OFFICE OF PLANNING, RESEARCH, AND ACCREDITATION

Outcomes for Students Taking AVID-Infused Courses

Examining Grades

S. Dean Crews

Date Created: 8/16/2016

Purpose:

This report supplements the Analysis of Student Success Metrics for AVID (Spring 2015, Summer 2015, and Fall 2015). A copy of that report is included in Appendix A. While the aforementioned report examined the AVID courses on a section by section basis, the current report examines outcomes for individual students who participated in an AVID-infused course from the inception of the AVID program in Spring 2015 through Summer 2016. A comparison group was randomly selected from the students who participated in a Non AVID-infused section of the same courses.

The current report will provide a summary of the available data in an effort to address the following questions:

- Do students' grades improve in the terms following an AVID-infused course when compared to grades in terms preceding an AVID-infused course?
- Do students who participate in an AVID-infused section of a course earn higher grades in subsequent semester than students who have never participated in AVID-infused section where the courses were equivalent?
- Do particular groups of students reap greater benefits from participating in AVID-infused instruction?

Key Findings:

- Students' mean grades improved from pre-AVID levels in the terms following an AVID-infused course by .10 grade points. The improvement would probably be seen even if different samples of students were used.
- AVID-participating students' mean grades improved when compared to non-AVID students in the terms following participation in AVID-based courses. The magnitude of improvement was .05 grade points. However, the apparent improvement could have been due to chance based on the make-up of the samples in this study.
- Some groups benefit more from AVID-based pedagogy than do others. In fact, the African-American ethnic group performed worse over the long-term following AVID-based courses.
- The beneficial effect of AVID-based instruction appears to be additive for the first two exposures.

Caveats:

This research is based on a quasi-experimental design. Students were not randomly assigned to the AVID condition. Students were not randomly assigned to sections, but they are nested within sections. The sections are crossed with AVID instruction. The nature of such a design carries with it certain implications for interpreting the findings.

- Associations identified in quasi-experimental research meet one important requirement of causality since the intervention precedes the measurement of the outcome.
- Another requirement is that the outcome can be demonstrated to vary statistically with the intervention. Importantly, statistical association does not imply causality. Thus, in many quasi-experimental designs one is left with the question, "Are there alternative explanations for the apparent causal association?" If these alternative explanations are credible, then the evidence for causation is less convincing.

- The lack of random assignment is the major weakness of the quasi-experimental study design. An inability to sufficiently control for important confounding variables arises from the lack of randomization. A variable is a confounding variable if it is associated with the exposure of interest and is also associated with the outcome of interest; the confounding variable leads to a situation where a causal association between a given exposure and an outcome is observed as a result of the influence of the confounding variable.

Background

AVID learning strategies are instructional techniques that build a personalized, high-engagement learning environment in the classroom. Content in AVID courses remains the same as non-AVID courses. There is no additional work.

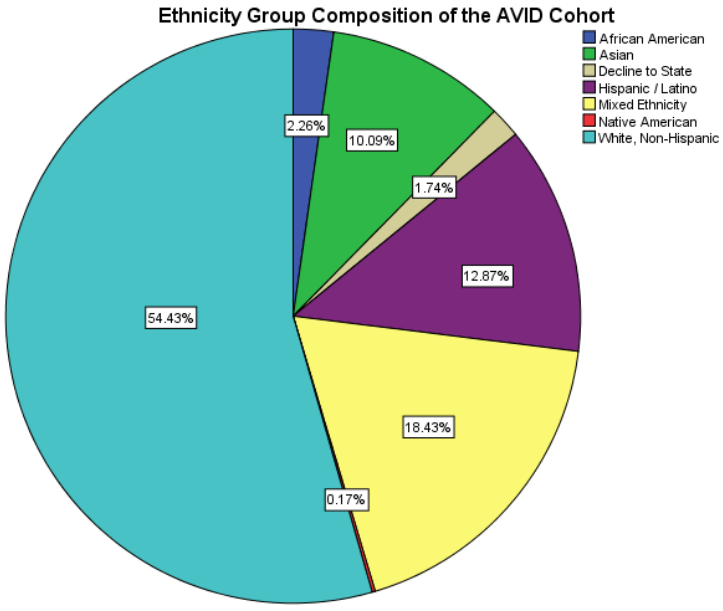
Sections within courses are specifically listed as AVID-based on the AVID website. Students have access to information that will assist them in the determination to seek out AVID-based sections of specific courses prior to registration.

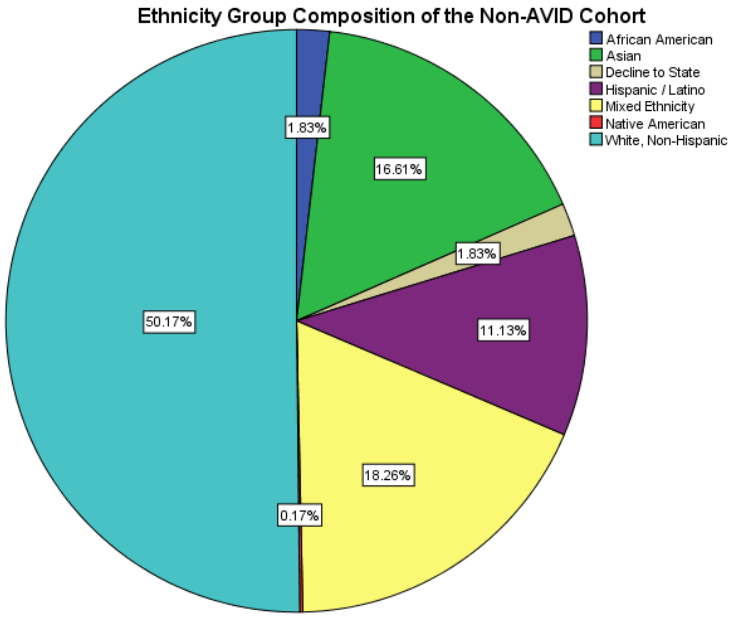
Saddleback College is the first California community college to incorporate AVID strategies. 2013-2014 was our planning year and Saddleback College began offering AVID-based courses in the Spring of 2015.

For the purpose of this research, only courses offered in departments listed in Appendix B were considered in the calculation of student GPAs.

Demographic Characteristics of Students in the AVID and Non-AVID Conditions

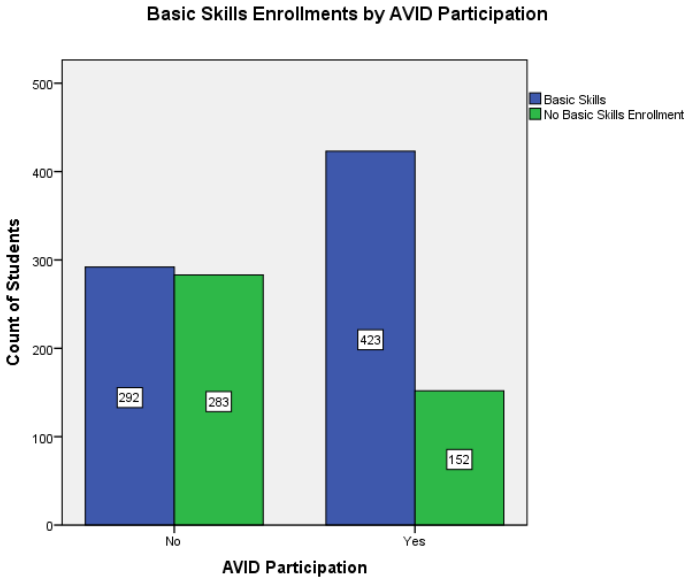
The cohort of interest included 1,150 individual students, equally divided between students who had participated in at least one AVID-based section of a course and students who had never participated in an AVID-based section of any course. All students had participated in the same **course**. The requirement that all students in the study complete at least 12 units post-AVID participation resulted in 575 subjects from the total group of AVID participants of 5,449. The non-AVID cohort was randomly chosen using the selection algorithms in the Statistical Package for the Social Sciences (SPSS).





The ethnicity group make-up of both the AVID and Non-AVID cohorts roughly corresponds to the ethnicity distribution on the Saddleback College campus as a whole. There are slightly fewer Whites and slightly more Asians in the Non-Avid cohort.

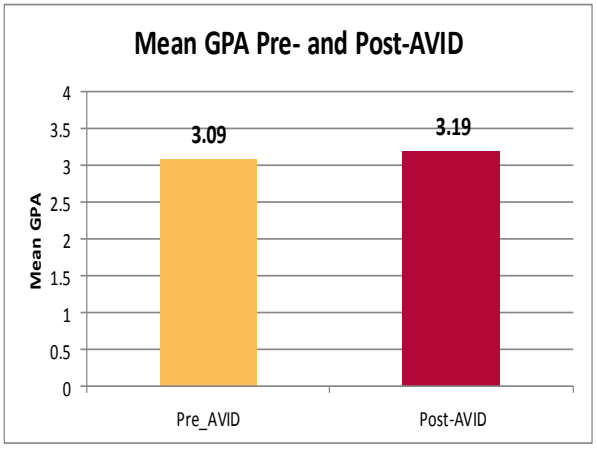
The percentage of students who enrolled in basic skills courses (courses below transfer level) was much higher in the AVID than the Non-AVID cohort. In the Non-AVID cohort, 50.8% of students enrolled in basic skills courses while 49.2% did not. In the AVID cohort 73.6% of students enrolled in basic skills courses while only 26.4% did not.



Results

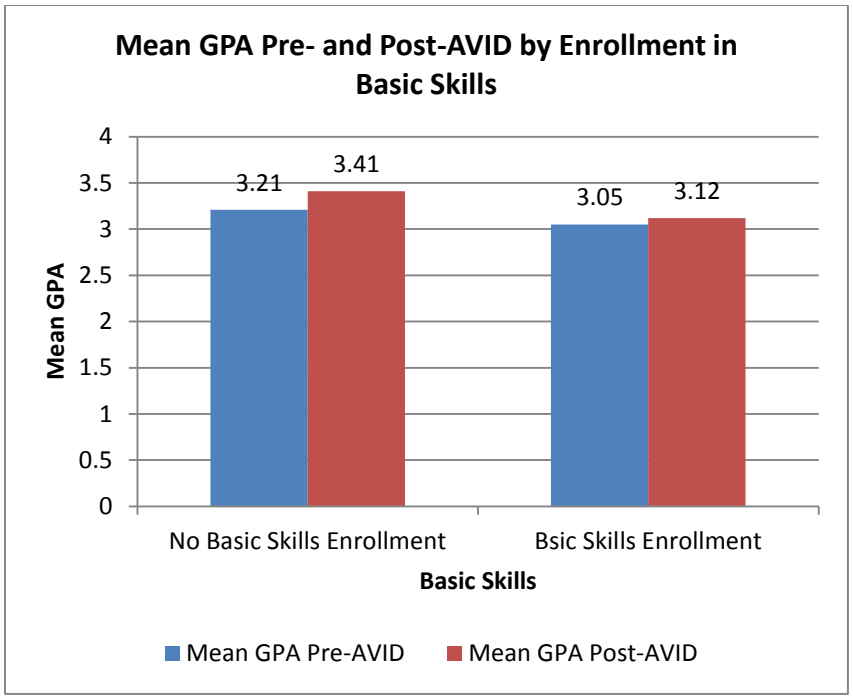
Pre- and Post-AVID GPA Comparison

The first question asks whether students' GPA improves after exposure to an AVID-based course. 575 students completed a minimum of 12 credits both pre- and post-AVID instruction. The mean Pre-AVID and Post-AVID GPA's of each student was compared. The mean GPA over the 12 credits prior to exposure to AVID based instruction was 3.09 for all students. The mean GPA over the 12 units following exposure to AVID-based instruction increased to 3.19. The mean GPAs are reflected in the following graph.



A *paired samples t-test* informs the inference that similar results would probably be obtained even if different samples of students were chosen. There is a less than 5% probability that the result was simply due to the chance makeup of the sample of 575 students. The results of the *t-test* are included in Appendix C.

When students' level of preparation is also considered, the difference in scores is more pronounced. Students who enrolled in basic skills courses in Math, English, or ESL improved mean GPAs by .07 grade points from pre-to post-AVID, while those students who did not enroll in basic skills courses (entered Saddleback College as prepared students) saw an improvement of .2 grade points from pre- to post-AVID. The change in mean GPA is depicted in the following graph, and the number of students in each condition is reflected in the chart.



		Mean GPA Pre-AVID	Mean GPA Post-AVID
Basic Skills Enrollment	Mean	3.05	3.12
	N	423	423
No Basic Skills Enrollment	Mean	3.21	3.41
	N	152	152
Total	Mean	3.09	3.19
	N	575	575

AVID- and Non AVID-based Instruction Comparison

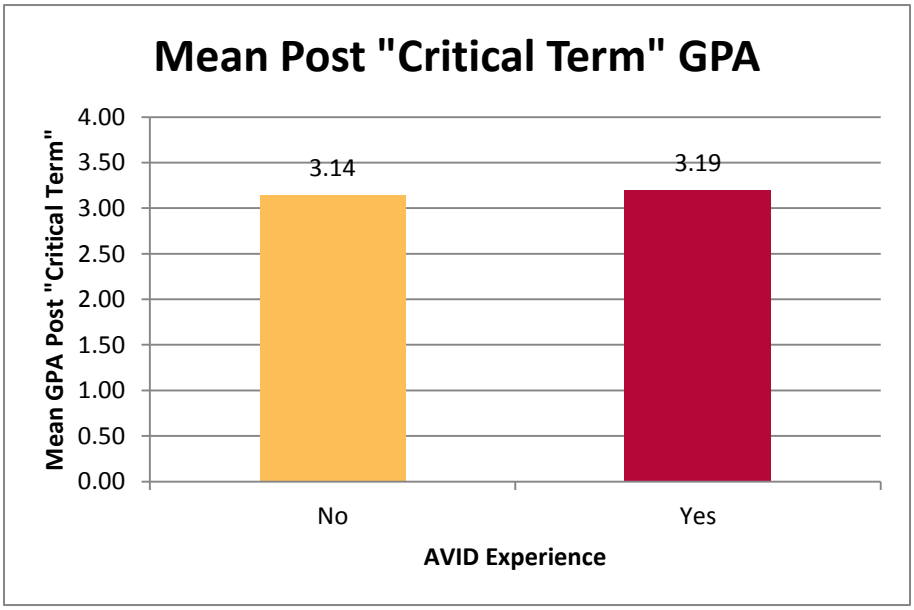
A single course may have many sections. Some sections are AVID-infused while other sections of the same course are not AVID infused. Two students might participate in the same course but by enrolling in different sections one might participate in AVID-based instruction while the other student does not. The comparison of AVID and Non AVID instruction makes use of this section by section distinction.

This comparison is based on the AVID cohort (those students who had enrolled in at least one AVID-based section, n = 575) when compared to 575 statistically similar students had enrolled in a non-AVID section of the same course in their corresponding "critical term" semester. A student's "critical term" is the term during which they enrolled in their first AVID-based course. For those students who were identified as Non-AVID their "critical term" is the term during which they enrolled in the same course the AVID cohort enrolled in. The GPA was calculated for courses following the "critical term". The following table presents the mean GPA for the Non-AVID and AVID cohort.

Mean GPA Post "Critical Term"

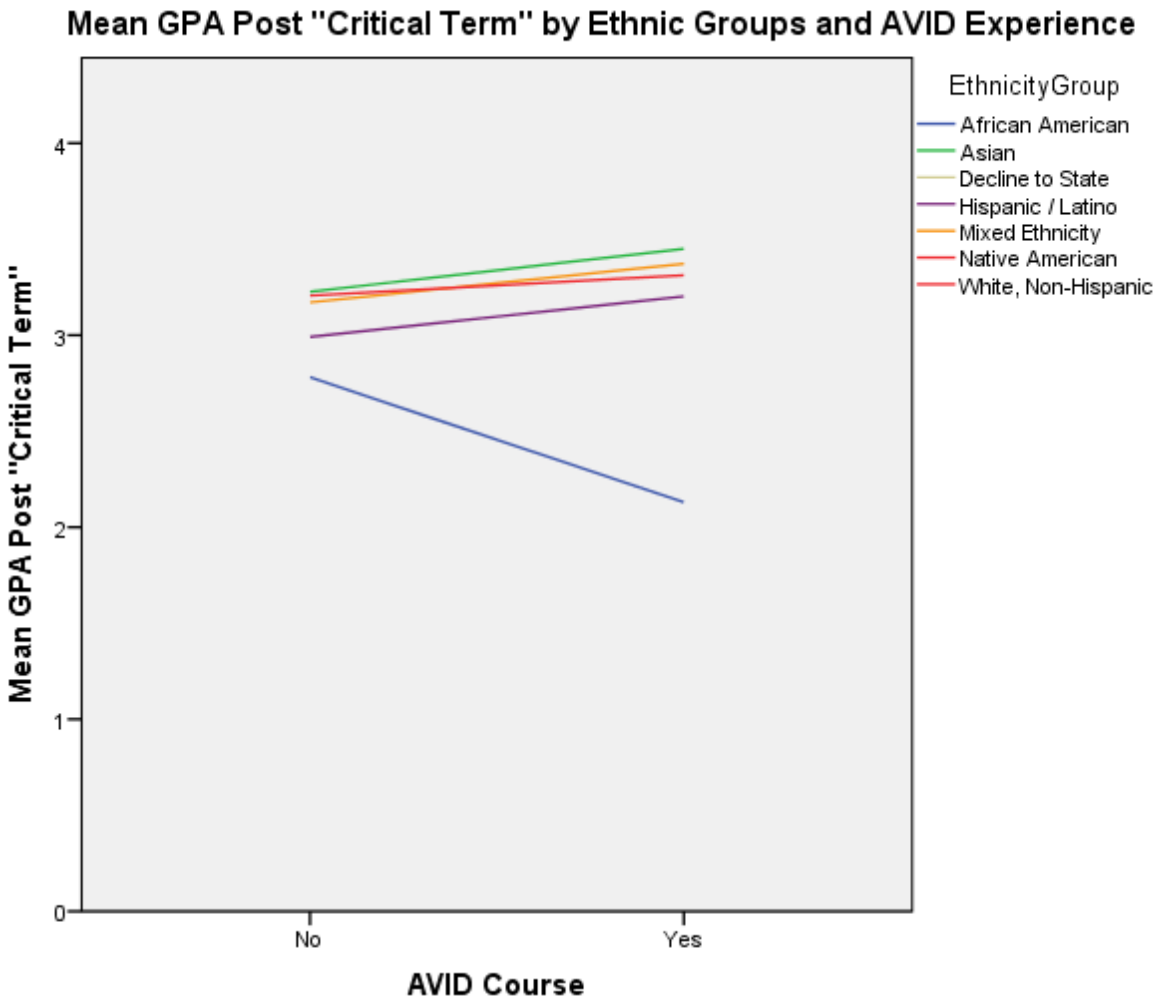
AVID Experience	Mean GPA	Std. Deviation
No	3.14	.617
Yes	3.19	.611
Total	3.17	.615

The following graph visually presents the mean GPA post "critical term".



An Analysis of Variance (*ANOVA*) procedure informs the inference that similar results would probably be obtained even if different samples of students were chosen. There is a 16.4% probability that the result was simply due to the chance makeup of the sample of 1150 students. The result of the *ANOVA* can be found in Appendix C.

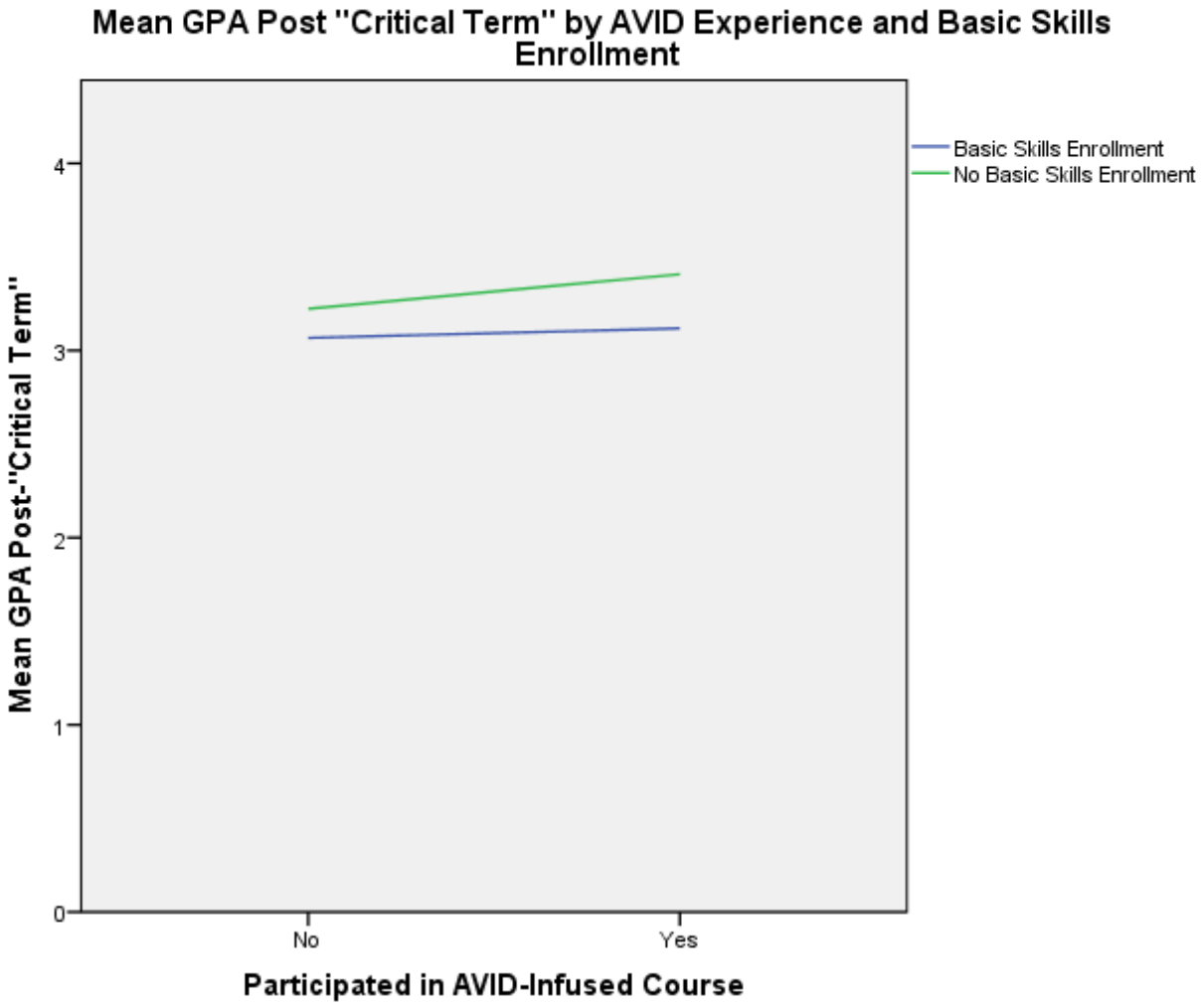
It is important to consider the effect of AVID experience on different groups of students. The following graph depicts differential effects for groups of students based on ethnicity groups. The African-American group had higher post- "critical term" GPA's in the non-AVID condition than in the AVID condition. The remaining groups had higher post-"critical term" GPA's though the difference was not as pronounced for the White Non-Hispanic students.



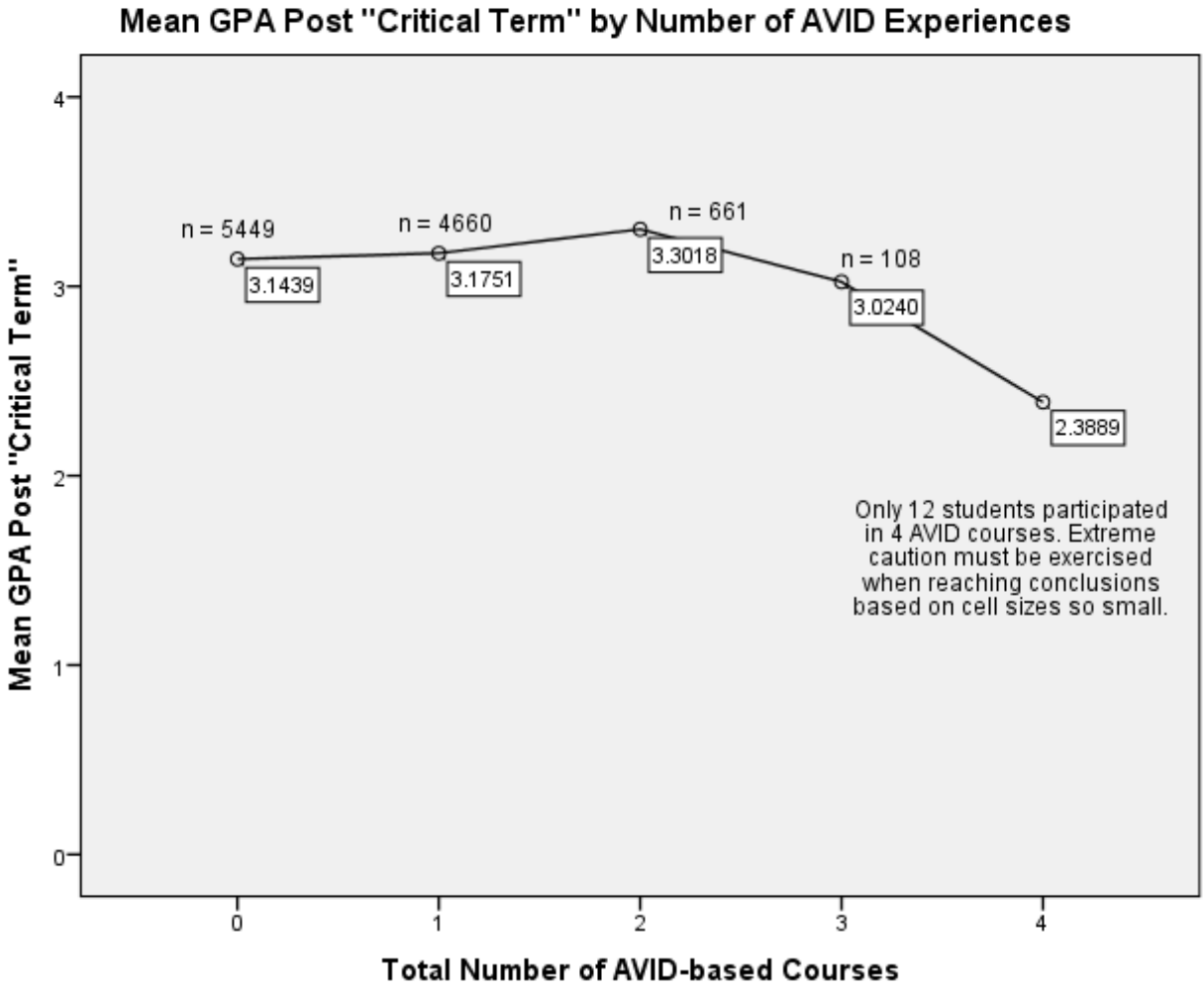
When basic skills enrollees are disaggregated the differential impact of AVID-infused courses on GPA in subsequent courses (or post-"critical term") appears. Those students whose higher education career includes enrolling in basic skills courses did not benefit from AVID participation to the same degree as students who did not need basic skills. Students who enrolled in basic skills and participated in AVID earned a mean post-"critical term" GPA of 3.12 compared to a mean post-"critical term" GPA for the students who did not enroll in basic skills and participated in AVID courses of 3.41, a difference of .29 grade points. For the non-AVID cohort the difference was .15 grade points.

Mean Post-"Critical Term" GPA

AVID	Bsic Skills	Mean	N
No	Basic Skills Enrollment	3.07	292
	No Basic Skills Enrollment	3.22	283
	Total	3.14	575
Yes	Basic Skills Enrollment	3.12	423
	No Basic Skills Enrollment	3.41	152
	Total	3.19	575
Total	Basaic Skills Enrollment	3.10	715
	No Basic Skills Enrollment	3.29	435
	Total	3.17	1150



The number of AVID experiences affected post-"critical term" GPA. Students having exposure to two AVID-based courses had a GPA of 3.30 while those students having exposure to four AVID-based courses had the lowest GPA at 2.39. Those students with no AVID-based courses had a GPA of 3.14. The number of students participating in four AVID-infused courses is very small (*n* = 12) in the absolute, and more troubling is very small in comparison to participation numbers for one, two, and zero AVID-based courses. The mean GPA for students participating in three and four courses must therefore be used with extreme caution.



Ethnicity differences in the composition of the groups having more than one exposure to AVID instruction are displayed in the following table. At three exposures the makeup of the group dramatically shifted to Hispanic/Latino ethnicity. This ethnicity group made up 26.9% of the three-exposure group which represented an increase from 12.6% at one exposure and 15.7% at two exposures. This is finding is of particular importance when coupled with the interaction effect already seen between ethnicity and AVID benefit.

Total AVID Classes * Ethnicity Group Crosstabulation

			EthnicityGroup									
			African American	Asian	Decline to State	Hispanic / Latino	Middle Eastern	Mixed Ethnicity	Native American	Pacific Islander	White, Non-Hispanic	Total
Total AVID Classes	1	Count	$129_{a, b}$	$427_{a, b}$	$83_{a, b}$	586_{b}	$1_{a, b}$	$942_{a, b}$	$18_{a, b}$	$12_{a, b}$	2462_{a}	4660
		% within Total AVID Classes	2.8%	9.2%	1.8%	12.6%	.0%	20.2%	.4%	.3%	52.8%	100.0%
		% within Ethnicity Group	84.9%	87.0%	88.3%	81.4%	100.0%	84.6%	90.0%	85.7%	86.8%	85.6%
		% of Total	2.4%	7.8%	1.5%	10.8%	.0%	17.3%	.3%	.2%	45.2%	85.6%
	2	Count	18_{a}	55_{a}	9_{a}	104_{a}	0_{a}	142_{a}	2_{a}	2_{a}	329_{a}	661
		% within TotalAVIDClasses	2.7%	8.3%	1.4%	15.7%	0.0%	21.5%	.3%	.3%	49.8%	100.0%
		% within EthnicityGroup	11.8%	11.2%	9.6%	14.4%	0.0%	12.8%	10.0%	14.3%	11.6%	12.1%
		% of Total	.3%	1.0%	.2%	1.9%	0.0%	2.6%	.0%	.0%	6.0%	12.1%
	3	Count	$5_{a, b}$	$8_{a, b}$	$2_{a, b}$	29_{b}	$0_{a, b}$	$24_{a, b}$	$0_{a, b}$	$0_{a, b}$	40_{a}	108
		% within Total AVID Classes	4.6%	7.4%	1.9%	26.9%	0.0%	22.2%	0.0%	0.0%	37.0%	100.0%
		% within Ethnicity Group	3.3%	1.6%	2.1%	4.0%	0.0%	2.2%	0.0%	0.0%	1.4%	2.0%
		% of Total	.1%	.1%	.0%	.5%	0.0%	.4%	0.0%	0.0%	.7%	2.0%
	4	Count	0_{a}	1_{a}	0_{a}	0_{a}	0_{a}	5_{a}	0_{a}	0_{a}	6_{a}	12
		% within Total AVID Classes	0.0%	8.3%	0.0%	0.0%	0.0%	41.7%	0.0%	0.0%	50.0%	100.0%
		% within Ethnicity Group	0.0%	.2%	0.0%	0.0%	0.0%	.4%	0.0%	0.0%	.2%	.2%
		% of Total	0.0%	.0%	0.0%	0.0%	0.0%	.1%	0.0%	0.0%	.1%	.2%
	5	Count	0_{a}	0_{a}	0_{a}	1_{a}	0_{a}	0_{a}	0_{a}	0_{a}	0_{a}	1
		% within Total AVID Classes	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
		% within Ethnicity Group	0.0%	0.0%	0.0%	.1%	0.0%	0.0%	0.0%	0.0%	0.0%	.0%
		% of Total	0.0%	0.0%	0.0%	.0%	0.0%	0.0%	0.0%	0.0%	0.0%	.0%
Grand Total		Count	152	491	94	720	1	1113	20	14	2837	5442
		% within Total AVID Classes	2.8%	9.0%	1.7%	13.2%	.0%	20.5%	.4%	.3%	52.1%	100.0%
		% within Ethnicity Group	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	2.8%	9.0%	1.7%	13.2%	.0%	20.5%	.4%	.3%	52.1%	100.0%

Conclusions

Participating in courses incorporating AVID pedagogical approaches is associated with improvements in student performance as measured by grades received. Participation in AVID-informed courses was associated with an improvement of .10 grade points.

However, the improvement in GPA was most pronounced for certain groups of students. In particular, there was an interaction between ethnicity and AVID benefits. This interaction effect between student characteristics and AVID-based instruction should be further studied.

Some students showed dramatic improvement in GPA in both the AVID and the non-AVID condition. Some students in both conditions showed dramatic decline in GPA. Further research could help to identify the characteristics of "improvers" and the "decliners" in an attempt to identify other interventions that might improve the academic careers of struggling students.

Appendix A

Analysis of Student Success Metrics for AVID

Executive Summary

Purpose

The AVID team requested student completion and persistence data on AVID infused sections compared to Non-AVID sections of the same courses. The intended goal was to gauge whether teaching an AVID curriculum makes a difference in student performance.

Method

The data for this analysis was extracted from the South Orange County Community College District's (SOCCCD) data warehouse, inFORM. *Metrics used in this analysis include sections counts, persistence to the next major semester (Fall and Spring only), and success/retention rates. The data was examined across* three terms: Spring 2015, Summer 2015, and Fall 2015. Since the summer semester is not considered a major semester, the data does not include a persistence table for that term. For purposes of consistency, the non-AVID sections that were analyzed were from the same courses that also offered AVID sections. Below are the definitions of the metrics used in this analysis:

Success Rate - The percentage of students who ended the semester with a passing grade. It is based on the number of students who receive a passing/satisfactory grade of A, B, C, CR, and P. Non-passing grades, incompletes, and W's are counted against the success rate.

Retention Rate – The percentage of students who maintained enrollment in the course until the end of the semester. It is based on the number of students who do not withdraw from class and who receive a grade (A,B,C,D,F,I,CR,NC,P,NP). Only W's are counted against the retention rate. Students who drop or are dropped by the no-penalty dropped date are not used in this calculation.

Persistence Rate – The percentage of students who enrolled in the next major semester (either Fall to Spring or Spring to Fall).

Findings

Across the three semesters (Spring 2015, Summer 2015, and Fall 2015); data suggest that about 3% of our total section offerings are AVID-infused (Spring 2015 was the first semester that AVID sections were offered, so there were less section offerings).

Spring 2015 –

- Roughly 1.3% of all section offerings were AVID
- Students enrolled in non-AVID sections had a 7% higher Persistence Rate than those in AVID sections.
- Student enrolled in AVID sections had a 3% higher Success Rate than those in non-AVID sections (3%).
- Students enrolled in AVID sections had a 5% higher Retention Rate than those in non-AVID sections (5%).

Summer 2015 –

- Roughly 3% of all section offerings were AVID
- Student enrolled in AVID sections had a .5% slightly higher Success Rate than those in non-AVID sections.
- Students enrolled in non-AVID sections had a 1.3% higher Retention Rate than those in AVID sections.

Fall 2015 –

- Roughly 3% of all section offerings were AVID
- Students enrolled in non-AVID sections had a 5% higher Persistence Rate than those in AVID sections.
- Student enrolled in AVID sections had a 3% higher Success Rate than those in non-AVID sections.
- Students enrolled in AVID sections had a 2% higher Retention Rate than those in non-AVID sections.

Data Tables

Spring 2015:

Table 1.1 Section Counts by AVID Status

Spring 2015

	Section Count	Percent of Total (%)
AVID	29	1.3%
Non-AVID	2,221	98.7%
Total	**2,250**	**100%**

Table 1.2 Persistence to the Next Major Semester by AVID Status

Spring 2015

	AVID Sections		Non-AVID Sections	
	Student Count	Percent of Total (%)	Student Count	Percent of Total (%)
Did Not Persist	239	30.3%	455	23.6%
Persisted	551	69.7%	1,475	76.4%
Total	**790**	**100%**	**1,930**	**100%**

Table 1.3. Success and Retention Rates by AVID Status

Spring 2015

	AVID Sections	Non-AVID Sections
Success Rate	80.5%	77.7%
Retention Rate	92.4%	87.3%

Summer 2015:

Table 2.1 Section Counts by AVID Status

Summer 2015

	Section Count	Percent of Total (%)
AVID	24	2.9%
Non-AVID	799	97.1%
Total	**823**	**100%**

Table 2.2 *Success and Retention Rates by AVID Status*

Summer 2015

	AVID Sections	Non-AVID Sections
Success Rate	77.7%	77.5%
Retention Rate	88.3%	89.6%

Fall 2015:

Table 3.1 Section Counts by AVID Status

Fall 2015

	Section Count	Percent of Total (%)
AVID	64	2.9%
Non-AVID	2,109	97.1%
Total	**2,173**	**100%**

Table 3.2 Persistence to the Next Major Semester by AVID Status

Fall 2015

	AVID Sections		Non-AVID Sections	
	Student Count	Percent of Total (%)	Student Count	Percent of Total (%)
Did Not Persist	313	17.4%	614	12.8%
Persisted	1,489	82.6%	4,201	87.2%
Total	**1,802**	**100%**	**4,815**	**100%**

Table 3.3 Success Rate by AVID Status

Fall 2015

	AVID Sections	Non-AVID Sections
Success Rate	76.5%	74.0%
Retention Rate	91.2%	88.8%

Conclusion

The analysis of students enrolled in AVID sections revealed that they generally had higher Success and Retention rates across the three semesters than those students enrolled in non-AVID sections of the same courses. Interestingly, the data also showed that more students in non-AVID sections persisted to the next major semester than those students in AVID sections.

Further examination of data is necessary in order to determine whether the success metrics revealed in this report may necessitate adjustments to the AVID curriculum and/or program strategies. The college should continue to monitor this population.

Appendix B

Courses taught by the following Saddleback College Departments were included in the calculation of GPA in this research.

Department Description
Automotive Technology
Family & Consumer Sciences
Humanities
Counseling
Physics
Theatre Arts
Computer Information Management
Paralegal
Paramedic
Art History
Fine Arts
Horticulture
Physical Sciences
Art (Studio)
Family & Consumer Services
Gender Studies
Medical Assistant
Medical Lab Technician
Philosophy
Human Development
Marine Technology
Accounting
Business
Construction Technology
Economics
Geological Sciences
Interdisciplinary Studies
Sociology
Office Systems and Administration
Biology
Health Information Technology
Legal Studies
Speech

Art History and Theory
Computer Information Science
Graphics
Information Management Center
Kinesiology
Learning Assistance
Mathematics
Administrative Assistant
Anthropology
Communication Studies
Geology
Learning Assistance Program
Library Science
Oceanography
Psychology
Accounting and Finance
American Sign Language
Electronics
Emergency Medical Technician
Engineering
English
Geography
History
Rapid Digital Manufacturing
Cosmetology
English: Writing Conference
Sign Language
Sustainability and Resource Mgmt
Child Development
Computer Science Center
Education
Foreign Languages
Health Sciences
Reading
Special Services
Adapted Kinesiology
Classics
Computer Info Mgt
Electrical

Humanities Center
Nursing
Religious Studies
Theatre
Cinema, TV, Radio
Laser Technology
Photography
Political Science
Art
Drafting
Foods
Gerontology
Health
Travel Services
Astronomy
Digital Media Art
International Languages
Journalism
Library Research
Music
Recreation
Human Services
Administration of Justice
Architecture
Child Development & Ed Studies
Environmental Studies
Fashion
Chemistry
English as a Second Language
Ethnic Studies
Interior Design
Travel & Tourism
Women's Studies
Applied Psychology
Computer Info Sci (Contract Ed)
Computer Science
Real Estate

Appendix C

The results from the *paired samples t-test.*

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	GPAPre	3.09	575	.573	.024
	GPAPost	3.19	575	.611	.025

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	GPAPre - GPAPost	-.101	.607	.025	-.151	-.051	-3.994	574	.000

The *ANOVA* results are presented in the following table.

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
GPA Post * AVIDYN	Between Groups	(Combined)	.733	1	.733	1.943	.164
	Within Groups		433.257	1148	.377		
	Total		433.991	1149			