SBCCD Distance Education Success and Retention Rates
2005 – 2006 to 2009 – 2010

Overview: The following brief illustrates the number of grades on record earned (GOR), and the success and retention rates for courses in the San Bernardino Community College District (SBCCD) from 2005 – 2006 to 2009 – 2010 by instruction method. In addition, student performance in lecture courses is compared to student performance in online courses while controlling for term, instructor, and course.

Summary of Findings:
- The number of grades on record (GOR) in internet sessions has increased from 4,453 in 2005 – 2006 to 9,371 in 2009 – 2010, a 110% increase.
- The success rate in online courses has increased from 53.7% in 2005 – 2006 to 59.9% in 2009 – 2010, a 12% increase (.599-.537/.537).
- The retention rate in online courses has increased from 75.2% in 2005 – 2006 to 80.7% in 2009 – 2010, a 7% increase (.807-.752/.752).
- When controlling for term, course, and instructor the overall five year success rate is the same for both lecture (61.6%) and online (61.0%) courses.

Methodology: Tables 1 and 2 display the success and retention rates for SBCCD by instruction method from 2005 – 2006 to 2009 – 2010. Instruction method refers to the method of instruction. There are ten methods of instruction identified in Tables 1 and 2: clinical, two-way video and audio, one-way video, internet with delayed interaction, independent study, field experience, laboratory, lecture, and work experience. **The internet – delayed interaction instruction method is the method often referred to as distance education.** At the same time, distance education also includes two-way video and audio, and one-way video.

When examining the success and retention rates illustrated in Tables 1 and 2 it is essential to not compare the success and retention rates of different instructional methods because each method does not control for instructor and discipline, and would be misleading. Comparing the success and retention rates longitudinally is more methodologically sound. In addition, a second more methodologically sound method than comparing across instructional methods is to compare success and retention rates while controlling for instructor, term, and course. Accordingly, Table 3 illustrates the results of comparing lecture to distance education courses for the same term, instructor, and course. Specifically, if an instructor taught both an online and lecture course within the same term the performance of students in each of these courses was compared.

Definitions: The number of GOR refers to one of the following grades and is also the number of students enrolled at census: A, B, C, D, F, P (CR), NP (NC), I, or W. Success rate is the number of A, B, C, or P grades divided by the number of GOR, and retention rate is the number of A, B, C, D, F, P, NP, or I grades divided by the number of GOR.

Effect Size and Statistical Significance. The effect size statistic is commonly used in meta-analyses. A meta-analysis uses quantitative techniques to summarize the findings from a number of studies on a particular topic to determine the average effect of a given technique. One method of interpreting effect size was developed by Jacob Cohen. Jacob Cohen defined "small," "medium," and "large" effect sizes. He explained that an effect size of .20 can be considered small, an effect size of .50 can be considered medium, and an effect size of .80 can be considered large. Effect size is calculated by dividing the difference of the two means by the pooled standard deviation. It is important to mention that the

number of students in each group does not influence Effect Size; whereas, when statistical significance is calculated the number of students in each group does influence the significance level (i.e. "p" value being lower than .05). Accordingly, using Cohen as a guide, a substantial effect would be .20 or higher.

Findings: The distance education sessions with the highest enrollments at SBCCD are the delayed interaction (i.e. internet) internet sessions. Specifically, the number of GOR in internet sessions has increased from 4,453 in 2005 – 2006 to 9,371 in 2009 – 2010, a 110% increase. In contrast, lecture sessions have only had a 17% increase from 2005 – 2006 to 2009 – 2010. Equally important, the success rate in internet sessions has increased from 53.7% in 2005 – 2006 to 59.9% in 2009 – 2010, a substantial increase (ES* = .13).

Figure 1. Internet Delayed Interaction Retention and Success Rates from 2005 – 2006 to 2009 – 2010.
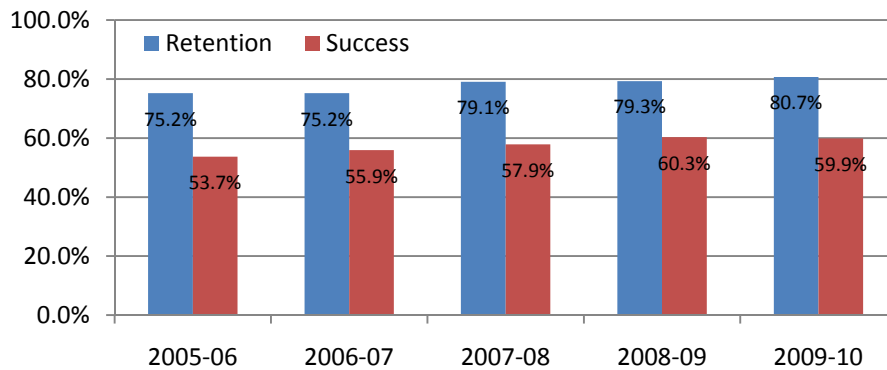
* A .10 effect size corresponds to a Pearson r of .05. The effect size represents the magnitude of the difference between the target and the baseline measure. Using an effect size increases the likelihood that the difference is not only statistically significant but practical as well.

Table 3 and Figure 2 indicate that when controlling for term, course, and instructor the overall four year success rate for lecture (61.6%) and online courses (61.0%) is the same for both types of courses. Equally important, none of the differences in success rate are statistically or substantially different from one another (see Table 3). A limitation of these findings is that not all online courses are included in the comparison because many of the online instructors did not teach the same lecture course in the same term in which they taught the online course.

Figure 2. Success Rates from 2006 – 2007 to 2009 – 2010 by Lecture and Online Courses taught by the Same Instructor in the Same Semester.
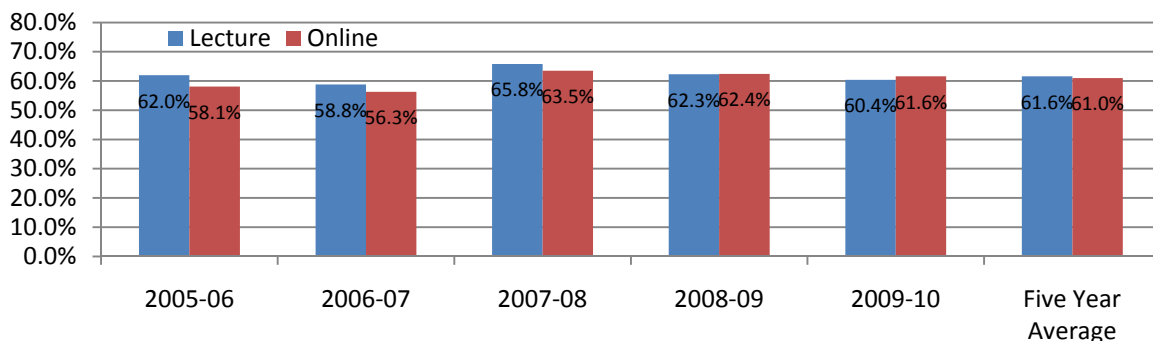
Table 1: Success Rate by Instructional Method from 2005 – 2006 to 2009 – 2010.

Instruction Method	2005 – 2006			2006 – 2007			2007 – 2008			2008 – 2009			2009 – 2010		
	#	N	%	#	N	%	#	N	%	#	N	%	#	N	%
Clinical	93	93	100.0	76	77	98.7	67	68	98.5	92	94	97.9	70	71	98.6
Two-way Video/Audio				51	70	72.9	51	61	83.6	36	39	92.3	28	57	49.1
One-way Video	1,162	2,284	50.9	505	810	62.3	138	255	54.1						
Internet – Delayed Interaction	2,392	4,453	53.7	2,378	4,250	56.0	3,629	6,263	57.9	5,215	8,645	60.3	5,613	9,371	59.9
Independent Study	118	175	67.4	85	110	77.3	80	89	89.9	42	53	79.2	66	83	79.5
Field Experience	46	50	92.0	33	38	86.8	29	31	93.5	47	50	94.0	25	27	92.6
Laboratory	5,445	7,277	74.8	5,573	7,504	74.3	5,460	7,268	75.1	6,597	8,486	77.7	6,929	8,987	77.1
Lecture	57,513	86,231	66.7	57,864	87,538	66.1	61,349	91,869	66.8	68,722	99,925	68.8	67,850	101,014	67.2
Work Experience	748	1241	60.3	716	1166	61.4	697	1149	60.7	658	984	66.9	272	418	65.1
Total	67,517	101,804	66.3	67,281	101,563	66.2	71,500	107,053	66.8	81,409	118,276	68.8	80,853	120,028	67.4

Note. The blue font refers to distance education sessions, "#" refers to the number of successful grades, "N" refers to the number of GOR, and "%" is # divided by N.

Table 2: Retention Rate by Instructional Method from 2005 – 2006 to 2009 – 2010.

Instruction Method	2005 – 2006			2006 – 2007			2007 – 2008			2008 – 2009			2009 – 2010		
	#	N	%	#	N	%	#	N	%	#	N	%	#	N	%
Clinical	93	93	100.0	76	77	98.7	67	68	98.5	94	94	100.0	71	71	100.0
Two-way Video/Audio				56	70	80.0	53	61	86.9	37	39	94.9	45	57	78.9
One-way Video	1,674	2,284	73.3	686	810	84.7	197	255	77.3						
Internet – Delayed Interaction	3,348	4,453	75.2	3,195	4,250	75.2	4,951	6,263	79.1	6,855	8,645	79.3	7,565	9,371	80.7
Independent Study	161	175	92.0	101	110	91.8	82	89	92.1	45	53	84.9	72	83	86.7
Field Experience	50	50	100.0	37	38	97.4	31	31	100.0	50	50	100.0	27	27	100.0
Laboratory	6,341	7,277	87.1	6,406	7,504	85.4	6,270	7,268	86.3	7,500	8,486	88.4	7,906	8,987	88.0
Lecture	72,389	86,231	83.9	72,852	87,538	83.2	77,570	91,869	84.4	85,610	99,925	85.7	85,879	101,014	85.0
Work Experience	992	1,241	79.9	859	1,166	73.7	842	1,149	73.3	775	984	78.8	321	418	76.8
Total	85,048	101,804	83.5	84,268	101,563	83.0	90,063	107,053	84.1	100,966	118,276	85.4	101,886	120,028	84.9

Note. The blue font refers to distance education sessions, "#" refers to the number of retained students, "N" refers to the number of GOR, and "%" is # divided by N.

Table 3: Success and Retention Rates from 2005 – 2006 to 2009 – 2010, Effect Sizes, and P-Values by Lecture and Distance Education Courses taught by the Same Instructor in the Same Semester.

Academic Year	Lecture Course			Distance Education Course			ES*	P-Value**
	#	N	%	#	N	%		
Success								
2005 – 2006	494	797	62.0	406	699	58.1	-.08	.125
2006 – 2007	483	822	58.8	524	930	56.3	-.05	.308
2007 – 2008	617	937	65.8	685	1,079	63.5	-.05	.269
2008 – 2009	1,194	1,915	62.3	1,009	1,617	62.4	.00	.976
2009 – 2010	1,637	2,709	60.4	1,301	2,111	61.6	.02	.396
Total	4,425	7,180	61.6	3,925	6,436	61.0	-.01	.441
Retention								
2005 – 2006	683	797	85.7	552	699	79.0	-.18	.001***
2006 – 2007	636	822	77.4	713	930	76.7	-.02	.726
2007 – 2008	790	937	84.3	917	1,079	85.0	.02	.675
2008 – 2009	1,613	1,915	84.2	1,295	1,617	80.1	-.11	.001***
2009 – 2010	2,293	2,709	84.6	1,720	2,111	81.5	-.08	.004***
Total	6,015	7,180	83.8	5,197	6,436	80.7	-.08	< .001***

* A .20 effect size corresponds to a Pearson r of .10. The effect size represents the magnitude of the difference between the target and the baseline measure. Using an effect size increases the likelihood that the difference is not only statistically significant but practical as well.

**The P-Value is an indication of statistical significance. Statistical significance exists when the P-value is less than .05 indicating that the difference between the groups is likely to be due to chance only 5 out of 100 times. It is important to note that the p-value is influenced by the number of cases.

***The difference is statistically significant.