

Saddleback College

Matriculation Research and Evaluation Component Standard 13

Proportion of Students of Ethnic, Gender, Age and Disability Groups who Complete Pre-Collegiate Basic Skills Courses and who Subsequently Enter and Complete Associate Degree-Applicable and Transfer Level Courses

**Victor Manchik
Research Analyst
Counseling Services and Special Programs
April 8, 2002**

EXECUTIVE SUMMARY

This study tracked students from pre-collegiate basic skills courses into the next course in line, following the normal sequence of courses in order to identify the success rates of pre-collegiate basic skills students and the rates of pre-collegiate basic skills students' progress from the pre-collegiate basic skills courses to associate degree-applicable courses, and ultimately, transfer level courses.

The study found that of the students who successfully completed *Pre-Algebra* in Fall 98 (pre-collegiate basic skills level) 71.1% enrolled in *Beginning Algebra* (associate degree-applicable level), 28.6% enrolled in *Intermediate Algebra* and 17.4% enrolled in either *College Algebra*, *College Algebra for Calculus*, *Finite Math*, *Statistics*, or *Trigonometry* (transfer level Math courses).

Of the students who successfully completed *Beginning Writing* (English 300) in Fall 98 (pre-collegiate basic skills level), 72.6% enrolled in *Fundamentals of Composition*, 56.1% enrolled in *Principles of Composition I* (English 1A) and 30.6% enrolled in *Principles of Composition II* (English 1B).

The success rate in the associate degree applicable and transfer level Math and English courses was substantially higher for the students who had successfully completed all the pre-requisite courses without skipping a semester than the class average (78.9% vs. 56.3% in transfer level math; 71.4% vs. 59.1% in the associate degree applicable level math; 82% vs. 74.2% in English 1A, and 75.5 vs. 77.3% in English 1B).

Although the data show that students who do not skip a semester have a greater rate of success compared to students who skip a semester before taking the next course in the sequence, further research is needed to clarify the reasons for these findings.

Introduction

In December 1998, the Institute of Higher Education Policy published a paper on the effectiveness of college remediation. It reminded that remediation has always been a function of the American Higher Education system and claimed that remediation is a good investment for society and for colleges and universities since students who are admitted to a college and who successfully complete their remediation become regular attendees who pay tuition, participate in the collegiate experience, and contribute to the campus culture. But is college remediation really that effective? Do students who complete pre-collegiate basic skills courses go on taking associate degree applicable and transfer level courses?

The purpose of this study is to identify: 1) the success rates of pre-collegiate basic skills students, and 2) the rates of pre-collegiate basic skills students progress from pre-collegiate basic skills courses to associate degree-applicable courses, and ultimately, transfer level courses.

Method

Design

This research design is retrospective. The data for this study comes from the South Orange County Community College District Research Data Warehouse.

Subjects

The study selected two cohorts from the semester of Fall 98:

1. Students enrolled in MATH 351, PRE-ALGEBRA MATHEMATICS (N=607)
2. Students enrolled in ENG 300, BEGINNING WRITING (N=297)

Procedure

The study tracked each cohort's progress from pre-collegiate basic skills courses in the fall 98 semester to the next course in line, following the normal sequence of courses using Brio Query longitudinal tracking capabilities. For example, the cohort that took Math 351, Pre-Algebra, (Pre-Collegiate Basic Skills Level) was followed from Math 351 to Math 251, Beginning Algebra, and to Math 253, Intermediate Algebra (Degree Applicable), and to either of the following: Math 7, 8, 9, 10, or 124 (College Algebra, College Algebra for Calculus, Finite Math, Statistics, Trigonometry).

The course taking patterns, such as number of failures and repetitions and timing of enrollment were evaluated as well. Whenever appropriate, the success rate of the cohort was compared to the average of the class.

Operational Definitions

The definitions used for success and progress rate in this study are as follows:

Success rate: $(A+B+C+CR/A+B+C+CR+D+F+I^*+NC+W)$

Progress rate: $(\# \text{ in higher level course} / \# \text{ in lower level course}) \times 100$

The State defines Pre-Collegiate Basic Skills Courses as "Not Transferable/Credit/Not Degree Applicable" (Chancellor's Office, 2000).

Findings – Mathematics

Demographic Characteristics of the Cohort

In fall 98, six hundred and seven students (607) enrolled in a Pre-Algebra Mathematics (Math 351) course.

Among those enrolled, 363 (60%) were female and 244 (40%) were male students. Most of the students (74.8%) were younger than 30 years old. Thirty-three percent (33%) of the enrolled students were “First-Time Students” (91.9% of First Time Students were under 20 years of age). Forty-five percent (45%) were “Continuing Students.” Fifty-one percent (51%) of the “Continuing Students” were under thirty years old.

The majority of the students (N=376, 61.9%) enrolled in Math 351 were “White.” They were followed by “Hispanic” (N=137, 22.6%), “Asian” (N=20, 3.3%), and “Black” (N=17, 2.2%). 48 (7.9%) students belonged to a primary disability group. Of those belonging to primary disability group (70.8%) were learning disabled.

The Progress and Success Rates

Out of the 607 students enrolled in Math 351 in fall 98, 304 had completed the course (50.1%). The success rate for the course, however, was 52.9 percent after excluding 38 students whose grades were unknown, 3.27 percent higher than the statewide average for pre-collegiate basic skill math courses in fall 98 (49.29%).¹

Math 251 – Beginning Algebra

Out of the 304 students who successfully completed Pre-Algebra, Math 351, in the fall of 1998, 216 enrolled in Beginning Algebra sometime between spring 1999 and fall 2001 (71.1 percent progress rate). Sixty-one point six percent (N=133, 61.6%) of those attempted the class once; twenty-three point one percent (N=50, 23.1%) took the class twice; ten point two percent (N=22, 10.2%) enrolled in the class three times; three point seven percent (N=8, 3.7%) attempted the class four times; (N=5, 0.9%) had five records of enrollment, and one students enrolled in Beginning Algebra six times N=1, 0.5%) in 1999 – 2001. The majority (N=179, 58.9 percent) enrolled in spring 1999.

The success rate of the cohort in Math 251 for spring 1999 and fall 2001 was 35.9 percent, 6.9 percent lower than the average for the class for the same period of time, which was 42.8%. The success rate of those students who enrolled in the fall 1999 without delaying was 37.5 percent, only .5% lower than the class average.

Math 253 – Intermediate Algebra

Out of the 304 students who had successfully completed Pre-Algebra in fall 1998, 87 enrolled in Intermediate Algebra, Math 253, sometime in spring 1999 and fall 2001 (28.6 percent progress rate). 74.7% attempted the class once; 17.2% attempted the course twice; 5.7% attempted the course three times, and 1.1% attempted the course four times, and 1.1% attempted the course 6 times. A total of 120 classes were attempted, of which 66 were completed successfully (55 percent).

After excluding 9 students whose grades were unknown, the success rate of the students in the cohort was 59.5%, 6.4% higher than the class average for the same period of time of 53.1%. The success rate for those students who successfully completed Pre-Algebra in fall 1998 and Beginning Algebra in spring 1999 and Enrolled in Intermediate Algebra in summer/fall 1999 without skipping a semester was 71.4%, 12.3% higher than the class average of 59.1% in Summer/Fall 99.

Math 7, 8, 9, 10 or 124

Out of the 304 students who successfully completed Pre-Algebra in fall 1998, 53 enrolled in transfer level math courses in 1999 – 2001 (17.4% progress rate). A total of 78 courses were attempted, of which 43

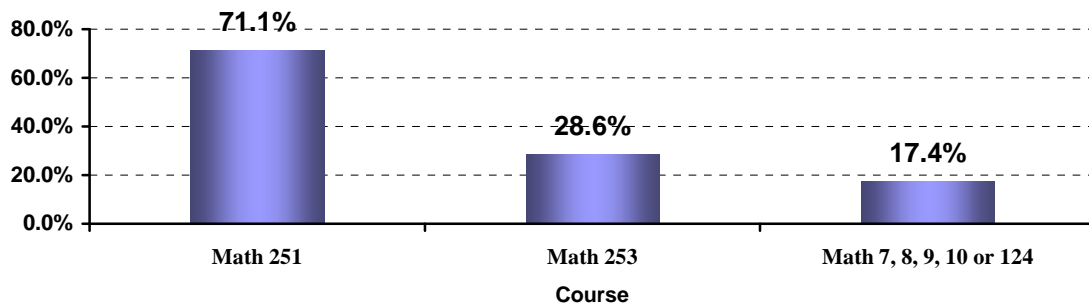
¹ The reason for excluding unknown (XX) grade notations was to allow comparison between success rates of other colleges and to follow the success rate calculation methodology defined in the matriculation manual.

were completed successfully. The success rate after excluding 9 students whose grades were unknown was 62.3%. The average success rate of all the students enrolled in transfer level math courses during the same period of time was 58.9%, while the success rate of the students in the cohort was 62.3%. However, the success rate of the students who successfully completed all the pre-requisite courses without skipping a semester was 78.9%, 22.6% higher than class average of 56.3%.

Table 1. Number and Percentage of Students who Complete Pre-Algebra and Who Subsequently Enter Associate Degree Applicable and Transfer Level Math Courses.

Course Level		Cohort Math 351	Math 251 - Beginning Algebra		Math 253 - Intermediate Algebra		Math 7, 8, 9, 10, or 124 - Transfer Level	
		Pre-Collegiate	Associate Degree Applicable		Transfer			
		#	#	%	#	%	#	%
Students		304	216	71.1%	87	28.6%	53	17.4%
Gender	Female	186	133	71.5%	57	30.6%	32	17.2%
	Male	118	83	70.3%	30	25.4%	21	17.8%
		304	216	71.1%	87	28.6%	53	17.4%
Age Groups	<20	110	88	80.0%	36	32.7%	22	20.0%
	20 - 24	65	45	69.2%	11	16.9%	7	10.8%
	25 - 29	32	20	62.5%	5	15.6%	3	9.4%
	30 - 34	27	16	59.3%	7	25.9%	6	22.2%
	35 - 39	25	17	68.0%	12	48.0%	7	28.0%
	40 - 49	39	27	69.2%	15	38.5%	8	20.5%
	50+	6	3	50.0%	1	16.7%	—	—
		304	216	71.1%	87	28.6%	53	17.4%
Ethnicity	Asian	12	10	83.3%	5	41.7%	4	33.3%
	Black	7	5	71.4%	3	42.9%	2	28.6%
	Filipino	8	6	75.0%	2	25.0%	—	—
	Hispanic	66	47	71.2%	21	31.8%	12	18.2%
	Native American	2	2	100.0%	—	—	—	—
	Other Non-White	2	1	50.0%	—	—	—	—
	Pacific Islander	3	3	100.0%	—	—	—	—
	Unknown/Declined	17	13	76.5%	6	35.3%	5	29.4%
	White	187	129	69.0%	50	26.7%	30	16.0%
		304	216	71.1%	87	28.6%	53	17.4%
Disability	Acquired Brain Injury	1	1	100.0%	—	—	—	—
	Delayed Learner	0	—	—	—	—	—	—
	Hearing Impaired	1	1	100.0%	—	—	—	—
	Learning Disabled	12	9	75.0%	3	25.0%	2	16.7%
	Mobility Impaired	3	2	66.7%	—	—	—	—
	Other Disability	2	1	50.0%	—	—	—	—
	Psychological Disability	3	3	100.0%	2	66.7%	2	66.7%
	Speech Impaired	—	—	—	—	—	—	—
	Visually Impaired	0	—	—	—	—	—	—
<i>Not in Disability Group</i>		282	199	70.6%	82	29.1%	49	17.4%
		304	216	71.1%	87	28.6%	53	17.4%

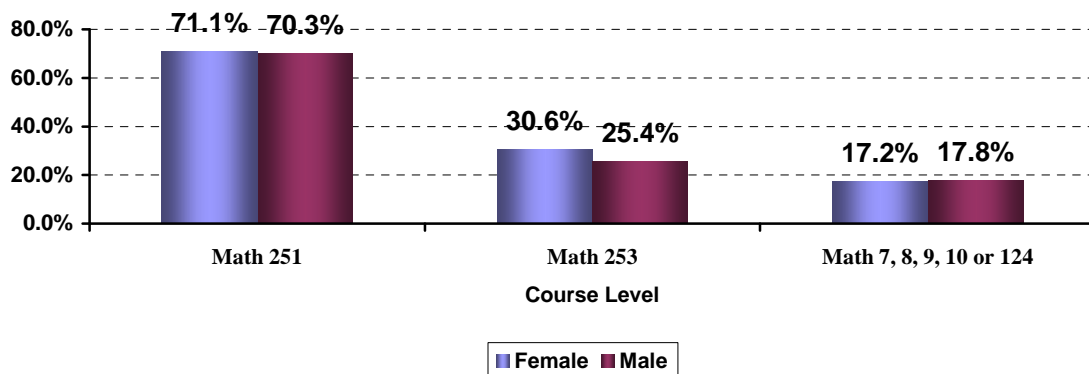
Graph 1. Progress Rate in Math Courses



Source: Saddleback College MIS Data.

Graph 1 shows the progress rate in mathematics. Of the 304 students who successfully completed *Pre-Algebra* in 1998, 216 (71.1%) enrolled in Beginning Algebra, 87 (28.6%) enrolled in Intermediate Algebra, and 53 (17.8%) enrolled in either *College Algebra*, *College Algebra for Calculus*, *Finite Math*, *Statistics*, or *Trigonometry*.

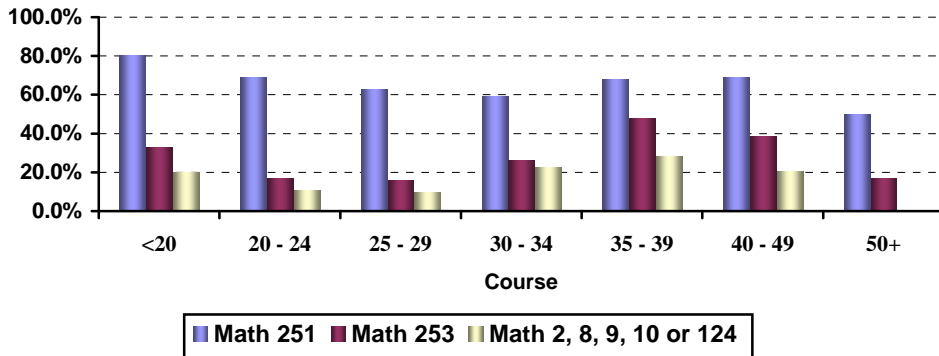
Graph 2. Progress Rate in Math by Gender.



Source: Saddleback College MIS Data.

Graph 2 shows the progress rate from *Pre-Algebra* to *Intermediate Algebra* and to either of the following transfer level math courses: *College Algebra*, *College Algebra for Calculus*, *Finite Math*, *Statistics*, or *Trigonometry* by gender.

Graph 3. Progress Rate in Math Courses by Age.



Source: Saddleback College MIS Data.

Graph 3 shows the progress rates from pre-collegiate basic skills mathematics courses to the associate degree-applicable and transfer level math courses by age groups. Students <20 years of age had the highest progress rate from Pre-Algebra to Beginning Algebra (80%). The highest progress rate from Pre-Algebra to Intermediate Algebra or to transfer level math courses was found among 35 – 39 year old students (48% and 28%).

Findings – English

Demographic Characteristics of the Cohort

Out of the 297 students who entered a *Beginning Writing* course in fall 1998, 51.2% were male and 48.8% were female students. The majority of the students were younger than 25 years of age (76.8%). Fifty five point two percent (55.2%) of students were White; followed by Hispanic (17.8%) and Asian (10.1%). Fourteen (14) students belonged to a primary disability group.

The Progress and Success Rates

Out of 297 students who enrolled in *Beginning Writing* in fall 1998, 157 had completed the course (52.9%). The success rate for the course, however, was (60.4%) after we exclude from the denominator 37 students who enrolled but whose grades were unknown,

ENG 200 - Fundamentals of Composition

Of the 157 students who successfully completed English 300, a *Beginning Writing* course in the fall 1998, 114 entered English 200, *Fundamentals of Composition* in 1999 – 2001 (72.6% progress rate). The majority of the students attempted the class once (N=95, 83.3%). Nine point six percent (N=11, 9.6%) attempted the class twice. And four point five percent (N=8, 7%) attempted English 200 three times. 54.8% enrolled in *Fundamental of Composition* in spring 1999.

The successful completion rate of English 200 for the period of 1999 – 2001 was 75.9%, 2.6% lower than the successful completion rate for all of the students in the course for the period (78.5%). The successful completion rate of students who enrolled in *Fundamental of Composition* in spring 1999, right after successfully completing *Fundamental of Composition*, was 76.7%, 6.5% higher than the class average in spring 1999.

Table 2. Number and Percentage of Students who Complete Beginning Writing and Who Subsequently Enter Associate Degree Applicable and Transfer Level English Writing Courses.

Course Level		English 300 -	English 200 -		English 1A -		English 1B -	
		Beginning Writing	Fundamental of		Principle of		Principles of	
		Pre-Collegiate	Degree Applicable		Composition I		Composition II	
		#	#	%	#	%	#	%
	Students	157	114	72.6%	88	56.1%	48	30.6%
Gender	Female	89	66	74.2%	54	60.7%	31	34.8%
	Male	68	48	70.6%	34	50.0%	17	25.0%
		157	114	72.6%	88	56.1%	48	30.6%
Age Groups	<20	81	67	82.7%	54	66.7%	34	42.0%
	20 - 24	35	22	62.9%	13	37.1%	5	14.3%
	25 - 29	14	8	57.1%	8	57.1%	4	28.6%
	30 - 34	8	4	50.0%	4	50.0%	2	25.0%
	35 - 39	5	4	80.0%	2	40.0%	2	40.0%
	40 - 49	11	7	63.6%	5	45.5%	1	9.1%
	50+	3	2	66.7%	2	66.7%	—	—
			157	114	72.6%	88	56.1%	48
Ethnicity	Asian	19	13	68.4%	12	63.2%	6	31.6%
	Black	5	5	100.0%	5	100.0%	2	40.0%
	Filipino	8	7	87.5%	3	37.5%	1	12.5%
	Hispanic	25	11	44.0%	10	40.0%	6	24.0%
	Native American	1	0	0.0%	—	—	—	—
	Other Non-White	1	0	0.0%	—	—	—	—
	Pacific Islander	—	—	—	—	—	—	—
	Unknown/Declined	9	6	66.7%	5	55.6%	2	22.2%
	White	89	72	80.9%	53	59.6%	31	34.8%
		157	114	72.6%	88	56.1%	48	30.6%
Disability	Acquired Brain Injury	—	—	—	—	—	—	—
	Delayed Learner	—	—	—	—	—	—	—
	Hearing Impaired	—	—	—	—	—	—	—
	Learning Disabled	8	8	100.0%	5	62.5%	2	25.0%
	Mobility Impaired	1	1	100.0%	—	—	—	—
	Other Disability	—	—	—	—	—	—	—
	Psychological Disability	—	—	—	—	—	—	—
	Speech Impaired	—	—	—	—	—	—	—
	Visually Impaired	—	—	—	—	—	—	—
	<i>Not in Disability Group</i>	148	105	70.9%	83	56.1%	49	33.1%
		157	114	72.6%	88	56.1%	51	32.5%

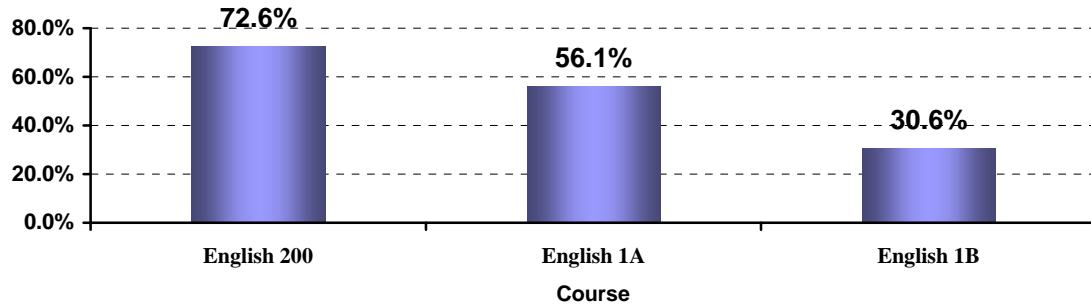
ENG 1A - Principle of Composition

Of the 157 students who successfully completed English 300 courses in 1998, 88 entered *Principles of Composition I*, ENG 1A (56.1% progress rate) taking 103 courses sometime in spring 1999 and fall 2001. Of the 103 courses taken, 69 were completed successfully (67%). If we exclude 10 students whose grades were unknown, the adjusted success rate for the course would be 74.2%, 4% lower than the average for the class. The success rate of the students who enrolled in the course after successfully completing all pre-requisite courses without skipping a semester was 82%, 1.6% higher than the average for the class.

ENG 1B - Principles of Composition II

Of the 157 students who successfully completed English 300 in 1998, 48 enrolled in English 1B (30.6% progress rate) taking 55 classes. 89.6% of 157 students attempted the course once, 6.3% attempted the course twice, and 4.2% attempted the course three times. The successful course completion rate of English 1B was 75.5%, .8% lower than the class average. The success rate for students who successfully completed all courses without skipping a semester was 77.3%, 1.9% higher than the average for the class.

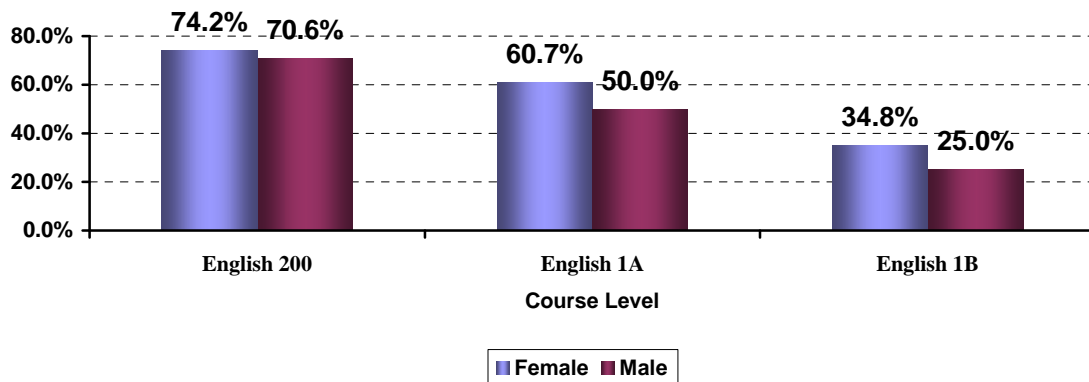
Graph 4. Progress Rate in English Writing Courses



Source: Saddleback College MIS Data

Graph 4 shows the progress rate in English courses. Of the 157 students who successfully completed *Beginning Writing* in fall 1998, 114 (72.6%) enrolled in *Fundamentals of Composition*, 88 (56.1%) enrolled in *Principles of Composition I*, and 48 (30.6%) enrolled in *Principles of Composition II*.

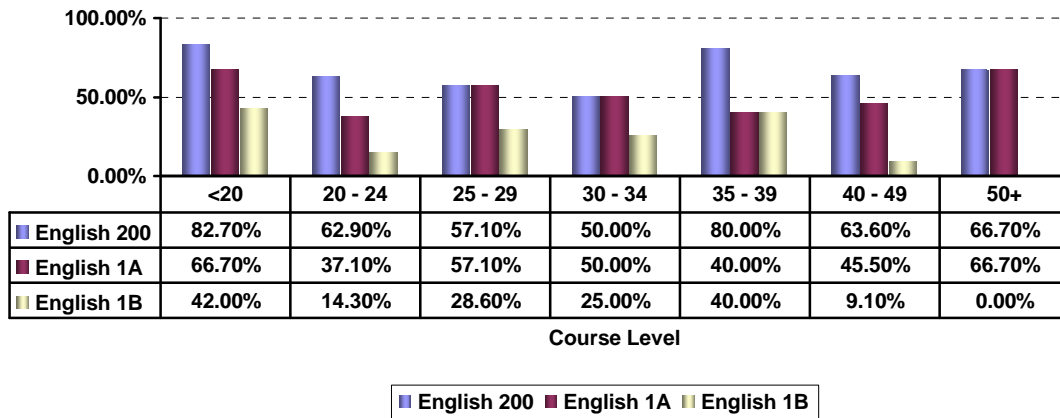
Graph 5. Progress Rate in English Writing by Gender.



Source: Saddleback College MIS Data

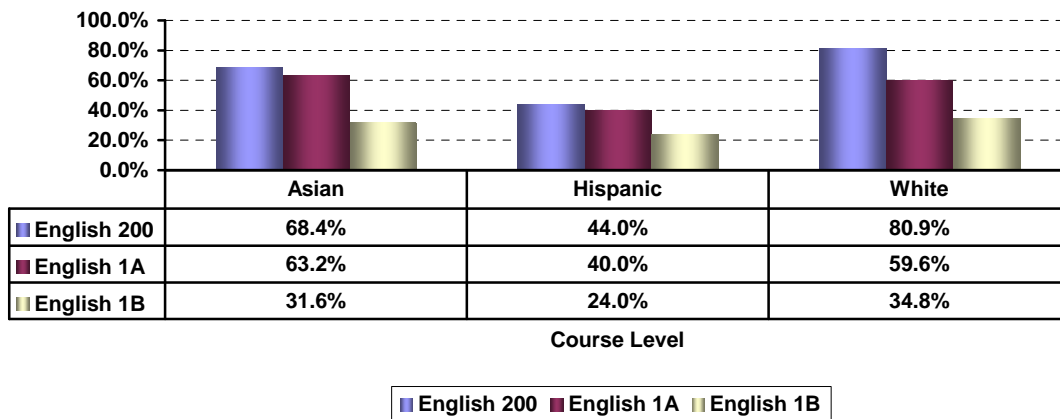
Graph 5 shows the progress rate in English courses by gender.

Graph 6. Progress Rate in English Writing by Age



Graph 6 shows progress rate in English writing courses by age. Under 20 and 50+ groups had the highest progress rate from *Beginning Writing* to *Fundamentals of Composition*, English 200.

Graph 6. Progress Rate in English Writing Asian, Hispanic and White Ethnic Groups



White students had the highest progress rate from *Beginning Writing* to *Fundamentals of Composition*. Asian students had the highest progress rate from *Beginning Writing* to *Principles of Composition I*. Hispanics had the lowest progress rate of the three groups.

Discussion and Conclusion

At this point, we do not know why students who complete all the pre-requisite courses without skipping a semester have a higher success rate in transfer level Math and English courses. While the finding may represent a motivational difference among students, it does suggest that students may benefit from the continuity experienced by taking Math and English courses in adjacent semesters. The data show that students who do not skip semesters have a greater rate of success compared to students who skip a semester before taking the next course in the sequence. Further research is needed to clarify the reasons for this finding.

Reference

1. California State Chancellor's Office Data Mart, 2001,
http://misweb.cccco.edu/mis/onlinestat/ret_sucs.cfm
2. California State Chancellor's Office, Data Element Dictionary, October 2000.