	English Percent	Mathematics Percent
CVCC	158	42.8	10.0	22.8
DCCC	168	7.1	6.5	35.1
SCC	69	14.5	11.6	14.5
STC	58	51.9	65.4	82.7

Table 23

Summary of the Correlation and Linear Regression of May 1988 Student Graduates From Catawba Valley Community College, Davidson County Community College, Surry Community College, and Sampson Technical College

	CVCC	DCCC	SCC	STC
No. of Students	46	12	10	27
Reading Mean	84.5652	289.167	37.3	9.7407
GPA Mean	2.97933	2.80117	2.7431	2.8741
Correlation (R)	0.002	0.19	0.4	0.201
No. of Students	16	11	8	34
English Mean	20.0625	5.72727	40.5	42.5294
GPA Mean	3.03206	2.902	2.723	2.93
Correlation (R)	0.401	0.286	0.081	0.372
No. of Students	36	59	10	43
Mathematics Mean	21.5833	147.864	40.9	29.8535
GPA Mean	2.85958	3.05719	2.7548	2.8885
Correlation (R)	0.109	0.226	0.234	0.473

From the results obtained, it is evident that the community colleges need to improve their testing methods for more effective placement of students in developmental classes and provide practical counseling to the students. To aid in the retention of developmental students, a more thorough follow up throughout the year would recognize any special problems incurred by the students that would cause them to leave the community college before their graduation.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

Summary

In keeping with the philosophy of the North Carolina Department of Community Colleges, community college admission procedures reflect the "Open Door" policy. And, unlike most senior colleges, the community college does not impose selective standards for admission.

Each community college in this study has an assessment program designed to identify academic deficiencies in its students. The goal of each institution's assessment program is to serve its students more effectively by collecting and analyzing information relevant to the students' educational and career decisions. The assessment process presents a broad base of information which enables each institution to assist its students in program choices and to aid the colleges in curriculum design and planning.

Once certain academic deficiencies are identified, students are designated as being developmental and placed in developmental courses designed to remove these deficiencies. Upon completion of the developmental courses, the students can successfully complete their chosen program and graduate from the community college with a degree, certificate, or diploma in their chosen field.

Conclusion

This study began with the hypothesis that developmental students who perform at a higher level on the admission/placement tests will have a higher grade point average at the time of graduation from the community college of their choice. Study of the data from the admission/placement tests in reading, English, and mathematics and the corresponding students' GPA for the four institutions leads to the conclusion that the hypothesis is accepted.

Developmental students who were enrolled in the appropriate developmental courses did graduate from the community college of their choice with an associate degree, certificate, or diploma in their chosen field. These students were successful in spite of any academic deficiencies they may have had when they entered the community college. The data shows no relationship between entering scores and the final overall GPA; therefore, other factors are important in the success of developmental students. Motivation, maturation, along with developmental course work provide factors for success more so than does past academic achievement.

Because of the nature of the community college students, they cannot be compared with students who are classified as traditional college students. The community college student body is unique. "...more than half of the freshmen and sophomore students in post secondary education are in fact in community colleges. ...community college students are 41 percent black, 53 percent Hispanic, and 33 percent white..." (Delco, 1988, p. 35). The average age of the

community college student is 28+ years. With an older student body this means that more students have been away from structured education than have continued on right out of high school. The number of females outnumber the number of males by about fourteen percent. This appears to be a trend of women moving out of the home environment into the community college in order to prepare to enter an industrial or business environment. The community colleges' students continue to be employed full-time as opposed to being unemployed or employed part-time. This means that most of the students attend the community college on a part-time basis which causes them to take longer to graduate from college than the traditional students.

Implications

The implications are that the open door policy of the community colleges is working. Each community college provides an assessment program for entering students and then follows through with a supportive system to assist the under prepared students in achieving their goal of higher education. Motivation along with maturation combined with the support system in the community college enables these developmental students to succeed in spite of their diagnosed deficiencies.

Adult students come into the community colleges with a determination to succeed; they know what they want from life and they go after it. These students have the motivation and maturity to stick with their decision for a higher education and, given the support

system to overcome past academic deficiencies, they do succeed.

Recommendations for Further Research

It is recommended that a study be conducted which compares the performances of developmental students and non-developmental students throughout their community college career. Because developmental students are required to take developmental courses, they take longer than two years to complete the requirements for a degree. Therefore, it is recommended that a group of developmental students and a group of non-developmental students be chosen as they enter the community college. Both groups should be observed throughout their college careers. Records should be maintained on the developmental and credit courses taken and the grades received in those developmental and credit courses. In order to measure performance more accurately for comparisons, there should be consistency among the community colleges of the way in which grades are recorded.

It is recommended that the state community college system provide a tracking and counselling system for developmental students. Contact with the developmental students and the non-developmental students should be frequent throughout their college careers in order to spot any educational, personal, or social problems they may encounter that would cause them to leave the community college. The reasons for attrition for the developmental students should be determined, if at all possible, to aid the community college in better retention of these students.

Another recommendation is that counselors and academic advisors of all students pay closer attention to the admission/placement test scores in reading, English, and mathematics so that they can place the students in the appropriate course. Misplacement of students places the students and the course instructors at a disadvantage. For example, placing students in a business mathematics course when they cannot work with fractions is guaranteeing the students much stress, as well as the possibility of failure.

It is recommended that a study be conducted to examine entry qualifications for each specific curriculum, not just general qualifications. For example, the reading level of the textbooks used in the credit courses should be determined before setting the cut-off score on the admission/placement reading test. A student who reads on a tenth-grade level will have difficulty reading and understanding text material written on a twelfth-grade level. The inability to comprehend the reading material could cause the student to fail or just leave school.

The type of admission/placement tests and entry level cut-off scores for specific curriculums should be made more uniform statewide. This would allow better means for comparison of courses and would enable students to transfer from one community college to another more easily. For example, the entry requirements for nursing students should be statewide.

The open door policy of the community colleges mandates that each community college provides a comprehensive ongoing assessment program.

Developmental programs that are designed to take the students from where they are in their academic skills and move them to a higher level of knowledge are essential to the success of developmental students. Community colleges must make a strong commitment to increase their effectiveness in developmental education.

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APPENDIX A

RAW DATA

	Entering Scores			Developmental Course		Overall Grades		
ID Number	Read	Eng	Mat	RED	ENG	MAT	GPA	Academic Major
263718731	111	32	18			97	3.486	Associate Deg. Nursing
130995030	66	28	25			85	2.944	Rec. Grounds Mgt. Te.
246803870	79	30	23			84	2.400	Associate Deg. Nursing
237725503	92			P			3.732	Accounting
237821389				P			3.500	Accounting
243781137				TR			2.413	Furniture Production
94509246	45	22	15	91	85		3.179	Furniture Production
237924085	45			88			2.127	Business Admin.
494800569	93			P			3.966	Accounting
239350876	92	31	26			93	2.415	Associate Deg. Nursing
238940342				95		94	2.656	Business Administration
244192477	131	33	33				3.851	Accounting
241543385	43	22	19	97			3.000	Accounting
243046835				86			3.432	Accounting
199340045	102					81	2.661	Rec. Grounds Mgt. Te.
244236297	116	25	23			81	2.471	Associate Deg. Nursing
239191820				86			2.025	Accounting
238900525				96			3.736	Bus. Computer Pr.
265472823	87			P			3.438	Bus. Administration
334524949							3.000	Automotive Mechanics
237232703							3.230	Architectural Techno.
239869651							4.000	Bus. Computer Pr.
240198089	101	32	22			96	3.849	Associate Deg. Nursing
238275176	104	28					3.091	Rec. Grounds Mgt. Te.
244334856	99	32	24				2.179	Architectural Techno.
239331860	133	33	33				3.063	Bus. Administration
243358953							2.000	Bus. Administration
237435001	57	21	10	85	78	83	2.482	Rec. Grounds Mgt. Te.
238290151	140		32				2.193	Architectural Techno.
261567278							3.018	Industrial Management
243337936							2.440	Electronics Eng. Tec.
243689165				TR			3.630	Real Estate
241924341	64	31	23	86			3.487	Associate Deg. Nursing
240413980	86	34	21			96	3.035	Bus. Administration
237179198	89	26	26				3.354	Accounting
237170591							3.616	Bus. Computer Pr.
238880391				TR			3.391	Bus. Computer Pr.
240335860	78	20	18		89		2.527	Electronics Eng. Tec.
245373603	103						3.382	Electronics Eng. Tec.
155428934	58	22	20	90			3.375	Bus. Computer Pr.
237355161	130	36	33				3.083	Accounting
241985807	60	24	20	97		91	3.267	Associate Deg. Nursing
244785288	105						3.262	Heating & Air Cond.
251080381							3.593	Automotive Mechanics
246983350				P			4.000	Electronics Eng. Tec.
239337926		30	32				2.968	Automation/Robotics
240376408				96			2.468	Electronics Eng. Tec.
246904586	78	29	33				3.441	Electronics Eng. Tec.
243371743	82	29	33				3.419	Accounting

224847426	97						3.086	Heating & Air Cond. 107
241680552				89	76	88	2.909	Automation/Robotics
243376655							3.197	Bus. Administration
241330445	32	24		93		90	2.596	Bus. Administration
238419939	137	31	30				3.008	Architectural Techno.
241359237	109	24	23			99	2.930	Furn. Drafting & Pro.
242392129							2.990	Bus. Administration
240668974	122	27	32				3.245	Computer Engineering
237961388				TR			3.724	Accounting
240154204				95			2.639	Electronics Eng. Tec.
240134510				79	92		2.876	Automation/Robotics
244259410	107	29	13			86	2.211	Architectural Techno
237378503	62	27	28			60	2.136	Bus. Administration
240889509	75	17	15		96	94	3.087	Associate Deg. Nursing
237136491				87	86	83	2.982	Accounting
242233465							2.190	Bus. Administration
242436308	92	30	25				2.528	Architectural Techno
313888548					96		2.846	Secretarial Execut
242114856				83	82	77	2.189	Education Aide
238766893	144						3.759	Accounting
245900540	158	37	29				3.336	Furn. Production
240138261				97	83		3.387	Bus. Computer Pr.
243154782	104	28	29			92	2.443	Associate Deg. Nursing
239026517	92			P	92		3.763	Accounting
240436552	80	21	26		95	87	3.424	Horti. Technol
246627899	114						3.411	Heating & A/C
244115661	143	29	25		93		3.516	Bus. Administration
243825104	95	28	25		87	85	2.460	Associate Deg. Nursing
48426978	91	19	13			78	2.246	Hort. Technol.
245701057				78			3.554	Bus. Administration
237043096		131	26	30		91	3.195	Associate Deg. Nursing
238900953	163	36	32			p	3.310	Associate Deg. Nursing
238177412	137	37	33				2.797	Architectural Techno
243923077				93	70		3.204	Automation/Robotics
266581397				93			2.807	Traffic & Transportation
238805399							3.974	Accounting
243086125	80	27	19				2.669	Electronics Eng. Tec.
237416738	105	34	33				2.436	Bus. Administration
241250174	93	21	22		95		3.555	Furn. Production
242215348				97			3.787	Accounting
245257512							2.868	Heating & A/C
243909108				p			3.961	Accounting
240336589	91	29	34				3.254	Bus. Administration
237254144							3.261	Furn Drafting & Pro.
201380183	93	26	23				3.204	Rec. Grounds Mgt. Te.
241332967	75	28	20				2.132	Secretarial Execut
242218683	115	26	20			82	3.136	Education Aide
246061236	87	24	28			89	2.932	Associate Deg. Nursing
240353347	65	31	33				2.791	Bus. Computer Pr.
239434961	53	27	19			97	2.724	Associate Deg. Nursing
238743606	94	21	24				3.458	Bus. Computer Pr.
244272195	75	37	27			88	2.828	Automation/Robotics
237114559	63	22	18	93	93		3.375	Furn. Production
107501745	137						3.971	Accounting
9609971	145	39	29			95	3.402	Rec. Grounds Mgt. Te.

586262573	65						3.440	Industrial Eng. 108
238276494	76	33	24	96			3.779	Accounting
248111121	88	28	22			85	2.717	Associate Deg. Nursing
242290518	94	33	18			95	2.309	Gen. Office
241213642	101	31	31				2.821	Architectural Techno.
241868761	70	26	31				2.456	Bus. Administration
128428275						90	3.504	Associate Deg. Nursing
244354813	66	17		88	87		3.192	Architectural Techno.
261943978				78			2.712	Rec. Grounds Mgt. Te.
244194790				86			2.911	Bus. Administration
242945228				79			2.088	Bus. Administration
241116460		61	34	94			3.163	Electronics Eng. Tec.
522084598	126	31	24				3.043	Bus. Computer Pr.
238311581	92	32	23				2.500	Associate Deg. Nursing
243115328	68	26	18				2.117	Bus. Administration
244502425				p			3.162	Bus. Administration
246190089				95			3.190	Bus. Administration
237943812	134	31	21				3.238	Associate Deg. Nursing
238339389	114	25	18				3.088	Computer Eng.
239785635							3.912	Bus. Administration
239138447	77			p			2.910	Industrial Mgt.
242961134	114	25	25			94	2.798	Associate Deg. Nursing
237353568	99	27	20				3.071	Mechanical Eng.
245237246	93	24	23				2.789	Mechanical Eng.
239869449	88	26	30	90		95	2.818	Associate Deg. Nursing
243251512				p			2.225	Mechanical Eng.
229235237							2.635	Automotive Mechanics
246627854	76	23	23		96		3.759	Gen. Office
237278051	95	32	13			82	2.637	Bus. Administration
246257619	82	15	20		93		2.796	Furn. Drafting & Pro.
237061274							3.189	Accounting
238359106	69	21	16		86		2.430	Furn. Production
245199301	71	29	16				3.328	Accounting
237333772	96	24	29			95	2.434	Associate Deg. Nursing
245254094	68	26	27	96		99	3.905	Associate Deg. Nursing
241238124				98	93	96	3.578	Computer Eng.
242824627							3.390	Bus. Computer Pr.
241763344	71						3.242	Industrial Mgt.
244415312	62	24	20	95	73	82	2.225	Rec. Grounds Mgt. Te.
532807442				95	89		2.637	Bus. Administration
246131411	81	32	24		94		3.718	Bus. Computer Pr.
244172171	66	24	27		94		2.820	Bus. Computer Pr.
246338051							2.120	Bus. Administration
45626465				tr	tr	tr	3.746	Rec. Grounds Mgt. Te.
240390549	94	29	21				2.574	Architectural Techno.
365763668	100	25	10		87	p	2.670	Furn. Production
9403911							3.086	Rec. Grounds Mgt. Te.
238253207	82	26	24		77		2.972	Furn. Drafting & Prod.
485463399	38		16	91	tr	94	3.657	Accounting
238861725	117	34	27		90		2.404	Electrical Ins & Mt
241845021	102	27	23		tr	93	3.452	Rec. Grounds Mgt. Te.
239356828	71	17	20		94	85	2.628	Gen. Office
240962453				p	87		3.122	Accounting
246399417	78	26	32		84		2.932	Accounting

	Entering Scores			Developmental Course		Overall Grades		
ID Number	Read	Eng	Mat	RED	ENG	MAT	GPA	Academic Major
238132284						S	4.000	Pre-Liberal Arts
237136940	304	8	114				2.063	Pharmacy Technology
246375276		10	305				3.125	Pre-Liberal Arts
408940861							3.706	Secretary-Exe
246457971	297	7	121				2.063	Pharmacy Technology
067300288	321	8	122				3.767	Accounting
241961097	298	6	308				3.791	Pre-Liberal Arts
243927337	297	7	111				2.761	Secretarial-Exe
241660211	311	8	122				2.972	Assoc. Deg. Nursing
238175708							4.000	Bus Comp Prg
245154210	293	6	122				3.248	Secretarial-Exe
271606257	320	10	125				3.964	Bus Comp Prg
244062124	313	9	213				3.488	Pre-Liberal Arts
239447638						S	3.596	Pre-Liberal Arts
240290109				S	S		3.000	Accounting
242298257							3.462	Paralegal Tech
239416627	294	6	207		S	S	2.814	Accounting
237806754	307		120				3.947	Machinist
242272480						S	3.573	Mech Eng Tech
245413040							3.088	Pre-Engineering
240940583	302	9	315				2.484	Pre-Science
242763796							2.741	Auto Mech
238239952							3.941	Accounting
240392864	292	7			S		2.779	Traffic & Trans
238436927							2.728	Criminal Justice
206429268							3.181	Assoc Deg Nursing
244787606							3.788	Pharmacy Tech
245190549	316	8	119				3.274	Paralegal Tech
239294016	307	7	117				2.686	Paralegal Tech
244943939							3.278	Assoc Deg Nursing
241196035							2.343	Pre-Bus
240966148							3.403	Criminal Justice
246151450							2.243	Pre-Sci
238237417							2.639	Pharmacy Tech
240024891							3.344	Pre-Liberal Arts
243194086	299		112				2.652	Auto Mech
241960020							3.156	Bus Adm
245026769				S			3.643	Traffic & Trans
244419128	304	8	124				2.974	Accounting
240358837							2.598	Assoc Deg Nursing
245049488	296	8	120				3.122	Bus Adm
243968069	278	8	110	S			2.157	Assoc Deg Nursing
240217105	297	8	123				2.959	Assoc Deg Nursing
237416156	322	11	122				2.670	Pre-Bus
239888017	305	10	119				3.545	Assoc Deg Nursing
240433304							2.289	Assoc Deg Nursing
240825229				S			2.389	Pharmacy Tech
242114039							3.598	Bus Comp Prg
242068443	300	8	121				2.248	Assoc Deg Nursing

246396130				S	S		2.143	Criminal Justice
076645752	308	9	220				3.884	Pre-Sci
163525592	291	6	117				2.941	Criminal Justice
245666707	284	6	111	S	S		2.821	Bus Comp Prg
238747656	310	8	116				2.319	Criminal Justice
239942242							2.789	Secretarial-Exe
246967775						S	4.000	Pharmacy Tech
240089624							3.625	Pharmacy Tech
242297000						S	2.634	Pre-Liberal Arts
013528558							3.488	Paralegal Tech
245964189						S	3.783	Mech Eng Tech
246235670							4.000	Bus Comp Prg
237371014				S	S		2.171	Secretarial-Exe
243250901	308	6	119				2.746	Paralegal Tech
241462908							2.293	Welding
238841520						S	3.205	Pre-Bus
241900117							3.660	Bus Adm
242920229							2.747	Pre-Bus
239110131							3.540	Bus Comp Prg
238316034	304	9	305				3.385	Pre-Liberal Arts
239132656							3.109	Early Child Assoc
240231892				IP	S		2.864	Traffic & trans
238860392							2.243	Criminal Justice
235705188	329	9	115				3.602	Paralegal Tech
246065786	290	7	111				2.345	Bus Comp Prg
239152803						S	3.639	Electonics Eng Tech
239296809	306	10	120				2.826	Assoc Deg Nursing
245909067	304	8	122				3.120	Accounting
226154096							2.969	Bus Comp Prg
239294569	323	10	322				3.805	Pre-Art
243475640	305	10	115				2.919	Early Child Assoc
243664005	310	8	122				3.778	Accounting
245909203				S			2.667	Pre-Liberal Arts
239049434							2.390	Paralegal Tech
243275531							2.737	Drafting Mech
237359068							2.800	Accounting
246252616							2.570	Assoc Deg Nursing
243270072					S		2.832	Bus Adm
245399427				S			2.912	Bus Comp Prg
241215329	299	5	308		S		3.320	Arig Bus Tech
238949904							3.363	Elec Eng Tech
237965660					S		2.455	Bus Comp Prg
246884228						S	4.000	Elec Eng Tech
241960594							2.930	Sec- Exe
241921694				S			2.922	Accounting AAS
239330155				S	S	S	2.946	Elec Eng Tech
221683620	280	6	109	IP	S	S	3.093	Pre-Liberal Arts
239213896							3.027	Paralegal Tech
245024650							2.467	Pre-Bus
262354885	304	8	122				2.270	Paralegal Tech
238809475							3.879	Pharmacy Tech
242114617						S	2.739	Pre-Bus
237313014	308	8	122				4.000	Accounting
243454719	301	5	124				2.406	Pharmacy Tech
556834905							3.429	Pre-Bus

241026204				S			2.071	Early Child Assoc
2432544142							2.448	Auto Mech
246298919							3.652	Pre-Sci
246132318							3.315	Mech Eng Tech
245352713							3.328	Pre-Sci
245118321						S	3.936	Pre-Liberal Arts
243449109	300	9	121				2.542	Assoc Deg Nursing
241883750							3.897	Pharmacy Tech
173488656							2.310	Early Child Assoc
244394767						S	2.958	Bus Adm
246355411							2.873	Drafting-Mech
244235102				CE		S	2.247	Pre-Liberal Arts
245921283	312	9	117				2.419	Accounting
246352202						S	2.825	Paralegal Tech
243967862							3.758	Assoc Deg Nursing
243925825	316	8	116				3.350	Assoc Deg Nursing
237357011	290	8	201				3.684	Accounting
245279085						S	2.526	Elect Eng Tech
239434679	294	9	303			S	2.990	Pre-Liberal Arts
241989779	315	7	117				3.655	Bus Comp Prg
216667440	330	7					3.350	Accounting
245761039							3.513	Paralegal Tech
238219260							3.792	Pre-Sci
242356441	315	7	124				2.504	Assoc Deg Nursing
237252466					S	S	2.573	Pre-Bus
240805295							3.691	Accounting
244840710	289	5	120		S		2.387	Accounting
238949979							3.831	Pre-Math
246315076	302	8	125				3.593	Paralegal Tech
242331182							3.558	Elec Eng Tech
241929160	315	9	124				2.789	Assoc Deg Nursing
282521316						S	2.685	Pre-Liberal Arts
242376322							2.636	Elec Eng Tech
238020437							3.763	Bus Comp Prg
243926023					S		2.928	Accounting
237486322						S	3.320	Indus Maint
237351557							3.463	Accounting
246334281						S	2.826	Per-Liberal Arts
245920629							3.302	Bus Adm
245271466							2.725	Secre-Exec
239412011	301	7	120				2.295	Assoc Deg Nursing
240781856							3.478	Elec Eng Tech
231809424							3.323	Accounting
243274633							2.989	Bus Comp Prg
237172156							2.934	Accounting
239687396	330	11	118				3.157	Assoc Deg Nursing
241154143						S	3.583	Pre-Eng
244316994							2.835	Bus Comp Prg
237371349							2.731	Paralegal Tech
242061411							3.862	Ind Maint
237820783					S		2.984	Bus Comp Prg
237154972	295	6	114				2.355	Sec-Exec
237178506	316	8	116				3.761	Bus Comp Prg
246882770				S	S		2.913	Bus Comp Prg
238399810						S	2.681	Elec Eng Tech

577749073				2.314	Criminal Justice
239299959				3.861	Pharmacy Tech
246023939				3.091	Bus Comp Prg
397404197				3.702	Bus Adm
462803548	336	11	125	4.000	Bus Comp Prg
244155188				3.407	Bus Adm
240377675	299	8	123	3.190	Assoc Deg Nursing
241900024	305	9	124	3.542	Paralegal Tech
243155319	313	10	124	3.806	Pharmacy Tech

ID Number	Entering Scores Read	Eng	Mat	Developmental Course RED	ENG	Grades MAT	Overall GPA	Academic Major
165525118	49	53	53		C	D	2.288	CO11
223151167	55	59	54		B	C	3.055	CO11
223253525	64	61	63			A	3.612	CO11
223279320	50	53	58		D		3.214	TO40
223338288	52	51	55		B		2.263	TO40
223981083	37	41	50		A	A	3.539	VO29
224312320	39	51	55				2.591	TO45
224825152	39	49	53		B		3.108	TO20
224902948	46	43	36				2.819	CO11
226883572	38	41	48		B		3.171	TO20
227318887	41	45	47	A	B	A	2.720	CO11
227843789	59	53	63		A	C	2.784	CO11
230946526	57	52	54		C		2.473	TO45
231190085	48	39	43	B	I	C	2.350	CO11
237116992	44	43	52		B		2.364	TO22
237278465	63	69	63				3.413	TO16
237293356	55	56	64		A		3.640	TO16
237376595	49	45	61				3.396	TO40
237453261	55	51	63		A		3.694	CO11
238131159	50	58	58		B	A	2.590	CO11
238238216	41	58	43				2.650	TO33
238353630	35	55	55		B		2.215	TO20
239217683	63	61	52	A	A		2.931	TO59
239272287	52	61	50				3.315	TO16
239416983	57	63	46				3.229	CO11
239471274	59	59	55		A		2.598	CO11
239961403	55	58	42	A	C	A	3.695	CO11
240111625	59	56	54				2.566	TO59
240256308	45	53	60				3.096	TO59
240290050	35	45	43		B	D	2.000	TI21
240339997	63	56	58		A		3.556	TO22
240350973	52	59	58		B		3.548	TO22
240371424	55	55	58		C	A	2.677	CO11
240376356	55	45	52	B	C	C	2.060	TI21
240430107	45	52	49	A	C	B	3.443	TI21
241198953	52	53	48		B		2.934	CO11
241233528	46	56	56	A	B	A	2.973	CO11
241234186	55	58	57		A		3.759	TO20
241235188	44	53	57		C		2.532	TO40
241258727	38	51	43		B		3.410	TO31
241335799	50	55	51		B	A	2.685	TO43
241337342	61	65	68				3.452	CO11
241434584	45	49	47		C		3.330	TO32
241457919	42	52	56		B		3.535	CO11
241863531	39	49	65				2.830	TO40
242231750	46	49	51			A	3.174	TI21
242331926	60	56	60		A	A	3.323	CO11
243199790	35	45	48	A		A	2.672	TI21
243315409	42	32	38		B	C	2.604	CO11

243336915	44	58	55	A	C		2.717	TO16
243338047	52	51	60		C		3.110	TO40
243419192	46	55	48		B	B	3.146	CO11
243434331	38	42	37	A	B	C	1.895	TO20
243434518	64	55	66		A		2.661	TO45
244044309	48	43	45		B	C	3.042	CO11
244150628	57	55	51		B		3.168	CO11
244947812	53	51	53				3.010	CO11
244949066	50	56	65	A	A		3.360	TO13
245377014	55	58	56		B		2.379	TO59
245398973	44	58	55		C		3.171	TO43
245404515	56	53	63		B		2.917	CO11
246087963	53	49	50		B		3.385	TO31
246170471	61	51	49		B	A	2.524	TO45
246378803	46	48	39		B		3.083	TO30
246456473	55	53	52	A		C	2.770	CO11

ID Number	Entering Scores Read	Eng	Mat	Developmental Course RED	ENG	Overall Grades MAT	GPA	Academic Major
239-23-8280	14.4	56	42.0			A	3.119	ASSOCIATE
244-29-3294	10.9	46	13.6	B	A	A	2.338	ASSOCIATE
291-50-2931	44.0	43	13.0	B	A	A	2.573	ASSOCIATE
245-39-7340	8.9	42	49.0	A	A	A	3.632	ASSOCIATE
240-39-2203	10.7	43	56.0	A	A		2.906	ASSOCIATE
238-11-9712	8.9	51	14.0	A			2.441	ASSOCIATE
433-64-7994		45	44.0		B	B	2.992	ASSOCIATE
245-43-9451	14.0	62	38.0			A	3.276	ASSOCIATE
241-60-9619	6.8	48	39.0	A	B	B	3.368	DIPLOMA
242-08-9344	11.6	45	39.0	W	W	F	3.529	CERTIFICATE
240-17-6386	10.2	48	12.0	A	A	A	3.244	ASSOCIATE
238-78-8072	13.0	46	52.0		A		2.400	ASSOCIATE
237-17-4072				C		D	4.000	CERTIFICATE
244-06-5838	10.4	39	39.0				3.404	CERTIFICATE
243-88-9983	12.0	52	38.0			C	2.983	ASSOCIATE
239-19-0645	8.5	41	40.0	B	A	B	2.964	DIPLOMA
239-25-5129	7.7	42	12.0	C	C	C	2.381	ASSOCIATE
244-90-0349	11.6	48	56.0	A	A		3.366	ASSOCIATE
036-30-4722	12.8	41	45.0		A	A	3.706	CERTIFICATE
246-02-0013	13.1	58	45.0			B	2.599	ASSOCIATE
237-23-6811				B	C	C	4.000	CERTIFICATE
239-43-0179	10.4	33	48.0	F	B		2.718	CERTIFICATE
245-06-6522	35.0	42	12.9	B	B	B	2.406	ASSOCIATE
240-74-9161	9.3	36	25.0	C	C	C	2.675	ASSOCIATE
244-52-7231	6.6	48	16.1	A	B	C	2.694	ASSOCIATE
244-29-8659	14.3	49	44.0		A	A	4.000	ASSOCIATE
239-43-7113	9.3	35	48.0	C	B	B	2.264	ASSOCIATE
240-33-3029	46.0		13.6	A	A		2.278	ASSOCIATE
245-19-5586	15.8			A	A		3.909	ASSOCIATE
237-74-8901	9.1	38	12.5	A	B	A	3.400	ASSOCIATE
242-04-0906						C	2.130	DIPLOMA
245-31-0937	6.4	32	43.0		WP		2.738	CERTIFICATE
246-82-0411	33.0		12.0	A	C	A	2.690	ASSOCIATE
246-15-2143	11.3	45	36.0	A	A	A	3.243	ASSOCIATE
243-88-9469	6.2	38	12.7	A	B	B	2.538	ASSOCIATE
241-39-8135	9.7	39	13.2	B	C	C	2.116	ASSOCIATE
240-90-7723	11.3	51	12.0	B		A	2.736	ASSOCIATE
244-96-6197	11.3	48	43.0	A	A	A	3.529	CERTIFICATE
408-94-4214	12.1	49	39.0		A	B	3.000	ASSOCIATE
242-43-3823	11.5	46	12.7	B	A	B	2.667	ASSOCIATE
245-39-3157	11.8	49	14.1	A	A	A	3.294	ASSOCIATE
238-37-9304	10.4	39	10.4	F	C	B	2.444	ASSOCIATE
246-43-3734	11.8	42	13.6	A	A	A	2.677	ASSOCIATE
245-39-0317	12.6	55	43.0			B	3.190	CERTIFICATE
244-96-6299	12.5	36	44.0	B	B	B	2.923	ASSOCIATE
241-23-9057	10.4	42	45.0	B	C	B	2.294	CERTIFICATE
244-96-7312	12.6	51	45.0			A	3.224	ASSOCIATE
242-62-3489	14.0	43	49.0		C		3.192	ASSOCIATE
244-86-9620	13.4	59	52.0		B		3.141	ASSOCIATE

246-19-4451	12.7	52	60.0	W	W	W	3.375	DIPLOMA
239-41-1152	41.0	51	13.3	C		C	2.380	ASSOCIATE
246-29-4132	12.5	52	40.0			C	2.341	ASSOCIATE