

# DUAL IMMERSION PROGRAM EVALUATION

Prepared for Mountain View Whisman School  
District

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In the following document, Hanover Research evaluates the Spanish-English Dual Immersion program that Mountain View Whisman School District implements in Kindergarten through Grade 5. Hanover compares program participants' outcomes with those of similar students who did not participate in the program.

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# EXECUTIVE SUMMARY AND KEY FINDINGS

## INTRODUCTION

In this report, Hanover Research (Hanover) evaluates the Spanish-English Dual Immersion (DI) program implemented in Grades K through 5 at Mountain View Whisman School District (MVWSD). Specifically, Hanover compares the post-program academic outcomes between program participants and similar peers who did not participate in the program. The analysis is separately conducted for students whose native language is English and students whose native language is not English (English Language Learners).

The academic outcomes include short-term outcomes: middle school yearly GPA, Standardized Testing and Reporting (STAR) outcomes, California Assessment of Student Performance and Progress (CAASPP) outcomes, and course grades; and long-term outcomes: students' high school yearly GPA and Smarter Balanced Assessment Consortium (SBAC) outcomes in Grade 11. Along with the report, Hanover provides an interactive Excel dashboard containing the outcomes of program participants and similar peers who did not participate in the program.

This report is organized as follows:

- **Section I: Data and Methodology** describes the data provided by MVWSD, and the propensity score matching and descriptive analysis methods.
- **Section II: Descriptive Analysis** identifies differences in academic outcomes between program participants and control group students. The Excel supplement file that accompanies this report contains an interactive dashboard that allows the user to make additional detailed comparisons beyond what is presented in the report.

## KEY FINDINGS

### NATIVE ENGLISH SPEAKERS

Among native English speakers, DI participants generally have better academic performance than similar peers who do not participate in the DI program. However, we find that this difference is not statistically significant in some cases.

- **In Grades 6 through 11, DI participants have higher yearly GPA than the control group.**
  - In middle school, DI participants have a higher yearly GPA than the control group, by 0.18 to 0.24 points. However, only the difference in Grade 6 is statistically significant.
  - In high school, DI participants have statistically significantly higher yearly GPAs than the control group, by 0.54 to 0.7 points.
- **In the short term (Grades 5-8), DI participants tend to have better STAR/CAASPP test performance than similar peers who did not participate DI program.**

- DI participants score higher than similar non-participants in STAR ELA and Mathematics tests, by margins ranging from 36 to 64 points. Additionally, DI participants outscore the control group by 80.1 points in the STAR Social Science assessment.
- There is not a significant difference between DI participants' and non-participants' CAASPP outcomes. While Grade 5 DI participants have lower scores compared to similar non-participants, this reverses in all subsequent grades.
- **In Grades 6 through 8, DI participants also have higher course grades than similar peers who did not participate in the DI program.** However, in most grade levels and subjects, this difference is not statistically significant.

### ENGLISH LANGUAGE LEARNERS (ELLs)

Among English Language Learners, generally there are no statistically significant differences between the academic performance of DI participants and non-DI peers. Unlike what we find among native English speakers, ELLs who participate in DI do not perform as well as similar non-DI ELLs.

- **In regards to short-term outcomes (Grades 5-8), DI participants score lower than similar non-DI peers on STAR and CAASPP tests.**
  - In Grade 5, DI participants have a significantly lower scale score than the control group on the CAASPP ELA and Science tests. DI participants score 36 points lower in ELA and 27.5 points lower in Science, compared with non-participants. However, this difference decreases in later grades.
  - On STAR tests, DI participants score lower than non-participants in Grades 5 and 7. However, this difference is not statistically significant.

## SECTION I: DATA AND METHODOLOGY

In this section, Hanover explains the data that we analyze in this report and the methodology that we use to conduct our analyses.

### DATA OVERVIEW

To support this study, MVWSD provided seven general types of student-level data: enrollment, course grades, CELDT outcomes, STAR outcomes, CAASPP outcomes, high school GPA, and SBAC outcomes in Grade 11. As the post-program outcomes (academic outcomes in Grade 5 or later) are available for eight cohorts, our analysis focuses on the cohorts comprised of students who enrolled in Kindergarten in 2003-04 (referred to as the “2004 Cohort”) through 2010-11 (referred to as the “2011 Cohort”). Figure 1.1 presents these cohorts, and the cells highlighted in green indicate the availability of post-program outcomes by grade level and academic year. Please note that students who entered the program later than Kindergarten or exited the program earlier than Grade 5 are not included in the analysis.

The enrollment data include students’ gender, race/ethnicity,<sup>1</sup> EL status, native language,<sup>2</sup> disability status, lunch status, and country of birth.<sup>3</sup> The course grade data include students’ grades in Language Arts, Mathematics, Social Studies, Science, and other courses in middle school (Grades 6-8). The GPA data include students’ yearly GPA in high school (Grades 9-12). The SBAC data include the scale score and performance level in SBAC ELA, Mathematics, and Science for students in Grade 11. The STAR data include students’ scale score and proficiency level in CST Science in Grades 5 and 8, CST Social Science in Grade 8, and California Modified Assessment (CMA) ELA and Mathematics in Grades 2 through 8. The CAASPP data on students’ scale score and proficiency level in CST Science in Grades 5 and 8 are available in 2014-15 and 2015-16, as are the Smarter Balanced ELA and Mathematics in Grades 2 through 8. Finally, the CELDT data includes EL students’ scale score in Reading, Listening, Speaking, Writing, and “listenspeak,”<sup>4</sup> as well as the overall scale score in Kindergarten through Grade 8 (Figure 1.2).

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<sup>1</sup> We combine students in the following categories as Asian students: Chinese, Japanese, Korean, Cambodian, Filipino, Laotian, Vietnamese, Asian Indian, Other Asian, Samoan, Guamanian, and Other Pacific Islander.

<sup>2</sup> We combine the students whose native language is not English as one category: non-native speakers.

<sup>3</sup> We combine the students who were not born in the US as one category: not-US-born students.

<sup>4</sup> “listenspeak” might refer to listening and speaking assessments when combined. The interpretation of the scores is not important since we only use CELDT outcomes to identify the control groups and not to describe differences in academic performance.

**Figure 1.1: Grade Level Data Availability for Each Cohort**

ACADEMIC YEAR	2004 COHORT	2005 COHORT	2006 COHORT	2007 COHORT	2008 COHORT	2009 COHORT	2010 COHORT	2011 COHORT
2008-09	Grade 5	Grade 4	Grade 3	Grade 2	Grade 1	KG		
2009-10	Grade 6	Grade 5	Grade 4	Grade 3	Grade 2	Grade 1	KG	
2010-11	Grade 7	Grade 6	Grade 5	Grade 4	Grade 3	Grade 2	Grade 1	KG
2011-12	Grade 8	Grade 7	Grade 6	Grade 5	Grade 4	Grade 3	Grade 2	Grade 1
2012-13	Grade 9	Grade 8	Grade 7	Grade 6	Grade 5	Grade 4	Grade 3	Grade 2
2013-14	Grade 10	Grade 9	Grade 8	Grade 7	Grade 6	Grade 5	Grade 4	Grade 3
2014-15	Grade 11	Grade 10	Grade 9	Grade 8	Grade 7	Grade 6	Grade 5	Grade 4
2015-16	Grade 12	Grade 11	Grade 10	Grade 9	Grade 8	Grade 7	Grade 6	Grade 5

**Figure 1.2: Data Overview**

DATA TYPE	DATA CONTENT	YEARS AND GRADE LEVELS AVAILABLE	COHORTS AVAILABLE
<b>Enrollment</b>	Demographic characteristics, grade level, school of enrollment, and DI program participation	2005-06 through 2016-17; Grades K through 8	All cohorts
<b>Course Grades</b>	Course grades in ELA, Mathematics, Social Science, and Science; Yearly GPA	2005-06 through 2015-16; Grades 6 through 8	2004 to 2010
<b>GPA</b>	Yearly GPA	2008-09 through 2015-16; Grades 8 through 12	2004 to 2008
<b>SBAC Grade 11 Assessment</b>	Scale score and performance level in ELA and Mathematics	2014-15 through 2015-16; Grade 11	2004 to 2005
<b>STAR Assessment</b>	Scale score and performance level in ELA, Mathematics, and Science	2005-06 through 2013-14; Grades 2 through 8	2004 to 2009
<b>CAASPP Assessment</b>	Scale score and performance level in ELA, Mathematics, Social Science, and Science	2014-15 through 2015-16; Grades 2 through 8	2007 to 2011
<b>CELDT Assessment</b>	CELDT scale score and level in reading, listening, speaking, writing, listen speak, and overall score	2005-06 through 2015-16; Grades K through 8	2006 to 2011

### OUTCOME VARIABLES

To evaluate the DI program, we examine the difference in post-program academic performance between the students who participated in the program and their similar peers who did not participate in the program. The outcome variables we examine include:

- Short-term (Grades 5 through 8) academic performance measures:
  - CAASPP and STAR ELA, Mathematics, Social Science, and Science test outcomes (Grades 5 through 8)

- Language Arts, Mathematics, Social Science, and Science<sup>5</sup> course grades (Grades 6 through 8)
- Yearly GPA (Grades 6 through 8)
- Long-term (Grades 9 through 12) academic performance measures:
  - Yearly GPA (Grades 9 through 12)
  - Grade 11 SBAC ELA and Mathematics test scale scores (Grade 11)

For the short-term outcomes, we examine students' CAASPP or STAR scale scores, course grades and middle school yearly GPA. The CAASPP data has replaced STAR test data in 2014-15 and does not include the Social Science test outcomes which are available in STAR data. CAASPP/STAR Science is only administered to students in Grades 5 and 8 while STAR Social Science is only administered to students in Grade 8. We note that we do not include students' course grade in Algebra if taken in Grade 7 or Pre-Algebra if taken in Grade 6. Additionally, we use the course data to calculate students' yearly GPA in Grades 6-8. The long-term outcomes we compare are students' yearly GPA<sup>6</sup> in high school and SBAC ELA and Mathematics scale scores in Grade 11.

## METHODOLOGY

In order to evaluate the impact of program participation on later outcomes, we identify matched peers for the students who participate in the program. Then we conduct statistical tests to determine potential differences in academic outcomes between program students and matched control students.

### PROPSENSITY SCORE MATCHING

We identify matched peer students through a method known as propensity score matching. These matched peers serve as "control" groups for the program groups throughout the analysis.

The propensity score matching method uses a logistic regression model to measure the similarity of other students who are not in a program to those that are in the given program based on observable data such as race/ethnicity, gender, lunch status, EL status, and their pre-program academic outcomes. This propensity score for each student represents how similar a peer is to a student in the program group. We then pair each student who was in the program to a student who was never in the program and whose propensity score is most similar to the program group student's score. Ultimately, we create matched control groups, one for each program. The matched students are called "matched non-program" students, or simply "non-participants" in the rest of the report.

As proposed in Hanover's project outline, we conduct the propensity score matching separately for students whose native language is English (referred to as "Native English

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<sup>5</sup> We merge Science 6 and Science Earth, Science 7 and Science Life, and Science 8 and Science Physical.

<sup>6</sup> We use a student's latest cumulative GPA in each year as the final yearly GPA.

Speakers”) and students whose native language is not English (referred to as “English Language Learners (ELLs)”) in each cohort. Additionally, since the majority of students attend the program starting from Kindergarten, the earliest available pre-program academic outcomes are CELDT scores in Grade K for ELLs and STAR ELA and Mathematics scores in Grade 2 for native English speakers.

The comparison group that we construct includes students who did not participate in the Dual Immersion (DI) program but who have similar baseline academic performance and demographic characteristics. Each final comparison group contains roughly the same number of students as its corresponding program group. Figure 1.3 below presents the number of participants and non-participants, while Figure 1.4 presents the number of program participants and their constructed control group. Since Kindergarten CELDT data are available from 2005-06 onward, we are not able to conduct propensity score matching for English Language Learners in the 2004 cohort. Further, we do not conduct propensity score matching in cohorts beyond 2011 since these students have yet to realize outcomes in Grade 5 or later.

**Figure 1.3: Number of DI Participants and Non-Participants**

COHORT	NATIVE ENGLISH SPEAKERS		ENGLISH LANGUAGE LEARNERS (ELLs)	
	PARTICIPANTS	NON-PARTICIPANTS	PARTICIPANTS	NON-PARTICIPANTS
2004 Cohort	13	249	19	278
2005 Cohort	11	212	26	277
2006 Cohort	18	338	17	412
2007 Cohort	37	298	32	378
2008 Cohort	32	329	39	373
2009 Cohort	22	335	24	383
2010 Cohort	25	367	35	427
2011 Cohort	32	344	36	377

**Figure 1.4: Number of DI Participants and Matched Group**

COHORT	NATIVE ENGLISH SPEAKERS		ENGLISH LANGUAGE LEARNERS	
	PARTICIPANTS	CONTROL GROUP	PARTICIPANTS	CONTROL GROUP
2004 Cohort	13	13	--	--
2005 Cohort	9	9	--	--
2006 Cohort	16	16	11	11
2007 Cohort	28	28	27	27
2008 Cohort	26	26	35	35
2009 Cohort	20	20	21	21
2010 Cohort	23	23	31	31
2011 Cohort	25	25	35	35



## SECTION II: DESCRIPTIVE ANALYSIS

This section compares the DI participants to their matched non-participating peers, separately for native English speakers and for ELLs. The Excel supplement file, “Dashboard – DI Program Evaluation – MVWSD.xlsx,” allows the user to choose more detailed segmentations for comparison.

In Figures 2.1 through 2.8, we present the descriptive profiles for DI program participants and the constructed control group who did not participate in the DI program, by grade level for the 2004 through 2011 cohorts. The descriptive profiles include students’ demographic characteristics and academic performance. The results may indicate potential differences in academic performance throughout students’ post-program educational path in Grades 5 through 12. For the 2004 and 2005 cohorts, we are not able to identify their DI status until Grade 2. Therefore, for cohorts of 2004 and 2005, we use their DI participation status in Grade 2 as their DI participation indicator in Grade K.

### NATIVE ENGLISH SPEAKERS

In this subsection, we compare the academic performance between DI participants and their matched peers among native English speakers. Figure 2.1 compares the demographic characteristics and baseline academic performance (Grade 2 STAR ELA and Mathematics scale scores) of DI participants and the constructed control group. There is no significant difference in demographic composition between DI participants and the control group. The DI participants score slightly lower than the control group in terms of baseline Grade 2 performance, but this difference is not statistically significant.

### MAIN TAKEAWAYS

- **In middle school, DI participants tend to have higher yearly GPA and course grades than similar peers who did not participate in the DI program.** However, this difference is not statistically significant in most grade levels and subjects (Figure 2.2).
  - For students in Grade 6, DI participants have a higher yearly GPA than non-participants by 0.24 points. Specifically in Language Arts, DI participants have an average grade of 3.91, 0.23 points higher than the average grade of non-participants.
  - In Grade 8, native English speakers who participated in the DI program have an average score of 3.89 in Science, 0.27 points higher than similar peers who did not participate DI program.
- **Generally, DI participants score higher than similar peers who did not participate in the DI program on the STAR ELA and Mathematics tests** (Figure 2.3). Non-participating peers score higher, but not significantly, on the Grade 5 STAR Science assessment.
  - In Grades 6 through 8, DI participants have a higher scale score than the control group by 35.7 to 67.7 points on the STAR ELA assessment.

- In Grades 5 through 7, DI participants have a higher scale score than the control group by 38.3 to 64.3 points in STAR Mathematics.
  - Additionally, DI participants have a higher scale score than the control group by 80.1 points in STAR Social Science.
  - There is not a significant difference between DI participants’ and non-participants’ CAASPP outcomes. Nevertheless, DI participants outperform non-participants in Grades 6 through 8 and the differences generally increased in higher grade levels.
- **For long-term outcomes (high school outcomes), DI participants outperform similar peers who did not participate in the DI program (Figure 2.4).**
- In Grades 9 through 11, DI participants have higher yearly GPA than the control group, by 0.54 to 0.7 points. Additionally, program participants’ SBAC scale scores are higher than non-participants.

**Figure 2.1: Pre-Program Characteristics and Demographics – Native English Speakers**

NATIVE SPEAKER	PARTICIPANT (N=160)	NON-PARTICIPANT (N=160)	DIFFERENCE
<b>Gender</b>			
Male	55.00%	61.88%	-6.88%
Female	45.00%	38.12%	6.88%
<b>Race</b>			
Asian	11.25%	15.00%	-3.75%
Black	3.13%	2.50%	0.63%
Hispanic	15.63%	12.50%	3.13%
White	68.75%	69.37%	-0.62%
Unknown	1.25%	0.63%	0.62%
<b>EL Status</b>			
EL	0.00%	0.00%	0.00%
Non-EL	100.00%	100.00%	0.00%
IFEP	0.00%	0.00%	0.00%
RFEP	0.00%	0.00%	0.00%
Disability	1.87%	0.00%	1.87%
Free or Reduced-Price Lunch	4.37%	4.37%	0.00%
Born in US	96.25%	96.88%	-0.63%
<b>Grade 2 STAR Scale Score</b>			
ELA	404.68	407.83	-3.16
Mathematics	473.03	479.39	-6.37

Asterisks denote statistical significance as follows: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Figure 2.2: GPA and Course Grades in Grades 6-8 – Native English Speakers**

VARIABLES	PARTICIPANT		NON-PARTICIPANT		DIFFERENCE
	N	MEAN	N	MEAN	
<b>GPA</b>					
Grade 6	65	3.80	87	3.56	0.24**
Grade 7	59	3.71	70	3.49	0.22
Grade 8	47	3.72	53	3.55	0.18
<b>Course Grade</b>					
<b>Language Arts</b>					
Grade 6	65	3.91	83	3.69	0.23*
Grade 7	58	3.81	64	3.81	0.00
Grade 8	47	3.79	51	3.61	0.18
<b>Mathematics</b>					
Grade 6	29	3.86	48	3.69	0.17
Grade 7	2	3.00	4	1.50	1.5
Grade 8	3	3.67	12	3.58	0.08
<b>Social Science</b>					
Grade 6	30	3.93	83	3.76	0.17
Grade 7	38	3.66	69	3.49	0.17
Grade 8	35	3.80	51	3.76	0.04
<b>Science</b>					
Grade 6	64	3.82	84	3.73	0.10
Grade 7	58	3.78	68	3.53	0.25
Grade 8	47	3.89	53	3.62	0.27*

Asterisks denote statistical significance as follows: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Figure 2.3: STAR and CAASPP Scale Scores in Grades 5-8 – Native English Speakers**

VARIABLES	PARTICIPANT		NON-PARTICIPANT		DIFFERENCE
	N	MEAN	N	MEAN	
<b>STAR</b>					
<b>ELA</b>					
Grade 5	79	432.33	70	417.84	14.49
Grade 6	37	444.70	42	408.60	36.11**
Grade 7	22	453.18	23	417.52	35.66*
Grade 8	12	441.50	10	373.80	67.70*
<b>Mathematics</b>					
Grade 5	79	511.99	70	473.66	38.33**
Grade 6	37	487.49	42	426.29	61.20***
Grade 7	21	464.52	23	400.22	64.31**
Grade 8	12	415.33	10	382.40	32.93
<b>Science</b>					
Grade 5	95	438.51	87	443.18	-4.68
Grade 8	22	548.86	23	504.35	44.52
<b>Social Science</b>					
Grade 8	12	451.00	10	370.90	80.10*
<b>CAASPP</b>					
<b>ELA</b>					
Grade 5	39	2592.03	37	2601.62	-9.60
Grade 6	20	2640.35	29	2632.72	7.63
Grade 7	18	2685.06	29	2660.66	24.40
Grade 8	25	2690.08	31	2668.26	21.82
<b>Mathematics</b>					
Grade 5	39	2587.67	37	2600.65	-12.98
Grade 6	20	2666.30	29	2646.07	20.23
Grade 7	18	2704.22	29	2674.55	29.67
Grade 8	25	2725.04	31	2689.68	35.36
<b>Science</b>					
Grade 5	39	402.74	37	422.16	-19.42
Grade 8	24	517.54	29	497.83	19.71

Asterisks denote statistical significance as follows: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Figure 2.4: High School Outcomes – Native English Speakers**

VARIABLES	PARTICIPANT		NON-PARTICIPANT		DIFFERENCE
	N	MEAN	N	MEAN	
<b>GPA</b>					
Grade 9	44	3.50	42	2.96	0.54**
Grade 10	26	3.61	26	3.07	0.54**
Grade 11	14	3.49	9	2.79	0.70*
Grade 12	9	3.36	5	3.34	0.01
<b>SBAC Scale Scores</b>					
ELA	9	2733.33	6	2599.33	134.00*
Mathematics	9	2753.22	6	2601.17	152.06*

Asterisks denote statistical significance as follows: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## ENGLISH LANGUAGE LEARNERS (ELL)

In this subsection, we compare the academic performance between DI participants and their matched peers among English Language Learners. Figure 2.5 compares the demographic characteristics and baseline academic performance (Kindergarten CELDT scale scores) of DI participants and the constructed control group. There is no significant difference in demographic composition between DI participants and the control group. The DI participants score slightly higher than the control group in CELDT, but this difference is not statistically significant. Please note that in all CELDT subjects, Listening and Speaking tests are administered to the 2006 through 2011 cohorts, Listen Speak is only available for the 2006 and 2007 cohorts, and Reading and Writing are only available for the 2011 cohort.

## MAIN TAKEAWAYS

- In middle school, DI participants tend to have slightly lower yearly GPA and course grades than similar peers who did not participate in the DI program. However, these differences are not statistically significant (Figure 2.6).
- **Generally, DI participants score lower on the CAASPP tests than similar peers who did not participate in the DI program** (Figure 2.7). In most cases, these differences are also not statistically significant.
  - DI participants have lower CAASPP scale scores than the control group in earlier grade levels. For example, in Grade 5, DI participants have lower average scale scores than non-participants by 36 points in ELA and 27.5 points in Science. However, these differences tended to decrease or disappear moving from Grade 5 to Grade 8.
- For high school GPA, DI participants have slightly lower yearly GPA than the control group, by 0.12 points in Grade 9 (Figure 2.8). This difference is also not statistically significant.

**Figure 2.5: Pre-Program Characteristics and Demographics – ELLs**

VARIABLES	PARTICIPANT (N=160)	NON-PARTICIPANT (N=160)	DIFFERENCE
<b>Gender</b>			
Male	53.75%	49.38%	4.37%
Female	46.25%	50.62%	-4.37%
<b>Race</b>			
Asian	3.13%	2.50%	0.63%
Black	0.00%	0.00%	0.00%
Hispanic	89.38%	91.25%	-1.87%
White	6.88%	5.00%	1.88%
Unknown	0.63%	1.25%	-0.62%
<b>EL Status</b>			
EL	26.25%	31.25%	-5.00%
Non-EL	0.00%	0.00%	0.00%
IFEP	8.75%	6.88%	1.87%
RFEP	65.00%	61.88%	3.12%
Disability	4.37%	3.13%	1.24%
Free or Reduced-Price Lunch	57.50%	59.38%	-1.88%
Born in US	83.13%	80.00%	3.13%
<b>KG CELDT Scale Scores</b>			
Overall	352.64	339.82	12.83
Listening	370.08	340.42	29.66
Listen speak	351.96	331.53	20.43
Reading	291.83	285.14	6.69
Speaking	353.09	324.93	28.17
Writing	344.67	342.34	2.32

Asterisks denote statistical significance as follows: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Figure 2.6: GPA and Course Grades in Grades 6-8 – ELLs**

VARIABLES	PARTICIPANT		NON-PARTICIPANT		DIFFERENCE
	N	MEAN	N	MEAN	
<b>GPA</b>					
Grade 6	81	3.10	83	3.07	0.03
Grade 7	55	2.89	48	2.95	-0.06
Grade 8	41	2.82	39	2.88	-0.06
<b>Course Grade</b>					
<b>ELA</b>					
Grade 6	76	3.12	69	3.30	-0.19
Grade 7	48	3.13	45	3.20	-0.08
Grade 8	37	2.46	36	2.89	-0.43
<b>Mathematics</b>					
Grade 6	67	3.18	69	3.25	-0.07
Grade 7	2	1.50	1	4.00	-2.5
Grade 8	5	3.20	6	3.17	0.03
<b>Social Science</b>					
Grade 6	31	3.16	73	3.19	-0.03
Grade 7	32	2.84	46	3.07	-0.22
Grade 8	28	2.82	36	3.28	-0.46
<b>Science</b>					
Grade 6	78	3.19	70	3.24	-0.05
Grade 7	53	2.75	45	2.82	-0.07
Grade 8	40	3.00	38	2.95	0.05

Asterisks denote statistical significance as follows: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Figure 2.7: STAR and CAASPP Scale Scores in Grades 5-8 – ELLs**

VARIABLES	PARTICIPANT		NON-PARTICIPANT		DIFFERENCE
	N	MEAN	N	MEAN	
<b>STAR</b>					
<b>Language Arts</b>					
Grade 5	52	351.79	46	367.39	-15.60
Grade 6	25	357.32	23	347.65	9.67
Grade 7	7	341.00	7	392.29	-51.29
Grade 8	--	--	--	--	--
<b>Mathematics</b>					
Grade 5	52	383.37	46	404.83	-21.46
Grade 6	25	346.36	23	346.26	0.10
Grade 7	7	346.71	7	357.29	-10.57
Grade 8	--	--	--	--	--
<b>Science</b>					
Grade 5	69	346.64	62	363.45	-16.81
Grade 8	6	405.17	8	388.88	16.29
<b>CAASPP</b>					
<b>ELA</b>					
Grade 5	58	2499.16	54	2535.13	-35.97*
Grade 6	38	2532.55	40	2546.20	-13.65
Grade 7	30	2528.77	30	2563.20	-34.43
Grade 8	35	2558.11	34	2563.59	-5.47
<b>Mathematics</b>					
Grade 5	58	2490.07	54	2514.57	-24.51
Grade 6	38	2540.08	40	2554.40	-14.32
Grade 7	30	2547.33	30	2552.80	-5.47
Grade 8	35	2563.71	34	2542.44	21.27
<b>Science</b>					
Grade 5	58	340.19	54	367.70	-27.51**
Grade 8	34	390.29	34	392.68	-2.38

Asterisks denote statistical significance as follows: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Figure 2.8: High School Outcomes – ELLs**

VARIABLES	PARTICIPANT		NON-PARTICIPANT		DIFFERENCE
	N	MEAN	N	MEAN	
<b>GPA</b>					
Grade 9	24	2.72	24	2.83	-0.12
Grade 10	6	2.68	8	2.73	-0.05



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