

Immersion 2012: Bridging contexts for a
multilingual world

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immersion education

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“Setting a Research Agenda for Dual Language Immersion in
Utah” (Theme 4: Policy, advocacy and communication)

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Outline



- Utah Dual Language Immersion
- Research Questions in Language Immersion
- Utah Research Agenda (Research Group; State Conference)
- Data & Preliminary Findings
- Advocacy, Policy & Communication Implications
- Next Steps

Utah Dual Language Immersion

- State-funded
- One-way, and two-way (Spanish)
- 50/50 two-teacher model
- 78 programs in 16 districts
- Four languages:
 - Spanish (40 programs)
 - Mandarin (25)
 - French (10)
 - Portuguese (2)

Immersion Education Research Areas

- Program Design
 - Program type (90:10, 50:50; one-way, two-way)
 - Articulation (e.g. from elementary to secondary)
 - Interaction between programs and contexts
- Students
 - Demographics
 - Social / peer interaction in L1 and L2
 - Attitudes and motivation

Immersion Education Research Areas (continued)

□ Teachers

- Teacher education & credentials
- Language proficiency
- Effectiveness

□ Outcomes

- Academic content achievement
- Language competencies (e.g. sociolinguistic, intercultural)
- Biliteracy

Utah DLI Research: Background

- State Research group
- Research considerations & issues
 - Data access
 - Standardized assessment tools
 - Policy, politics and stakeholders
 - Who is interested in which research questions, and results?
 - Why are certain entities interested in these research questions?

Utah Research Agenda: Initial Set of Questions Answered through this Preliminary Research

1. How have the school demographics (i.e., race, income, language proficiency, and mobility) associated with Dual Language Immersion (DLI) programs changed over time?
2. How do DLI schools differ demographically from non-DLI schools?
3. How do schools differ academically from non-DLI schools?
4. How are student level demographics and academics related to participation in DLI programs?
5. How might DLI participation impact academic learning?
 1. To what extent do student demographics relate to academic outcomes for immersion students?

Methods - School Sample

- All schools that began with the “Utah Model” and had DLI programs implemented by the 2012-2013 school year were included in the School Sample. This sample was used to answer the demographic questions in research questions 1 and 2.
 - 2007, N=5
 - 2008, N=9
 - 2009, N=28
 - 2010, N=44
 - 2011, N=51
 - 2012, N=68 (does not include multiple programs per school, charter schools, or schools that did not start with the Utah model)

Methods - Student Sample

- Students from DLI schools who were in the third grade in the 2011-2012 school year and who had been in the same school for at least three years were included in the Student Sample. This sample was used to answer the academic questions, research questions 3-5.
 - ▣ Number of 3rd graders in 17 DLI schools in 2011-2012: N=1863
 - ▣ Number of 2011-2012 3rd graders who had been in the school for at least three years: 1347
 - 78 of the 668 DLI students were excluded because of mobility (12 percent)
 - 438 of the 1195 non-DLI students were excluded because of mobility (37 percent)

Significant
p<.001

Methods - Academic Achievement Measure

- Student achievement was measured using Criterion-Referenced Tests (CRTs) in English Language Arts (ELA) and Mathematics
- The Utah State Office of Education administers these CRTs to all Utah students (grades 3-11) in the spring of each year
- Scaled scores range from 130 through 190 with a mean of 160 and a standard deviation of 10
 - Students from schools included in our analysis outperformed their statewide peers
 - ELA mean = 167, std. deviation = 11
 - Math mean = 167, std. deviation = 12

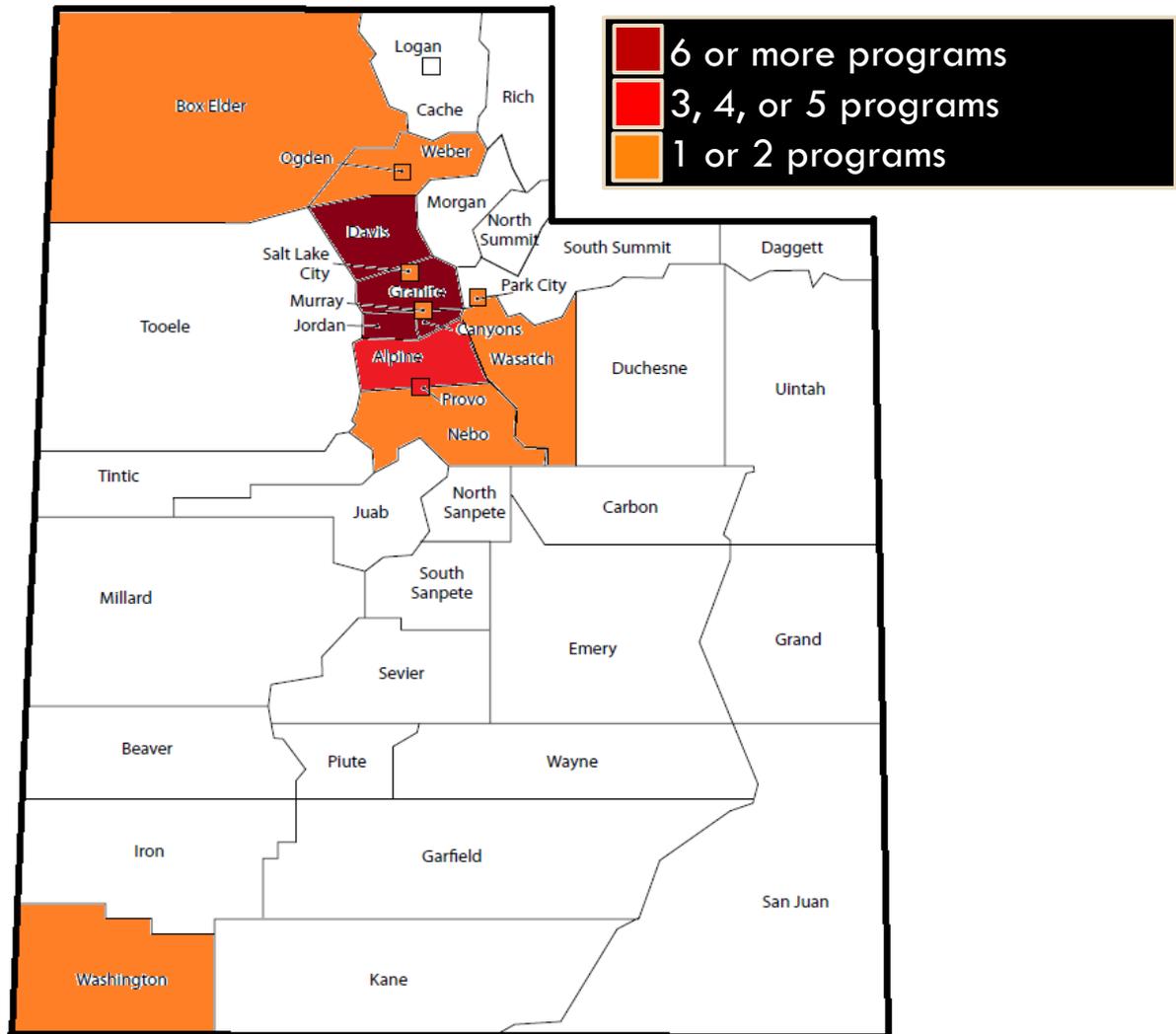
Methods - Inferential Statistics

- Growth modeling was used to try to detect any linear changes in school demographics over time
- Independent samples t-tests were used to compare demographics of DLI to non-DLI schools
- Chi-square tests were used to compare demographic characteristics of DLI students to non-DLI students
- Hierarchical linear modeling, with students at level-1 and schools at level-2, was used to analyze student achievement in DLI compared to non-DLI programs.

Results - How do the school-level demographics associated with DLI programs change over time?

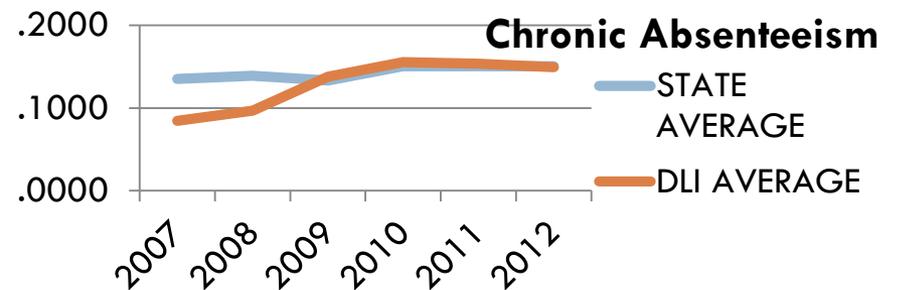
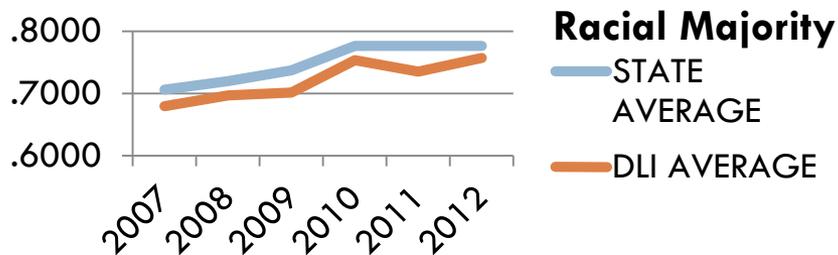
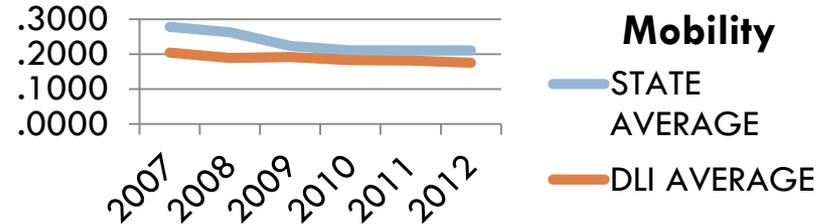
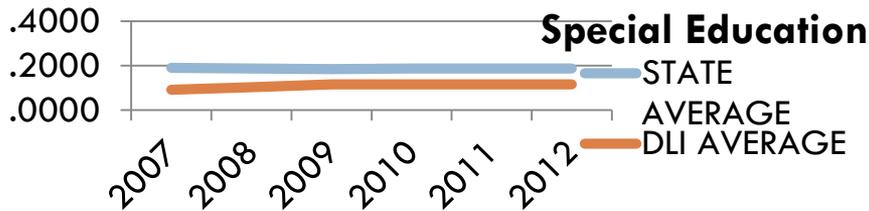
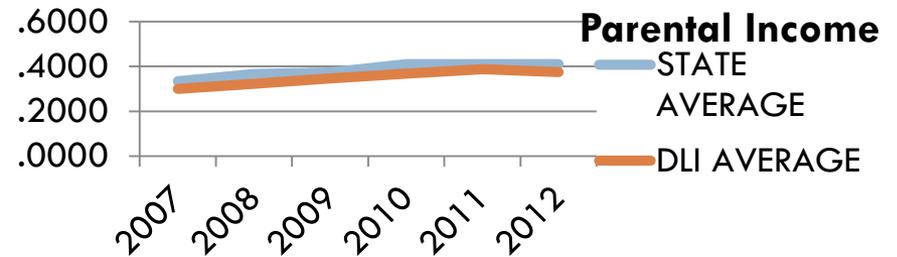
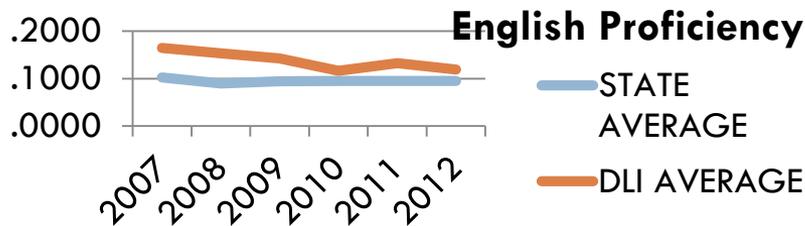
Districts with DI programs are the most urban districts in Utah (chart from 2011-2012 school year) but less urban districts are being added each year.

Approximately 90 percent of all students are in districts that have DI programs.



Results - How do the school-level demographics associated with DLI programs change over time?

There were NO detectable changes in DLI school demographics over time.



Results - How do the DLI and non-DLI school demographics differ over time?

DLI schools have consistently been larger than average schools with lower than average student mobility rates.

	2008 (8 Dual Immersion Schools)			2010 (44 Dual Immersion Schools)			*2012 (68 Dual Immersion Schools)		
Demographic	DLI School Average	Non-DI School Average	Was the difference significant?	DLI School Average	Non-DI School Average	Was the difference significant?	DLI School Average	Non-DI School Average	Was the difference significant?
Percentage LEP	15%	9%	NO	12%	9%	NO	12%	9%	NO
Percentage FRL	32%	37%	NO	37%	41%	NO	38%	41%	NO
Percentage Mobility	19%	26%	Marginal	18%	21%	YES	18%	22%	YES
Percentage White	70%	72%	NO	78%	75%	NO	76%	78%	NO
Number of Students	658	547	YES	741	553	YES	753	544	YES

- *2012 percentages taken from 2011 data
- Note: only schools that began the dual immersion program by implementing the “Utah Model” included in analysis

Results - How are student level demographics and academics related to participation in DLI programs?

Students in DLI programs were less likely to be low income, mobile, in special education, non-Hispanic racial minority, and native speakers of languages other than English or Spanish. Students in DLI programs were more likely to be female.

Demographic	Percent of DLI students in demographic group (n)	Percent of non-DLI students in demographic group (n)	Chi-Square	P-value	Significant?
ELL (ever)	20.7% (138)	22.2% (265)	0.582	0.446	NO
Free/reduced lunch	36.7% (245)	52.5% (627)	42.918	<.001	YES
Mobile	6.0% (40)	21% (262)	80.12	<.001	YES
Special Ed	5.5% (37)	14.6% (175)	35.227	<.001	YES
Female	54.9% (367)	48.7% (582)	6.67	0.01	YES
Hispanic	26.6% (178)	22.8% (272)	3.53	0.06	MARGINAL
Other racial minority	5.7% (38)	11.1% (133)	15.217	<.001	YES
Native language Spanish	19.6% (131)	16.6% (198)	2.726	0.1	NO
Native language other	1.0% (7)	5.8% (69)	24.459	<.001	YES

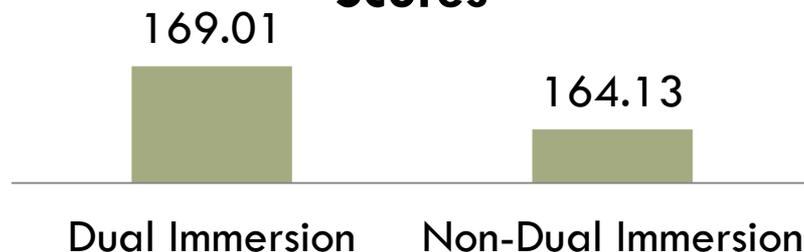
Of the 1863 students in this data set 668 (35.9%) were in DLI programs and 1195 (64.1%) were not

Results - How are student level demographics and academics related to participation in DLI programs?

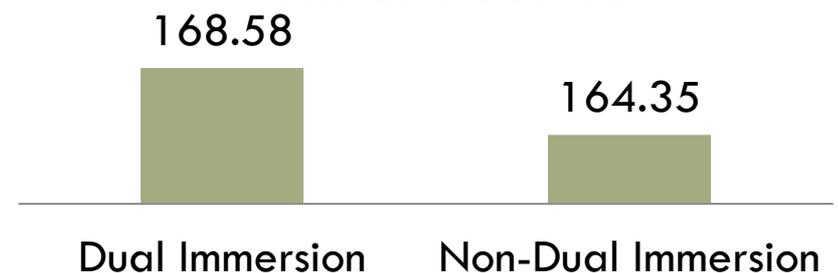
Students in DLI programs were more likely to read on grade level, be proficient in ELA, and be proficient in math than non-DLI students. Students in DLI programs were less likely to be chronically absent than non-DLI students.

Academic Indicator	Percent of DLI students in demographic group (n)	Percent of non-DLI students in demographic group (n)	Chi-Square	P-value	Significant ?
On reading level	81.1% (535)	68.4% (784)	34.023	<.001	YES
Proficient in ELA	85.9% (566)	70.1% (815)	57.314	<.001	YES
Proficient in math	83.2% (548)	67.9% (790)	50.007	<.001	YES
Chronically absent	3.2% (21)	9.7% (115)	27.066	<.001	YES

English Language Arts CRT Scores

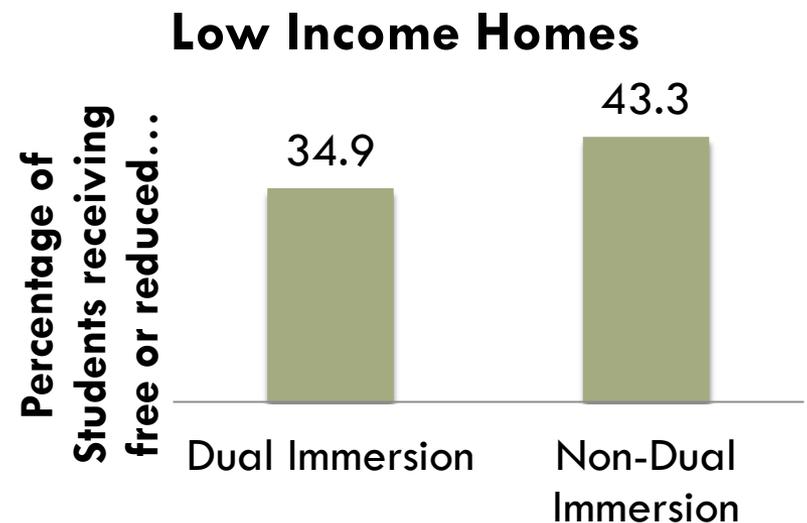
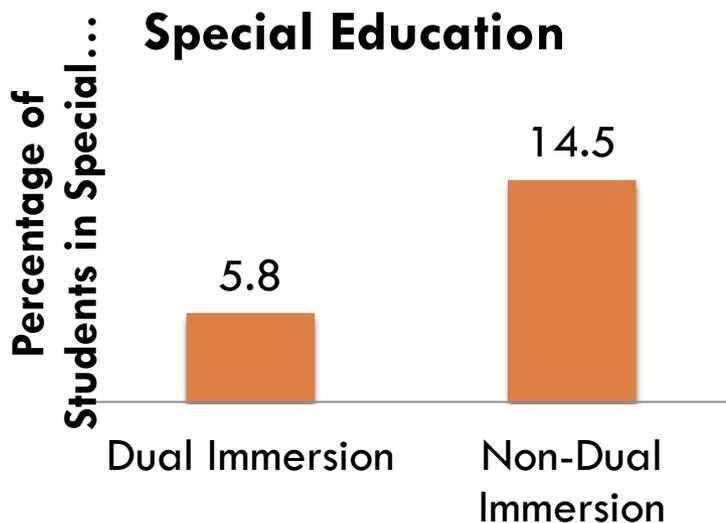


Math CRT Scores



Results - How does dual language immersion affect academic learning?

- Even after removing students who did not remain in the same school between first and third grades, mean differences in scores could not be directly compared. One reason was that demographic differences still existed between the two groups. We also assumed non-demographic differences between both the DLI and non-DLI students.



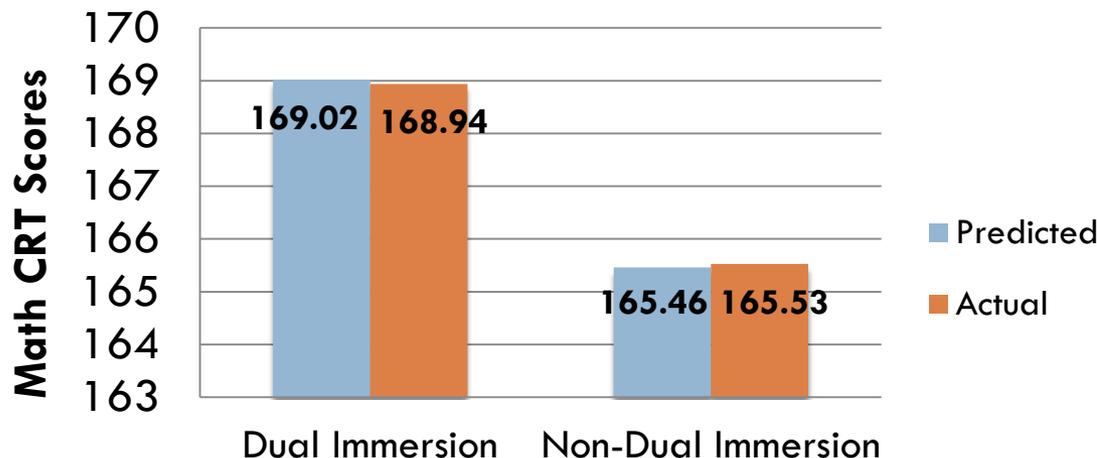
Results - How is DLI participation related to academic learning?

- We used scores in English Language Arts (taught in English) as a covariate for predicting scores in Mathematics (taught in the target language).
- We also used the student level covariates of gender, mobility, race, English proficiency, family income, and special education status.
- **With the covariates statistically controlled, we found NO DIFFERENCE in math scores between students taught in DLI Programs and students not taught in DLI Programs.**

Results –What does it mean to say there is NO DIFFERENCE in math scores?

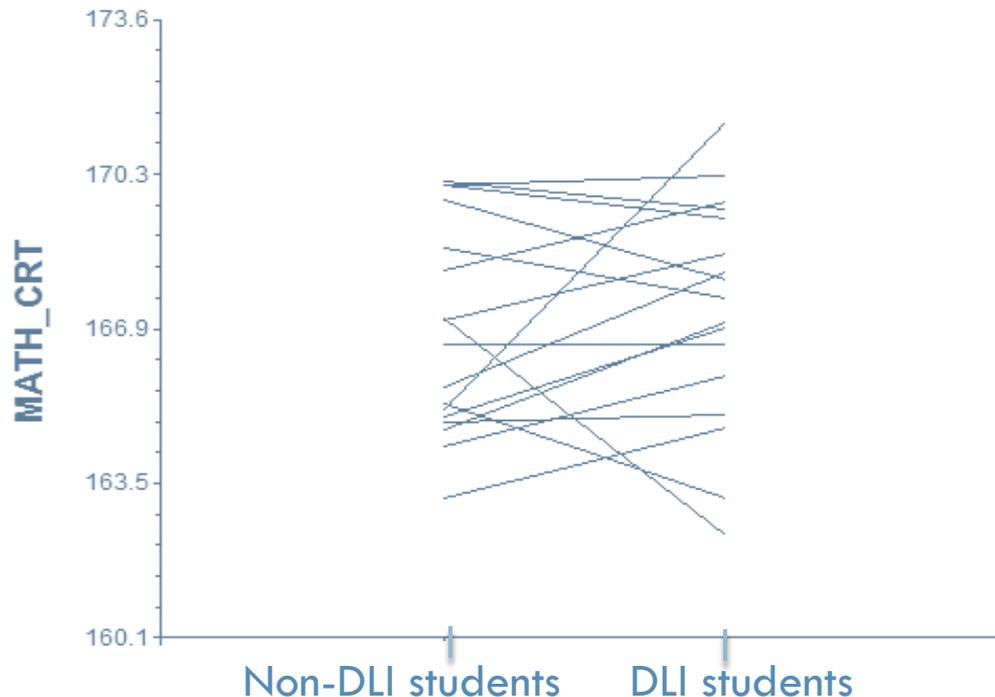
- Using OLS regression to predict Mathematics scores from the academic and demographic covariates, we predicted DLI students to score an average of 169 and the non-DLI students to score an average of 165.5.
- On average, DLI student scores were approximately .08 points below their predicted values and non-DLI student scores were approximately .07 points above their predicted values.

Predicted and Actual Values on Mathematics CRTs



Results - How is DLI participation related to academic learning?

- A significant proportion of variance in math CRT scores (9.5%) could be accounted for at the school level. This means that the difference between DLI and non-DLI students, in the 17 DLI schools, differed significantly from school to school. However, this variance was NOT accounted for by target language, one- vs. two-way immersion programs, or school size.



Results - To what extent do demographics affect academic outcomes for immersion students?

Demographic	Interactions between demographics and DLI participation on math outcomes	Significance Level (p value)
Female	No interaction	.715
Special Education	The difference between students in special education and not in special education was significantly smaller in DLI programs than in non DLI programs ($p < .1$)	.063
Hispanic	No interaction	.593
Non-Hispanic Minority	The difference between non-Hispanic minority students and other students was significantly smaller in DLI programs than in non-DLI programs ($p < .1$)	.066
Low English Proficiency	No interaction	.908
Low Income Home	No interaction	.909

Summary of Results

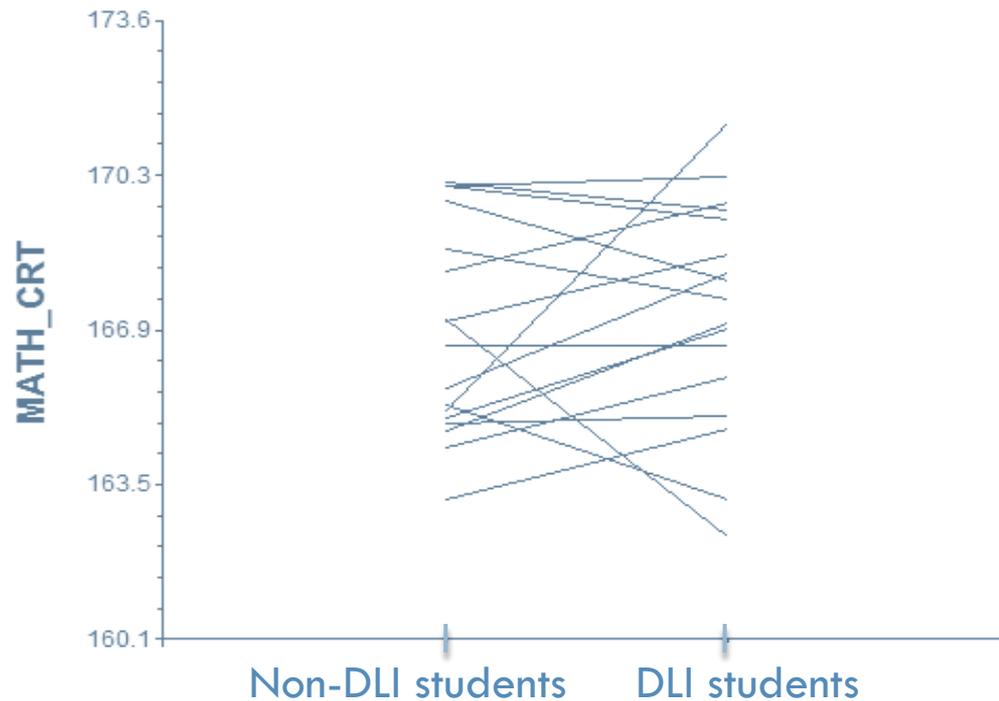
- **How have the school demographics associated with DLI programs changed over time?** Schools have been consistently more urban, larger, and have had lower student mobility. No significant changes are observable over time.
- **How are student level demographics related to participation in DLI programs?** Students in DLI programs were significantly less likely to be from low income homes, mobile, chronically absent, in special education, male, non-Hispanic racial minority, or native speakers of languages other than English or Spanish.
- **How does DLI affect academic learning?** When covariates were accounted for, student who learned math in a non-English target language and students who learned math in English perform similarly on state math tests.
- **To what extent do student demographics affect academic outcomes for DLI students?** Special education and non-Hispanic minority designations interacted with DLI participation. These interactions indicated that Special Ed students and non-Hispanic minority students in DLI performed as well as their peers without those designations.

Considerations for Policy, Advocacy, and Communication

- Schools with DLI programs correlated with low mobility when compared to non-DLI schools in the same district.
- Students from “traditionally marginalized groups” achieve at the same level as mainstream students.
- Students with different demographic characteristics are represented in the DLI programs.
- Students in DLI programs are learning the academic content at the expected rate while also acquiring another language.

Next Steps

- Investigate *between-school* differences or *between-teacher* differences in DLI academic outcomes



Next Steps: Research Topics

- Attitudes and motivation of students moving from elementary to secondary DLI (pilot)
- Socolinguistic and sociocultural language development in one-way and two-way immersion classrooms (APPLL pilot)
- Students' social and peer interaction
- Students' and teachers' L1 and L2 use
- Biliteracy assessment
- Teacher beliefs, effectiveness and preparation

Vielen Dank!

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