DOCUMENT RESUME

ED 414 985 JC 980 060

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TITLE Readiness for College in Leon County: Who Are the Students That Need Remedial Education?
INSTITUTION Leon County Schools, Tallahassee, FL.
PUB DATE 1997-11-05
NOTE 25p.; Paper presented at the Annual Conference of the Florida Educational Research Association (Orlando, FL, November 5-7, 1997).
PUB TYPE Numerical/Quantitative Data (110) -- Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS College Mathematics; *College Preparation; College Students; *Course Selection (Students); Developmental Studies Programs; Grade Point Average; *Grades (Scholastic); High Risk Students; *High School Graduates; High Schools; Higher Education; *Readiness; Remedial Instruction; Remedial Mathematics; Remedial Programs; *Student Characteristics; Tables (Data); Two Year College Students; Two Year Colleges
IDENTIFIERS *Leon County School District FL

ABSTRACT

A study was conducted to determine the extent to which high school graduates from Florida's Leon County needed remediation to enter college-level mathematics, reading, and writing courses. Records were examined for 2,705 high school graduates from 1992 to 1996 who were first-time college students in a Florida public community college or state university within the same period. Study findings included the following: (1) over the four-year span, an average of 21% of the graduates needed remediation in mathematics; (2) for students needing remediation in all subjects, 58% were female and 46% were black; (3) 79% of the graduates from the period did not need any remediation, 57% of whom were female and 22% black; (4) the average grade point average of students needing remediation in mathematics was almost one letter grade lower than those not needing remediation; (5) the mathematics remedial students were likely to take Algebra I, but were unlikely to take Algebra II or Geometry; and (6) 90% of the remedial students attended a community college. Data tables and a list of upper-level mathematics and science courses in Florida are appended. (BCY)

Readiness for College in Leon County: Who Are The Students That Need Remedial Education?

by

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Paper presented at the Annual Conference of the Florida Educational Research Association
Orlando, Florida

November 5, 1997

Opinions and conclusions in this paper do not necessarily represent those of the Leon County Schools.

READINESS FOR COLLEGE IN LEON COUNTY: WHO ARE THE STUDENTS THAT NEED REMEDIAL EDUCATION?

THE FOCUS OF THIS STUDY

The current study inquired into the extent to which the high school graduates of Leon County School District were ready to enter college-level courses. The main focus was on the need for remediation in mathematics but data related to remediation in reading and writing was also addressed. Data for this study was obtained by examining records of Leon County schools' graduates for the 1992-93, 1993-94, 1994-95 and 1995-96 school years who were first-time-in-college (FTIC) students between May 1st and April 30th of each year in Florida's public community colleges and state universities. This study should be useful in examining the effectiveness of the delivery of instruction in mathematics, reading, and writing and for enhancing the instructional and student services programs relevant to these areas of student preparation for postsecondary study.

Consistent with the purpose of the current study the following questions were posed:

1. What percentage of the FTIC students with valid records require remediation in mathematics, reading, and writing? What are their descriptive characteristics? Did remedial and non-remedial students differ in demographics?

2. Does completion of Algebra I, Geometry, and Algebra II (or equivalent courses) affect the need for math remedial education at the postsecondary level?

3. What are the differences between students who need remediation and those that do not need remediation in terms of credits earned in mathematics and science courses, summer school courses, and dual enrollment?

4. What are the differences between students who need remediation and those that do not need remediation in terms of achievement (GPA, HSCT, and Grades)?

5. What percentage of the FTIC students with valid records require remediation in reading and writing? What are their descriptive characteristics? Did remedial and non-remedial students differ in demographics?

6. What percentage of the FTIC students were enrolled in Community Colleges and 4-year Colleges or Universities?

BACKGROUND

In the last several years, remediation has become an increasingly central part of the college curriculum. A heated debated has surfaced over whether remediation courses have a legitimate place in the curricula of four-year college and universities or whether such courses should be the responsibility of community colleges (Shaw, 1997). Others argued that remediation should be the responsibility of the K-12 sector, suggesting that high schools should be required to pay for any graduates that need remediation at the postsecondary level.

At the core of this debate is the need for high school to raise their own standards and find effective strategies for improving student performance.

Postsecondary remedial courses have among the highest dropout and withdrawal rates. The more remedial courses students take, the less likely they are to complete them. Community colleges spent $53 million in the 1993-94 school year on remedial education. According to the ***1995-96 Readiness for College Report,,*** of the graduates entering the community colleges and state universities during the 1995-96 academic year, 54.1% were ready in all areas (mathematics), writing, and reading). In Leon County, 60.2% were ready in all areas; 23% required mathematics remediation; 29% required remediation in writing, and 18% required remediation in reading.

Effective July 1, 1997, students entering the 9th grade in 1997-98 school year must have credit in Algebra I or its equivalent and earn a grade point average of 2.0 on a 4.0 scale in courses required for graduation or have an overall cumulative grade point average of 2.0 or above. Therefore, the effectiveness of the delivery of instruction in our public high schools and the achievement of our students is of the outmost importance to our district.

In Florida, the Commissioner of Education reports on the performance of Florida public high school graduates who enroll in public postsecondary institutions throughout the State (Florida Statutes, 240.118) in the *Readiness for College Report*. This report includes first-time-in-college (FTIC) students enrolled in Florida's public community colleges or state universities between May 1st and April 30th each year. Students who enrolled in private in-state postsecondary schools or public or private out-of-state schools are not included.

The entry-level placement testing requirements form the basis for reporting student readiness and provide uniform minimum standards for the placement of students in college preparatory or college level computation and communication courses when they first enroll. The standards for the tests include cut-scores for mathematics, writing, and reading which are roughly equivalent for the approved tests. Effective with the 1996 Fall Semester, students who fell below a specific score on either the SAT or the ACT or who have not taken either of these tests were required to take a common entry-level placement test designed specifically for Florida community college and state university students.

Data Source/Method/Limitations

The data source was the *Readiness for College Report* files for Leon County Schools' graduates for the 1992-93, 1993-94, 1994-95, and 1995-96 school years. The files were obtained from the State Department of Education and included the names of approximately three thousand students. This information included data on results of the entry-level placement tests in the areas of reading, mathematics, and writing. High school records using our Student Information database were matched to their records using the social security number and student ID. Analysis of course-taking patterns, test scores, grades, and demographic characteristics were undertaken.

The *Readiness for College Report* data reflects the tests results of only those students who graduated from a Florida public high school within one year and were first-time-in-college students in a Florida public community college or university at some time during the three school terms immediately following graduation.

It does not include those students who enrolled in private in-state post-secondary schools or public or private out-of-state school. Also, high school students dually enrolled for both high school and college credit at the community colleges and state universities are not included in the files. Finally, *the Readiness for College Report* provides information on a pass/fail basis for all Entry Level Tests combined but does not display any type of actual score distribution.
Due to the above limitations, conclusions and generalizations will need to be made with caution. Nevertheless, the data allows schools districts to examine the remedial needs of those students included in the report.

Analysis Methods

The purpose of the study was to inquire into a wide range of issues related to the preparedness and remedial needs of Leon County Schools graduates for postsecondary education an then draw policy implications for high schools. In the analysis of the study, descriptive statistics were used and an attempt was made to arrive to a profile of the postsecondary remedial and non-remedial student.

Results

Characteristics of the Sample: A total of 2,705 FTIC student records were examined from 1992-93 to 1995-6 school years. Only students who took the entry placement test and had a valid record were included in the analysis. Table 1 presents the gender and race distribution. On an average 57% were female and 43% male. There was little difference for the last four years in the gender composition. Approximately, 70% were white and 30% non-white. This proportion has remained stable over the last four years.

Table 1

Distribution of FTIC* Students by Race and Sex

	1992-93	1993-94	1994-95	1995-96
Race				
Black	27%	30%	26%	23%
White	70%	67%	70%	72%
Asian	2%	2.5%	2.3%	2.6%
Hispanic	1%	1.5%	1.0%	24%
Sex				
Female	56%	57%	59%	57%
Male	44%	43%	41%	43%
N=	640	631	695	682

*Refers to students who took the entry level placement test.

The distribution of FTIC students postsecondary readiness by mathematics, reading and writing from 1992-1993 to 1995-96 is displayed in Table 2. Across all three academic areas, between 18% and 22% of the students who took the entry-level placement test did not pass it and needed remedial coursework. This percentage remains fairly stable over the last four years, except for the increase in the number of remedial students in writing (27%) in 1994-95 and 1995-96 school years.

Table 2 Distribution of FTIC students by Readiness in Mathematics, Reading, and Writing						
Not Ready	Mathematics		Reading		Writing	
	N	%	N	%	N	%
1992 - 93	641	21%	645	21%	645	30%
1993 - 94	636	21%	637	20%	665	22%
1994 - 95	670	18%	669	18%	635	27%
1995 - 96	675	22%	679	18%	672	27%
Ready	Mathematics		Reading		Writing	
1992-93	79%		79%		70%	
1993-94	79%		80%		78%	
1994-95	82%		82%		73%	
1995-96	78%		82%		73%	

Remedial and Non-Remedial Student Profiles: The following section will compare the characteristics of students who need remedial coursework and students who did not need remediation in mathematics. Table 3 and 4 in the Appendix presents the data for the 1992, 1993, 1994 and 1995 school years.. An average of those years was used to arrive at the profiles.

1. What percentage of the FITC students require remediation in math? What are their descriptive characteristics?
2. Are they different from the non-remedial population in terms of race, ethnicity, age, and gender?

Remediation

- On an average, 21% of the graduates needed remediation in math over the last four years.
- Across the last four years, 58% of the graduates needing remediation were females and 42% were males.
- Of those students needing remediation, 46% were black and 53% were white.
- The average age of students receiving remediation in math was 19 years of age.

Non-Remediation

- On an average, 79% of the graduates did not need remediation.
- Across the last four years, 57% of the graduates not needing remediation were females and 43% were males.
- Of those students not needing remediation, 22% were black and 74% were white.
- The average age of students was 19 years of age.

The data suggests that the majority of students entering the post-secondary level of education from the Leon County Public high schools are young, recent graduates who enter community college at approximately 19 years of age and 79% do not need remediation in mathematics.

Gender does not appear to have an effect on either group. There was a difference between remedial and non-remedial students in their race and ethnic background. There was a higher percentage of white students among non-remedial students than among remedial students, while there was an overrepresentation of blacks among those needing remediation.

2. Does completion of Algebra I, Geometry, and Algebra II (or equivalent courses) affect the need for math remedial education at the post-secondary level?

Remediation

- Across four years, the students needing remediation took and passed Algebra I with 47% passing, 23% failing, and 30% not taking the course at all. In comparison, only 5% of the students took and passed Algebra II, 6% failing, and 86% not taking. The same pattern was evident in Geometry also with 16% passing, 9% failing and 76% not taking the course.

Non-Remediation

- For the students not needing remediation, the majority of students took and passed all three courses with 95% passing Algebra I, 75% Algebra II, and 76% Geometry. The rate of failure in all three courses was 9% or less. Only 4% of the students didn't take Algebra I, but this percentage increased to 17% in Algebra II and 20% in Geometry.

There was a difference between remedial and non-remedial students in the number of mathematics course they take. The data suggest that the students needing remediation would benefit from taking all three courses in preparing for post-secondary level education. The students who did take courses successfully passed the placement test upon entry to community college and did not need remedial coursework. More students are taking Algebra, Geometry, and Algebra II courses over the last 4 years. The percentage of remedial students taking Algebra I increased 13 percentage points. In Geometry, there was an increase of 19 percentages points between 1992 and 1995 for remedial students and non-remedial students. In Algebra II, there was an increase of 10 percentage points for non-remedial students.

3. What are the differences between students who need remediation and those that do not need remediation in mathematics in terms of the number of mathematics and science courses taken, summer school courses, and dual enrollment courses?

Math/Science Level I, II, III Credits Earned*

Remediation

- Across four years, 95% of the students needing remediation took and earned 1 or more credits for Level I Math.
- Of these students, 61% took and earned 1 or more credits for **Level II Math.**
- Ninety-eight percent of these students did not earn a credit for **Level III Math.**
- Twenty-seven percent of the remedial students earn 1 or more credits for **Level I Science**.

- Eighty-three percent took and earn a credit for **Level II Science.**
- Of these students, 87% did not earned a credit for **Level III Science.**

***See Appendix B for list of Level I, II and III Courses.**

Non-Remediation

- Across the four years, 58% the students not needing remediation did not take **Level I Math.**
- Of these students, 98% took and earned 1 or more credits for **Level II Science.**
- Forty-six percent earned 1 or more for **Level III Math.**
- Across the four years, 95% of the non-remedial students did not take **Level I Science.**
- Of these students 83% took and earned 1 or more credits for **Level II Science.**
- Sixty-one percent of these students took and earned 1 or more credits for **Level III Science.**

There was a difference between the two groups regarding the Mathematics and Science courses they took. These differences occurred primarily in their enrollment in Level III courses. The data suggests that remedial students would benefit from taking more Level II and III courses in Mathematics and Science.

Summer School Courses Taken

Remediation

- Across the last four years, 66% of the students needing remediation have taken 1 to 5 summer school courses and 17% have taken 6 or more.

Non-Remediation

- Across the last four years, 66% of the students not needing remediation have taken 1 to 5 summer school courses and 6% have taken 6 or more.

The data seems to suggest that students needing remediation are more likely to take 6 or more summer school courses over the four years of high school.

Dual Enrollment

Remediation

- For the students needing remediation, 97% did not earn any dual enrollment credit, 2% earned 1 credit.

Non-Remediation

- Of the students not needing remediation, 75% did not earn any dual enrollment credit, 16% earned, 1 credit, 8% earned 2 credits, and 2% earned more than two credits.

The data suggests that non-remedial students are more likely to participate in and earn dual enrollment credits.

4. What are the differences between students who need remediation and those that do not need remediation in terms of achievement (GPA, HSCT scores and grades)?

Achievement:

A. Average GPA

- **Remediation :** 2.25
- **Non-Remediation:** 2.9

The data suggests that the students in the remedial group are performing almost a letter grade behind the students not needing remediation based on their average GPA. Tables 3 and 4 indicate that there is an improvement of GPA for both groups from 1992-93 to 1995-96.

B. HSCT

Number of Times Taken

Remediation

- Over the last four years, the percent of students passing the HSCT **Communications** Section after taking it once increased.
- The percent of remedial students taking and passing the **Math** Section of the HSCT test only once has increased 20 percentage points from 1993 to 1996.
- Over the last four years, eighty-two percent of the students have taken the **Communications** subtest once and successfully passed.
- Fifty-nine percent of the students have taken the **Math** subtest and successfully passed it after taking it once.

Non-Remediation

- Over the last four years, ninety-six percent of the students not needing remediation have successfully taken and passed the **Communications** subtest of the HSCT one time.
- Only 3% of this group have taken and passed the **Communications** subtest 2 or more times in the last four years.
- Ninety-one percent of the students have taken the **Math** subtest of the HSCT once and successfully passed it over the last four years.
- Only 7% of the students have taken the **Math** subtest 2 or more times in the last 4 years.

There was a difference between remedial and non-remedial students in their ability to successfully take and pass the HSCT subtests once. The data indicates that although there is an increase in the number of students passing both sections of the HSCT for the first time, the non-remedial students are more likely to take it once and pass it.

Average Scores on HSCT

Remediation

- Students needing remediation in math had an average score of 683 on the HSCT **Communications** subtest and an average score on 685 on the HSCT **Math** subtest.
- Of the students needing remediation in reading, their average score on the HSCT **Communications** subtest was 667 and the average score on the HSCT **Math** subtest was **670.**
- Of the students needing remediation in writing, the average score on the HSCT **Communications** subtest was 681 and the average score on the HSCT Math subtest was **683.**

Non-Remediation

- The students not needing remediation in math had an average score of 730 on the HSCT **Communications** subtest and an average score of 720 on the HSCT **Math** subtest.
- The students not needing remediation in reading had an average score of 730 on the HSCT **Communications** subtest and an average score of 719 on the HSCT **Math.**
- Of the students not needing remediation in writing, their average score on the HSCT **Communications** subtest was 731 and their average score on the HSCT **Math** was 720.

The data shows remedial students in reading, writing and math scored lower on both the Communications and Mathematics subtests of the HSCT. They performed from 47 to 63 points lower on the Communication subtest and 35 to 49 points lower on the Math subtest. This differences suggest that improvement in HSCT score could reduce the likelihood of needing remediation in college.

Math Grade Distribution

Remediation

- Across the last four years, 76% to 84% of the students who passed Algebra I earned a grade of C or D.
- Of the students needing remediation, 70% to 100% earned a grade of C or D in Algebra II during the last four years.
- Of the students needing remediation, 76% to 92% earned a grade of C or D in Geometry.
- The percentage of students earning As or Bs has increased over the last four years in Algebra I

Non-Remediation

- Of the students not needing remediation, 48% to 58% earned a grade of A or B in Algebra I.
- Across the four years, 46% to 62% of the students not needing remediation earned a grade of A or B in Algebra II.

- Forty-three to 52% of these students earned a grade of A or B in Geometry over the last four years.
- The number of students earning Cs or Ds has decreased over the last four years in all three math courses.

The data suggests that students needing remediation are more likely to earn a grade of C or D in all three math courses (Algebra I, Algebra II, and Geometry) than students who do not need remediation. From 1992 to 1995, the percentage of non -remedial students earning an A rose 10 percentage points in Algebra I, 14 percentage points in Algebra II and 9 percentages points in Geometry. The number of remedial students earning a grade of A or B has increased in Algebra I (9 percentage points).

5. What percentage of the FTIC students require remediation in Reading and Writing ? What are their descriptive characteristics? Are they different from the non-remedial population in terms of gender and race?

Reading - Gender and Race

Remediation

- On an average, 60% of the graduates needing remediation in reading were females and 40% were males.
- Of those students needing remediation, 53% were black and 53% were white.

Non-Remediation

- Across the last four years, 76% of the students not needing remediation were white and 20% were black.
- Of the students not needing remediation, 57% were females and 43% were males.

The data suggests that black students are more likely to need remediation in reading. Gender does no appear to have a large effect on either group.

Writing - Gender and Race

Remediation

- Over the last four years, 57% of the graduates needing remediation were females and 40% were males.
- Of those needing remediation, 46% were black and 50% were white.

Non-Remediation

- Across the last four years, 58% of the graduates not needing remediation were female and 42% were males.
- Of those not needing remediation, 77% were white and 19% were black.

It appears from the data that black students are more likely to need remediation in writing, Gender does not appear to have a large effect on either group.

6. What percentage of the FTIC students were enrolled in Community Colleges and Four-Year Colleges and Universities?

% of Students Attending Community College, a 4 Year College, or Other Institutions

- Across the last four years, an average of 90% of the remedial students attended community college.
- An average of 4% of the remedial students attended a four year college.
- One percent of the remedial students attended other types of colleges.

Non-Remediation

- Across the four years, an average of 54% of the non-remediation students attended community college.
- An average of 46% of the non-remedial students attended a four year college.
- One percent of the non-remedial students attended other types of colleges.

The data suggests students needing remediation are more likely to attend a community college instead of a four year college upon entering post-secondary education. In comparison, a higher percentage of non-remedial students enter four year colleges after high school.

SUMMARY

The following conclusions can be drawn from the results of this study in an effort to enhance the student preparation for postsecondary education.

1. The FTIC students were recent high school graduates (average age 19). White students are less likely to need remediation in math, reading, and writing. In comparison, the data suggests a need for black students to be remediated across all subjects based on the percentages reported by race for the remedial group. Gender has little effect on either group.
2. A student who needs remediation in mathematics is one with an average GPA, almost a letter grade behind the non-remedial student and with an average HSCT score 35-63 points lower on all subtests. The remedial student will probably take Algebra I but not Algebra II or Geometry. It is likely his/her grade percentage earned will be a C or D in any courses taken. Of the remedial students who pass Algebra I, 76% to 87% earned a grade of C or D.

   Overall, more students are taking Algebra I, Geometry and more Level lII Science Courses over the last four years. However, the course taking patterns of remedial and non remedial students differ substantially. The remedial student does not take all three Math level (I, II, III) courses or Science level courses. The majority take Algebra I but not Algebra II and

Geometry. This is particularly significant when one considers that courses in mathematics and science can teach students to use higher level thinking skills to solve complex problems. The remedial student is not a likely candidate for dual enrollment and will probably need 6 or more summer school courses to complete his/her high school requirements. He/she will probably need remediation in all subjects.

3. Since 1992 the proportion of non-remedial students with an A or B average rose 10 percentage points in Algebra I, 14 percentage points in Algebra II and 9 percentage points in Geometry. Also, the proportion of remedial students with a grade of A and B in Algebra I rose from 16% (1992) to 23% in (1995). However, the percentage of students needing remediation in Mathematics remain unchanged. This raises concerns with regard to grade inflation.
4. Ninety percent of the remedial students attended community college in comparison with 54% of the non-remedial students.

In summary, there are considerable differences between students who need remediation and those who do not need remediation. Non-remedial students are less likely to be from minority groups, have higher GPA and HSCT scores, and are more likely to complete Algebra I, Geometry, and Algebra II in high school. These differences maybe in part due to differences in earlier schooling experiences, interest, motivation, educational expectations, and career aspirations which were not measured in this study. Furthermore, although students are taking higher level courses and having better grades than in the past, the percentage of students who needs remediation in Mathematics has not decreased (21%). More quality interventions, counseling, and monitoring of student progress are needed to prepare students for college-level work.

RECOMMENDATIONS

The following recommendations are based on the findings of the study.

- All students planning to enter a community college or four-year college should be advised in taking all three math courses (Algebra I, Algebra II, Geometry).
- All students entering postsecondary education should take courses in all three levels (I, II, III) of Mathematics and Science.
- Academic and guidance support should be given to students planning to enter a community college or four-year college to decrease the need for remediation prior to their entry into postsecondary education. In some instances a counselor is assigned a single grade level, following that grade level through until graduation, getting to know each student in that particular grade in a way that would otherwise be difficult to do. In addition, numerous opportunities for students to learn before school, after school, weekends and summer should be planned.
- A system for monitoring the preparation of students should be devised to include periodic checks, i.e. College Placement Test in 10^{th} grade, research projects, courses taken, achievement, and records of conferences with students and parents, to check student progress beginning in middle/high school.
- Middle and high schools should ensure that recent legislation requiring a program of studies be planned and approved by school staff, parents, and students be in effect to guide students to take the courses throughout middle and high school that will ensure their successful entry into postsecondary. Researchers from the Educational Testing Service (ETS) recommended that eight grade students take algebra rather than general mathematics (Smith, 1996). It is believed that early planning (pre-high school) and access to courses in the curriculum, shaped by prior success in particular courses, may influence the way students choose their subsequent courses (Smith, 1996).
- A plan of action should be developed to ensure that articulation agreements with postsecondary institutions address remediation needs an instructional interventions.
- The Readiness for College Report should accurately reflect the student data needed to report the number of students prepared for college instead on focusing on the students not prepared. The data should include information about students attending four year colleges as well as community colleges.

Further research is needed to study the factors influencing mathematics attainment of remedial and non-remedial students. For example, mathematics achievement in elementary and middle school may influence whether a student will continue to take advanced courses. Furthermore, the impact and contribution of several indicators (GPA, HSCT, courses taken, demographics etc.) on whether a student will need remedial courses in college needs to be assessed. Finally, further studies are needed to ascertain if indeed there is grade inflation among secondary schools.

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Appendix A

- Profile of Remedial Students - Table 3
- Profile of Non-Remedial Students - Table 4

Table 3
Profile of Remedial Students

		1992-93	1993-94	1994-95	1995-96
Requiring Remediation		N=132 21%	N-133 21%	N=120 18%	N=149 22%
Math		**Demographics**			
Gender	Female Male	58% 42%	58% 42%	57% 43%	60% 40%
Race	Black White	46% 52%	52% 47%	46% 53%	41% 58%
Age (Average)	Math Reading Writing	18.81 18.79 18.78	18.75 18.82 18.79	18.88 18.96 18.94	19.45 18.97 18.88
Courses Taken/Passing					
Percentage Passing	Algebra I Algebra II Geometry	43% 5% 9%	41% 4% 9%	49% 7% 16%	56% 4% 28%
Percentage Not Passing	Algebra I Algebra II Geometry	22% 7% 9%	23% 5% 4%	26% 8% 13%	21% 4% 8%
Percentage Not Taking Course	Algebra I Algebra II Geometry	35% 88% 82%	36% 92% 87%	26% 85% 71%	23% 85% 64%
Math Credits Earned	**Level 1** 0 1.0 2.0 More than 2	 6% 54% 38% 2%	 8% 55% 34% 3%	 6% 58% 28% 8%	 6% 51% 30% 13%
	Level 2 0 1 2 More than 2	 48% 28% 15% 9%	 45% 35% 13% 7%	 32% 31% 25% 12%	 30% 22% 32% 17%
	Level 3 0 1 2 More than 2	 98% .2% .8% 0%	 99% .7% 0% 0%	 97% 2.5% 0% 0%	 99% .7% .7% 0%
Science Credits Earned	**Level 1** 0 1 2 More than 2	 58% 23% 14% 4%	 62% 17% 16% 5%	 82% 9% 8% 0%	 76% 16% 6% 5%

Science Credits Earned	**Level 2** 0 1 2 More than 2	 2 % 10% 30% 58%	 5% 12% 20% 64%	 8% 7% 14% 79%	 7% 6% 22% 72%
Science Credits Earned	**Level 3** 0 1 2 More than 2	 88% 9% 3% 0%	 92% 5% 2% 0%	 88% 9% 3% 0%	 78% 17% 5% 9%
Summer School Courses Taken	1-5 6 or more	68% 16%	65% 20%	66% 17%	64% 15.2%
Dual Enrollment Credit Earned	% Earning 0 Credit % Earning 1 Credit% Earning 2 Credits % Earning More than 2 Credits	97% 2.4% .8% 0%	98% 0% 1.5% 0%	95% 5.1% 0% 0%	97% 1.4% .7% .7%
Achievement					
GPA (Average)		2.17	2.18	2.28	2.38
HSCT					
First Time Passing	Communication Math	78% 61%	79% 51%	84% 54%	88% 71%
Passed after 2 or more	Communication Math	14% 33%	18% 45%	12% 42%	10% 28%
HSCT Scores					
Math	Communication Math	624 640	699 700	681 682	726 718
Reading	Communication Math	614 630	699 705	656 658	698 688
Writing	Communication Math	640 651	695 699	667 676	723 707
Math Grade Distribution					
Algebra I	A B C D	5% 11% 42% 42%	3% 13% 39% 45%	4% 20% 36% 40%	1% 22% 41% 36%
Algebra II	A B C D	0% 0% 50% 50%	0% 31% 38% 31%	0% 22% 52% 26%	3% 16% 43% 38%
Geometry	A B C D	3% 21% 31% 45%	4% 4% 20% 72%	5% 9% 49% 37%	1% 14% 28% 57%

Community College/Four Year College					
Percentage of Students Attending					
	Community College	89	86	93	91
	4 yr. College	11	11	5	8
	Other (Keiser)		2	2	1
Requiring Remediation/Other Subjects					
Reading		**Demographics**			
Gender	Female	64%	53%	66%	55%
	Male	36%	47%	34%	45%
Race	Black	49%	56%	59%	49%
	White	48%	40%	36%	44%
Writing		Demographics			
Gender	Female	57%	59%	59%	51%
	Male	43%	41%	41%	49%
Race	Black	42%	49%	52%	42%
	White	56%	49%	44%	52%

Table 4
Profile of Non-Remedial Students

		1992-93	1993-94	1994-95	1995-96
Not Requiring Remediation		79% N=509	80% N=503	82% N=550	78% N=526
Math		**Demographics**			
Gender	Female	56%	56%	60%	55%
	Male	44%	44%	40%	45%
Race	Black	22%	24%	22%	18%
	White	74%	72%	74%	76%
Age (Average)	Math	18.57	18.75	18.66	18.67
	Reading	18.57	18.82	18.65	18.67
	Writing	18.55	18.79	18.64	18.66
		Courses Taken/Passing			
Percentage Passing	Algebra I	92%	94%	97%	96%
	Algebra II	70%	75%	75%	80%
	Geometry	66%	71%	83%	84%
Percentage Not Passing	Algebra I	6%	6%	2%	2%
	Algebra II	11%	8%	9%	6%
	Geometry	6%	7%	7%	3%
Percentage Not Taking Course	Algebra I	2%	2%	1%	2%
	Algebra II	19%	17%	16%	14%
	Geometry	27%	22%	17%	13%
Math Credits Earned	**Level 1**				
	0	49%	57%	61%	66%
	1.0	41%	35%	33%	30%
	2.0	9	8%	6%	4%
	More than 2	.6%	.2%	.2%	.4%
	Level 2				
	0	2%	2%	1%	2%
	1	12%	12%	14%	17%
	2	28%	28%	25%	21%
	More than 2	57%	58%	59%	60%
	Level 3				
	0	57%	56%	55%	48%
	1	21%	19%	22%	22%
	2	13%	13%	9%	14%
	More than 2	10%	12%	14%	16%
Science Credits Earned	**Level 1**				
	0	92%	94%	96%	97%
	1	6%	4%	2%	3%
	2	3%	2%	1%	2%
	More than 2	.2%	.4%	.4%	0%

Science Credits Earned	**Level 2**				25%
	0	9%	13%	19%	22%
	1	15%	19%	22%	19%
	2	21%	16%	17%	34%
	More than 2	55%	52%	42%	
	Level 3				
	0	49%	46%	34%	27%
	1	13%	11%	13%	16%
	2	16%	13%	15%	16%
	More than 2	22%	30%	38%	40%
Summer School Courses Taken	1-5	61%	64%	64%	66%
	6 or more	6.0%	6.9%	8.8%	5.7%
Dual Enrollment Credit Earned	% Earning 0 Credit	79%	71%	69%	81%
	% Earning 1 Credit	14%	14%	23%	13%
	% Earning 2 Credits	7%	1.3%	5.1%	5.0%
	% Earning More than 2 Credits	2.0%	2%	3%	2%
Achievement					
GPA (Average)		2.78	2.9	2.92	3.02
HSCT					
First Time Passing	Communication	95%	96%	95%	97%
	Math	91%	92%	89%	92%
Passed after 2 or more	Communication	3%	2%	5%	3%
	Math	7%	7%	10%	7%
HSCT Scores					
Math	Communication	714	737	731	738
	Math	707	724	726	723
Reading	Communication	714	730	733	744
	Math	707	715	728	729
Writing	Communication	716	733	736	740
	Math	708	717	729	727
Math Grade Distribution					
Algebra I	A	14%	18%	20%	19%
	B	34%	33%	36%	39%
	C	34%	33%	29%	29%
	D	18%	15%	15%	13%
Algebra II	A	12%	13%	17%	22%
	B	34%	35%	37%	40%
	C	37%	36%	31%	27%
	D	18%	16%	15%	11%
Geometry	A	13%	15%	18%	19%
	B	30%	33%	32%	33%
	C	38%	34%	33%	33%
	D	19%	18%	17%	15%

Community College/Four Year College					
Percentage of Students Attending	Community College 4 yr. College Other (Keiser)	55% 45%	54% 46%	54% 45% 1%	52% 47% 1%
Requiring Remediation/Other Subjects					
Reading		**Demographics**			
Gender	Female Male	54% 46%	58% 42%	58% 42%	57% 43%
Race	Black White	21% 75%	23% 73%	19% 77%	17% 78%
Writing		**Demographics**			
Gender	Female Male	56% 44%	59% 41%	59% 41%	59% 41%
Race	Black White	20% 76%	22% 74%	19% 77%	16% 79%

Appendix B

- List of Courses in Mathematics and Science

Upper Level Courses in Mathematics and Science
(Source: *Guide to Calculations, 1995-96 Florida School Report)*

	Course Title--Math	Course Title--SCIENCE
LEVEL I	Pre-Algebra	Fundamentals of Biology
	Math Competency Skills	Fundamentals of Anatomy & Physiology
	Consumer Mathematics	Fundamentals of Earth Science
	Explorations in Math I	Fundamentals of Environmental Science
	Explorations in Math II	Fundamentals of Oceanography
	Business Math	Fundamentals of General Science
		Fundamentals of Science and Technology
		Fundamentals of Physical Science
		Fundamentals of Chemistry
LEVEL II	Algebra I	Biology I
	Algebra II	Anatomy and Physiology
	Applied Mathematics I	Botany
	Applied Mathematics II	Ecology
	Applied Mathematics III	Limnology
	Informal Geometry	Marine Biology
	Geometry	Zoology
	Integrated Math I	Biology Technology
	Integrated Math II	Earth/Space Science
	Integrated Math III	Environmental Science
	Liberal Arts Mathematics	Astronomy, Solar/Galactic
		Oceanography
		General Science
		Space, Technology, Engineering
		Physical Science
		Chemistry I
		Physics I
		Nuclear Radiation
		Principles of Technology I
		Principles of Technology II

LEVEL III	Algebra I Honors	Biology I Honors
	Algebra II Honors	Biology II
	Linear Algebra	AP Biology
	Abstract Algebra	Anatomy/Physiology Honors
	Mathematics Analysis	Marine Biology Honors
	Analysis of Functions	Biology I Pre -IB
	Calculus	Biology II -IB
	AP Calculus AB	Biology III -IB
	AP Calculus BC	Earth/Space Science Honors
	Multivariate Calculus	Integrated Science, I-V
	Pre-Calculus	Physical Science Honors
	Calculus IB	Chemistry I Honors
	Differential Equations	Chemistry II
	Geometry Honors	AP Chemistry
	Analytic Geometry	Physics I Honors
	Analytic Geometry IB	Physics II
	Mathematics Studies IB	AP Physics B
	Probability & Statistics with Applications	AP Physics C
		Chemistry I -Pre -IB
	Using Probability & Statistics	Chemistry II -IB
	Trigonometry	Chemistry III -IB
	Trigonometry IB	Physics III -IB
	Discrete Mathematics	
	Elements of Mathematics, I-VIII	
	All Dual Enrollment Math Courses	All Dual Enrollment Science Courses

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I. DOCUMENT IDENTIFICATION:

Title: Readiness for college in Leon County: Who Are the Students that Need Remedial Education

Author(s): Margarida Southard and Sylvia Collier

Corporate Source: Leon county schools

Publication Date: November 5, 1997

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