

# **Impact of Tutoring on Student Success at Cabrillo College**

(DRAFT)

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## Abstract

This longitudinal study examines the effect of tutoring (the LIBR502 course) at Cabrillo on students' success and retention. Pre-collegiate basic skills students seem to benefit most significantly from tutoring compared to those who did not seek the service. Younger students benefit the most from tutoring as well.

## Introduction

This study examines the impact of Library 502 (LIBR502) on students' learning, particularly those who started their study by enrolling in non-precollegiate courses (MIS Course Type = P) and those who took regular basic skills (MIS Course Type = B). Pre-collegiate courses are courses mostly offered for developmental purposes in Math, English, Reading, and ESL. Basic skills courses on the other hand can be found among some of the vocational classes. Traditionally colleges did not differentiate them in reporting basic skills outcomes. Recently, however, the need became evident that those who take pre-collegiate basic skills classes belong to a very special population and their needs should be examined and addressed. This study focuses primarily on the success rates of precollegiate and basic skills students who either took or did not take LIBR502 in the past five years. In this case, LIBR502 is the effect of "tutoring".

## Study Design

This is a longitudinal tracking study using data from spring 1999 to spring 2005. Students' academic records considered to be appropriate variables for the study were extracted from the college's data warehouse.

Due to the large number of students involved, the study does not consider statistical test of significance. Large numbers in the thousands, as is the case with this study, may easily trigger a significance for any observations. Although it is not meant to generalize the findings to all the students, it is indeed generalizable to the entire student population at the college, because the study does not use samples of students, instead, it has extracted all the data straight from the entire universe of the college students. When data comes from a given universe without being sampled, the findings are universal truth and need not to be tested for statistical significance. A rough analogy would be the results of a national door to door census. The results are stated as they are, because there are no sampling errors.

An early version of the query was developed by former Research Analyst, Dick Borden. That query served the purpose of proof of concept really well. This study is based on that query with modifications. The paper received excellent editorial support from recently hired Research Analyst, Rick Fillman.

## Findings

The study finds that students who took Library 502 (LIBR502) had an overall higher success rate than those who did not (Figure 1). Specifically, those who had enrolled in pre-collegiate classes and took LIBR502 had a success rate of 70.8% vs. those who did not take LIBR502 (59.4%) --a difference of 11.4%. Those who enrolled in regular basic skill classes and took LIBR502 had a success rate of 92.7% vs. those who did not (81.8%) – a difference of 10.9%. Suffice it to say, for an individual student, taking LIBR502 somewhere along the way during his/her academic history at the college is positively related to their success. For students as a whole, the difference is around 10 percentage points.

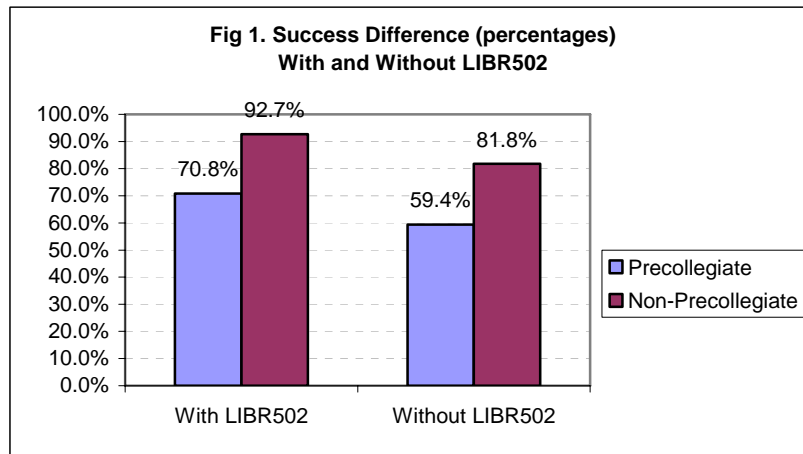


Table 1 includes the raw counts of students in both categories of pre-collegiate and non-precollegiate (regular basic skills classes) further separated by those who took LIBR502 and those who did not. The ratio of taking LIBR502 to not taking LIBR502 is about 1 to 10, or, one (1) out of every 10 students would take LIBR502. The average of the two groups of students' success rates is 78.9% (with LIBR502) and 66.2% (without).

Table 1, Counts and Percentages of Success and Retention With or Without LIBR502

Basic Skills Status	LIBR502 = YES			LIBR502 = NO		
	Basic Skills Enrollments	Success	Retention	Basic Skills Enrollments	Success	Retention
Precollegiate	2,224	70.8%	87.1%	24,499	59.4%	78.9%
Non-Precollegiate	1,315	92.7%	95.1%	10,803	81.8%	87.9%
<b>Total</b>	<b>3,539</b>	<b>78.9%</b>	<b>90.1%</b>	<b>35,302</b>	<b>66.2%</b>	<b>81.6%</b>

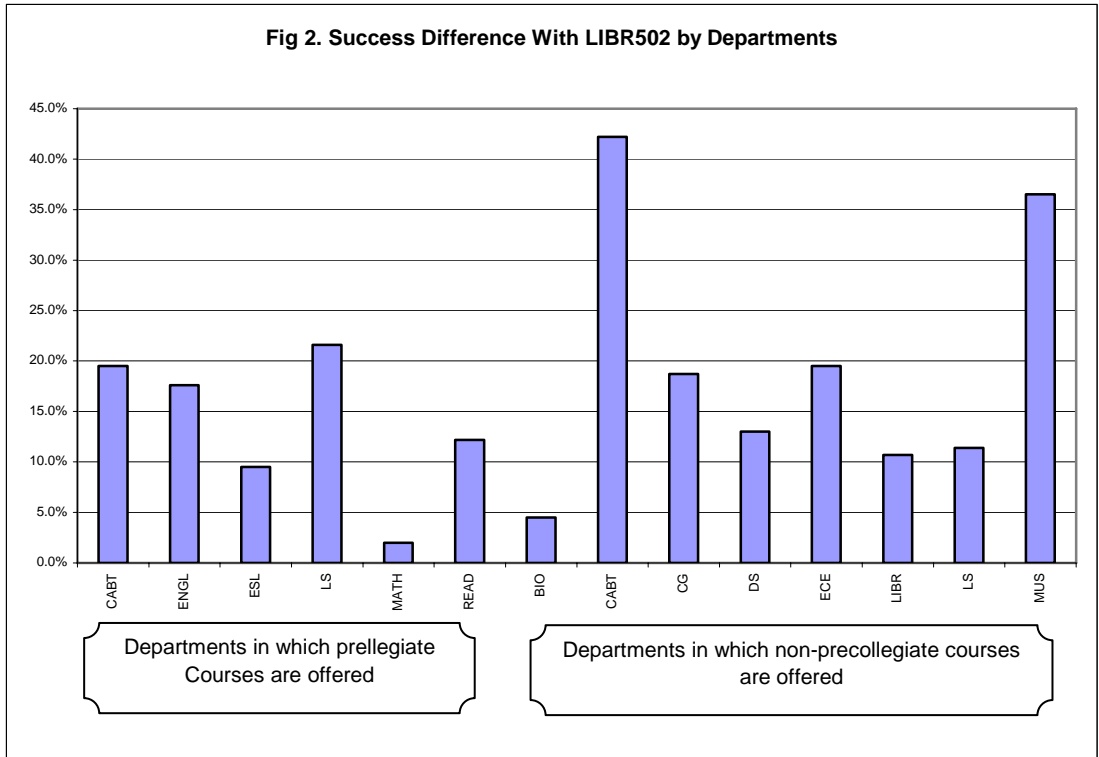
Table 2 and Figure 2 provide success and retention rates information by departments. This table is the same as Table 2 except for the addition of breakdowns by departments. It appears that departments in which pre-collegiate students have had the highest benefits from taking LIBR501 are Learning Skills (LS, 21.6%), Computer Applications and Business Technology (CABT, 19.%), English (ENGL, 17.6%).

Reading and ESL both had high benefits as well. The department with the least benefits is Math (2.0%). The reason for this is unclear.

For those departments in which students took regular basic skills classes, CABT again has the highest gains in success rate at 42.2%. Music had 36.5% gain, but with only a very small number of 6 students taking LIBR502. Early Childhood Education (ECE) had a 19.5% gain in success rate and Counseling and Guidance (CG) had an 18.7% difference. Disabled Student Services has a difference of 13.0%. All other departments, excluding those without any students taking LIBR502, all had over 10% in success rates with the exception of Biology. The basic skills course in Biology was BIO201, which is a one-day class in learning how to use a microscope.

Table 2, Counts and Percentages of Success and Retention With or Without LIBR502 by Department

	Dept	LIBR502 = YES			LIBR502 = NO			Success Gain (diff)
		Basic Skills Enrollments	Success	Retention	Basic Skills Enrollments	Success	Retention	
Precollegiate	CABT	132	96.2%	98.5%	962	76.7%	85.7%	19.5%
	DS				29	65.5%	75.9%	-65.5%
	ENGL	641	75.5%	87.4%	6,394	57.9%	78.1%	17.6%
	ESL	277	76.5%	88.1%	4,192	67.0%	80.9%	9.5%
	LS	109	76.1%	85.3%	721	54.5%	68.0%	21.6%
	MATH	616	59.1%	85.2%	7,509	57.1%	77.6%	2.0%
	READ	449	67.7%	85.7%	4,692	55.5%	80.5%	12.2%
	Sub Total	2,224	70.8%	87.1%	24,499	59.4%	78.9%	11.4%
Non-Precollegiate	BIO	428	98.6%	99.1%	3,147	94.1%	95.0%	4.5%
	BUS	1	100.0%		38	73.7%	86.8%	26.3%
	CABT	51	92.2%	92.2%	528	50.0%	54.0%	42.2%
	CG	545	88.8%	93.0%	2,820	70.1%	80.2%	18.7%
	DS	5	80.0%	80.0%	91	67.0%	79.1%	13.0%
	ECE	13	92.3%	92.3%	202	72.8%	82.2%	19.5%
	ENGL	1		0.0%	14		0.0%	0.0%
	LIBR	34	94.1%	94.1%	205	83.4%	88.3%	10.7%
	LS	231	91.8%	94.4%	1,524	80.4%	89.5%	11.4%
	MUS	6	83.3%	83.3%	400	46.8%	78.3%	36.5%
	SC				1,795	99.7%	99.9%	-99.7%
	TA				39	53.8%	87.2%	-53.8%
	Sub Total	1,315	92.7%	95.1%	10,803	81.8%	87.9%	10.9%
Total	Total	3,539	78.9%	90.1%	35,302	66.2%	81.6%	12.7%



When the success and retention data are examined by students' demographics (Tables 3, 4 and 5), younger students seem to benefit more than older students (Table 3). For example, for those who are between the ages of 18-20, the difference in success is 15.3% while those between the ages of 40-50 the difference is only 3.4%.

According to Table 4, male students enrolled in pre-collegiate basic skills classes seem to benefit more than females. Male students' success is 11.9% higher if they have had LIBR502. Female students' success rate difference is 9.3%, still very high. The same level of difference is observed by gender among the regular basic skills students.

The analysis of impact of tutoring on students' success by ethnicity is most intriguing. Without tutoring, African American students' success is 45.1%. With tutoring, it is 53.3%, a difference of 8.2%. Yet, the 53.3% success rate is the lowest among all ethnicities. Asian and Hispanic pre-collegiate students seem to benefit the most from tutoring. Asian students' success rate difference is 10.8% and Hispanic students' success rate is 11.5%.

Table 3, Counts and Percentages of Success and Retention With or Without LIBR502 by Student Age

Basic Skills Status	Age Group	LIBR502 = YES			LIBR502 = NO			Success Gain (diff)
		Basic Skills Enrollments	Success	Retention	Basic Skills Enrollments	Success	Retention	
Precollegiate	17 & under	95	83.2%	94.7%	1,459	67.8%	87.5%	15.4%
	18-20	748	70.1%	88.2%	10,025	54.8%	77.5%	15.3%
	21-25	387	68.2%	83.2%	4,489	56.6%	76.8%	11.6%
	26-30	189	67.7%	87.8%	2,220	61.7%	77.5%	6.0%
	31-40	440	73.2%	86.8%	3,535	65.4%	81.2%	7.8%
	41-50	284	71.5%	86.3%	2,017	68.1%	81.6%	3.4%
	51-60	69	66.7%	89.9%	617	63.7%	80.1%	3.0%
	61+	12	66.7%	83.3%	126	56.3%	74.6%	10.4%
	Unknown				11	18.2%	36.4%	-18.2%
	<b>Sub Total</b>	<b>2,224</b>	<b>70.8%</b>	<b>87.1%</b>	<b>24,499</b>	<b>59.4%</b>	<b>78.9%</b>	<b>11.4%</b>
Non-Precollegiate	17 & under	11	90.9%	90.9%	695	69.5%	88.5%	21.4%
	18-20	232	92.7%	95.7%	2,600	78.7%	85.2%	14.0%
	21-25	294	90.5%	93.5%	1,949	78.7%	84.8%	11.8%
	26-30	190	90.0%	91.6%	992	80.1%	85.9%	9.9%
	31-40	300	95.0%	97.3%	1,392	79.0%	85.6%	16.0%
	41-50	211	93.8%	96.2%	1,119	82.1%	86.9%	11.7%
	51-60	67	97.0%	97.0%	634	87.7%	92.0%	9.3%
	61+	8	87.5%	87.5%	1,414	98.7%	99.3%	-11.2%
	Unknown	2	100.0%		8	87.5%		12.5%
	<b>Sub Total</b>	<b>1,315</b>	<b>92.7%</b>	<b>95.1%</b>	<b>10,803</b>	<b>81.8%</b>	<b>87.9%</b>	<b>10.9%</b>
<b>Total</b>	<b>Total</b>	<b>3,539</b>	<b>78.9%</b>	<b>90.1%</b>	<b>35,302</b>	<b>66.2%</b>	<b>81.6%</b>	<b>12.7%</b>

Table 4, Counts and Percentages of Success and Retention With or Without LIBR502 by Student Gender

Basic Skills Status	Gender	LIBR502 = YES			LIBR502 = NO			Success Gain (diff)
		Basic Skills Enrollments	Success	Retention	Basic Skills Enrollments	Success	Retention	
Precollegiate	Female	1,505	73.3%	87.6%	14,108	64.0%	81.4%	9.3%
	Male	705	65.1%	85.7%	10,255	53.2%	75.5%	11.9%
	Unknown	14	85.7%		136	52.9%	77.2%	32.8%
	<b>Sub Total</b>	<b>2,224</b>	<b>70.8%</b>	<b>87.1%</b>	<b>24,499</b>	<b>59.4%</b>	<b>78.9%</b>	<b>11.4%</b>
Non-Precollegiate	Female	1,029	93.2%	95.2%	6,875	83.0%	88.8%	10.2%
	Male	279	90.7%	94.3%	3,893	79.6%	86.3%	11.1%
	Unknown	7	100.0%		35	77.1%	82.9%	22.9%
	<b>Sub Total</b>	<b>1,315</b>	<b>92.7%</b>	<b>95.1%</b>	<b>10,803</b>	<b>81.8%</b>	<b>87.9%</b>	<b>10.9%</b>
<b>Total</b>	<b>Total</b>	<b>3,539</b>	<b>78.9%</b>	<b>90.1%</b>	<b>35,302</b>	<b>66.2%</b>	<b>81.6%</b>	<b>12.7%</b>

Table 5, Counts and Percentages of Success and Retention With or Without LIBR502 by Student Ethnicity

Basic Skills Status	Ethnicity <sup>6</sup>	LIBR502 = YES Basic Skills			LIBR502 = NO Basic Skills			Success Gain (diff)
		Enrollments	Success	Retention	Enrollments	Success	Retention	
Precollegiate	African American	30	53.3%	83.3%	408	45.1%	70.3%	<b>8.2%</b>
	Asian	143	73.4%	91.6%	1,525	62.6%	79.9%	<b>10.8%</b>
	Hispanic	1,545	72.2%	87.9%	14,841	60.7%	80.5%	<b>11.5%</b>
	Native American	13	61.5%	69.2%	209	48.8%	71.8%	<b>12.7%</b>
	Other	43	67.4%	83.7%	735	58.8%	78.2%	<b>8.6%</b>
	White	450	66.9%	84.0%	6,781	57.1%	75.8%	<b>9.8%</b>
	<b>Sub Total</b>	<b>2,224</b>	<b>70.8%</b>	<b>87.1%</b>	<b>24,499</b>	<b>59.4%</b>	<b>78.9%</b>	<b>11.4%</b>
Non-Precollegiate	African American	36	91.7%	97.2%	186	71.5%	78.0%	<b>20.2%</b>
	Asian	69	89.9%	89.9%	410	81.5%	84.6%	<b>8.4%</b>
	Hispanic	506	91.9%	95.1%	2,898	78.3%	85.4%	<b>13.6%</b>
	Native American	27	85.2%	88.9%	132	70.5%	79.5%	<b>14.7%</b>
	Other	46	95.7%	97.8%	516	83.9%	91.3%	<b>11.8%</b>
	White	631	93.8%	95.6%	6,661	83.6%	89.3%	<b>10.2%</b>
	<b>Sub Total</b>	<b>1,315</b>	<b>92.7%</b>	<b>95.1%</b>	<b>10,803</b>	<b>81.8%</b>	<b>87.9%</b>	<b>10.9%</b>
<b>Total</b>	<b>Total</b>	<b>3,539</b>	<b>78.9%</b>	<b>90.1%</b>	<b>35,302</b>	<b>66.2%</b>	<b>81.6%</b>	<b>12.7%</b>

### Self-motivation Issue

Library 502 is Supervised Tutoring that offers drop-in tutorial assistance in both high school equivalent courses and in university transfer courses. Since it's not a required class, those who seek tutorial assistance from Library 502 may be students who are motivated and able to navigate to the right source of help. In behavioral science, learning included, it's common knowledge that self-motivation is a contributing factor in success in life. Yet, no evidence exists to support the notion that those who do not utilize Library 502 are not self-motivated. Furthermore, students do not have to rely on Library 502 as their sole source of tutorial support. Further, not all students must rely on tutorial service to be successful. Therefore, the study disregards the self-motivation factor, instead, focuses on the empirical data of course success.

### Conclusion

This longitudinal study examines the effect of tutoring (the LIBR502 course) at Cabrillo on students' success and retention. Pre-collegiate basic skills students seem to benefit most significantly from tutoring compared to those who did not seek the service. Younger students benefit the most from tutoring as well.