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## Dual Language Effectiveness to Narrow Achievement Gaps: A Quantitative Correlational Study

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# **Dual Language Effectiveness to Narrow Achievement Gaps: A Quantitative Correlational Study**

## **Introduction**

English learners (ELs) are those whose primary language at home is one other than English (Turgut et al., 2016). The National Center for Education Statistics (2016) has shown that the English language population continues to increase in public schools in the United States. One in five students speaks a language other than English as the EL population has doubled in the past few decades (U.S. Department of Education, 2016).

Clearly, ELs are the leading and largest student population segment in United States public schools in terms of growth (Turgut et al., 2016). With 169% growth of ELs between 1979 to 2003, and a 12% population growth of the student population overall, over 40% of the K-12 population will be students whose first language is other than English by 2030 (Roseberry-McKibbin & Brice, 2013). Implemented provisions have aimed to provide minorities with the same quality education as non-minority counterparts through government interventions, such as the No Child Left Behind Act of 2001, P.L. 107-110, 20 U.S.C. § 6319 (2002; NCLB), which was replaced by the Every Student Succeeds Act (ESSA) in 2015 (Adler-Greene, 2019). Unfortunately, academic achievement gaps between ELs and non-EL counterparts have continued to persist from early childhood education through the post-secondary level (Florida Department of Education, 2019). The National Center for Education Statistics reported a nationwide 33% achievement gap between ELs and non-EL counterparts in fourth-grade reading and a 45% gap in eighth-grade mathematics (National Center for Education Statistics, 2020).

## **Background of the Problem**

Societal changes have increased economic and educational globalization. The rising

immigration to the United States has initiated significant growth in the population of ELs (Gibson, 2016). The shift has caused a need to reconsider educational models to prepare a contemporary labor force. Reassurances of equitable education founded on social justice are critical in implementing educational models for EL students.

Grade-level content mastery and cultural responsiveness are key for instruction, which support sustained academic achievement (Apodaca-Orozco et al., 2017). Seminal studies confirmed EL students taught in home language have superseded the general population in academic growth. Dual language programs that simultaneously teach language and content in the home language and English have increased the academic performance of ELs significantly (Genesee et al., 2006).

### **Dual Language Programs**

The purpose of dual language programs is to provide a balance of English learners and non-English learners with rigorous instruction in two languages, the English learners' native language (i.e., partner language) and English. English and the partner language have equal time and importance creating a bridge for second language learning (Murphy, 2016). Dual language immersion programs as the one that has been the focus of this study includes both languages for an equivalent amount of time. The make-up of the class consists of half-English learners and half non-English learners with the extended purpose of providing all students with the opportunity to be bilingual and biliterate (Varghese & Park, 2010).

Whitacre (2015) found that attitudinal perspectives were a factor of notable importance in the implementation of dual language curricular programs. A case study methodology was used to examine teachers' language orientations between language as a problem and language as a resource in dual language programs. The study addressed the impact perception had on the

application of dual language instruction and concluded that explicit planning for language was important in teacher education. Moreover, professional development that considered language as a resource rather than view language as a problem was critical. The findings addressed contradictions in prior literature between language as a problem and as acceleration in the era of immediate success on English state assessments (Zúñiga, 2016).

Kotok and DeMatthews (2018) recognized race as a factor in attitudinal perspectives. School districts needed to take charge of developing race-neutral plans to promote diversity in racially and economically incorporated schools (Kotok & DeMatthews, 2018). Dual language instruction increased the language proficiency and executive function of second language learners, particularly the increasingly Spanish-speaking population in the United States (Esposito & Baker-Ward, 2013). A quasi-experimental design measured the advantages of effective function through task demands such as motor control and letter sequencing, as well as demanding tasks performed by students participating in dual language education. Higher effective function performance correlated with greater exposure to dual language instruction (Esposito & Baker-Ward, 2013). Traditional education did not present results with the same advantages when compared to dual language instruction. The study contributed to the limited literature on the implementation of second language instruction to economically disadvantaged students and established a comparison of benefits between dual language second language instruction and immersion models centered on minority language.

Dual language instruction has additive value and a positive impact on academic and social achievements of children segregated by race and poverty (Kotok & DeMatthews, 2018). Dual language intervention strategies, which improve the general executive function skills of students at risk of failure, have lifelong academic success benefits. Learning both languages

enhance the students' capacity to regulate attention and provides increased academic outcomes for student subgroups in a diverse setting (Esposito & Baker-Ward, 2013).

Miller et al. (2017) focused on the effects of sharing dual language identity texts and providing opportunities for English learners to work on narrative skills. The multi-modal intervention for English learners included the discourse length and lexical diversity. The culturally responsive intervention included dual language identity texts and required students to author the texts. Their study measured the effects of culturally responsive practices in response to the language and educational needs of an increasing population of English learners and showed notable gains in vocabulary and skill performance in narration in 67% of student participants. Moreover, Zúñiga (2016) has found that the dual language instructional model bridges the cultural, language acquisition, and academic needs of English learners.

### **Purpose of the Study**

The purpose of the quantitative correlational study was to determine if a significant relationship existed between ACCESS for ELLs and iReady Diagnostic 2 Tool for EL students at five elementary school sites in the southeast quadrant of the United States. A significant achievement gap of 30% between EL students and non-EL peers (Florida Department of Education, 2019) asked for the identification of an effective instructional model to support the acquisition of language. The study was necessary because the literature search did not yield a significant amount of research on the effectiveness of dual language instruction, specifically addressing EL language acquisition. EL's lack of language acquisition and low academic achievement could have continued to contribute to the EL achievement gap at the research sites if the research was not conducted.

The school district selected for the study was in a county with suburban, urban, and rural

areas. The school district was in the southeast quadrant of the United States in the State of Florida. The population of the school district was approximately 73,000 students, with 30% EL students and 63% Hispanic students. Consistent growth in the district EL student population created a challenge and an opportunity. The school district provided ELs instruction through mainstream or dual language instruction. Classes of heterogeneous groups taught in English composed mainstream instruction. Dual language instruction provided access to the curriculum in two different languages to a group of students, of which half are English proficient students and half are EL students.

The standardized scores for selected third-grade students participating in dual language instruction and mainstream instruction were analyzed. ACCESS for ELLs measured language acquisition, and the iReady Diagnostic 2 Tool measured the reading proficiency to determine the instructional model with the highest level of success in EL language acquisition. The selected model was provided to a larger population to narrow the academic achievement gap among the EL population. The research report was shared with the school district, the State of Florida Department of Education, and related professional organizations. The intent was for EL students throughout the state and the nation to benefit from the findings of the study.

### **Research Questions**

A quantitative correlational study determined if a relationship existed between ACCESS for ELLs and iReady Diagnostic 2 Tool for EL students. The use of standardized test data allowed for the comparison of correlations between two groups with one common variable (Diedenhofen & Musch, 2015). The two groups were EL students receiving dual language instruction and EL students receiving mainstream instruction. The variable in common was both groups of participants were ELs. Data obtained through research questions were used to analyze

the statistical relationship of EL language acquisition between dual language instruction and mainstream instruction. The subsequent questions directed the study.

**Research Question One:** Does a significant relationship exist between the use of dual language instruction and (a) language acquisition as measured by ACCESS for ELLs and (b) reading proficiency as measured by the iReady Diagnostic 2 Tool for third-grade ELA students at five elementary school sites?

**Research Question Two:** Does a significant relationship exist between the use of mainstream instruction and (a) language acquisition as measured by ACCESS for ELLs and (b) reading proficiency as measured by the iReady Diagnostic 2 Tool among third-grade ELA students at five elementary school sites?

### **Data Collection and Analysis**

A correlational study compares correlations between two groups with one variable in common (Diedenhofen & Musch, 2015). The sample population included 83 EL students enrolled in three dual language schools and 176 EL students enrolled in two schools offering mainstream instruction during the 2017-2018 and 2018-2019 school years. Table 1 below represents the participant sample at each school, organized by dual language and mainstream instruction designation. The total sample size included 275 third grade EL students who were in the United States for a year or more. Data collection included the test scores of iReady Diagnostic 2 Tool and ACCESS for ELLs, which allowed the correlation of language acquisition and reading proficiency, as well as the statistical significance between student scale score on the ACCESS for ELLs of ELs receiving dual language instruction and ELs, instructed in mainstream classrooms.

**Table 1***Number of Participant Samples*

Population Samples	Number of EL Students
Dual Language School 1	26
Dual Language School 2	30
Dual Language School 3	27
Mainstream School 1	69
Mainstream School 2	123
Total Population	275

Based on the correlations, the Pearson Bivariate Correlation determined if there was a significant relationship between dual language instruction and language acquisition, as well as determined if there was a relationship between dual language instruction and reading proficiency. The strength of the relationship was determined by the results of the correlation coefficient formula ( $r_{xy} = \text{Cov}(x,y) / \sqrt{S_x S_y}$ ). The coefficient determined how strongly x and y were related (DeMoulin, 2018). If the  $r \geq 0.8$ , then a high correlation was determined between the two dependent variables. If the correlation coefficient was between  $0.5 \geq r \leq 0.7$ , then a moderate correlation was determined between the two dependent variables. If the correlation coefficient was  $0.0 \geq r \leq 0.6$ , then a slight correlation was determined between the two dependent variables with 95% confidence. If the correlation coefficient was negative, then an inverse relationship was determined between the two dependent variables. The findings are organized by research questions.

**Research Question One:** Does a significant relationship exist between the use of dual language instruction and (a) language acquisition as measured by ACCESS for ELLs and (b)



reading proficiency as measured by the iReady Diagnostic 2 Tool for third-grade ELA students at five elementary school sites?

### **Academic School Year 2017-2018**

A comparison of correlations between two groups and a common variable occurs with the use of standardized test data (Diedenhofen & Musch, 2015). The Pearson Bivariate Correlation was used to determine if a significant relationship between dual language instruction and language acquisition existed, as well as whether there was a significant relationship between dual language instruction and reading proficiency. The correlation coefficient formula determined the strength of the relationship. The scatterplot chart in Figure 1 displays two-variable data of language acquisition and reading proficiency, representing a slight correlation for dual language EL students during the 2017-2018 school year.

**Figure 1**

*Scatterplot Correlating Language Acquisition and Reading Proficiency of ELs Enrolled in Dual Language Schools During the 2017-2018 School Year*

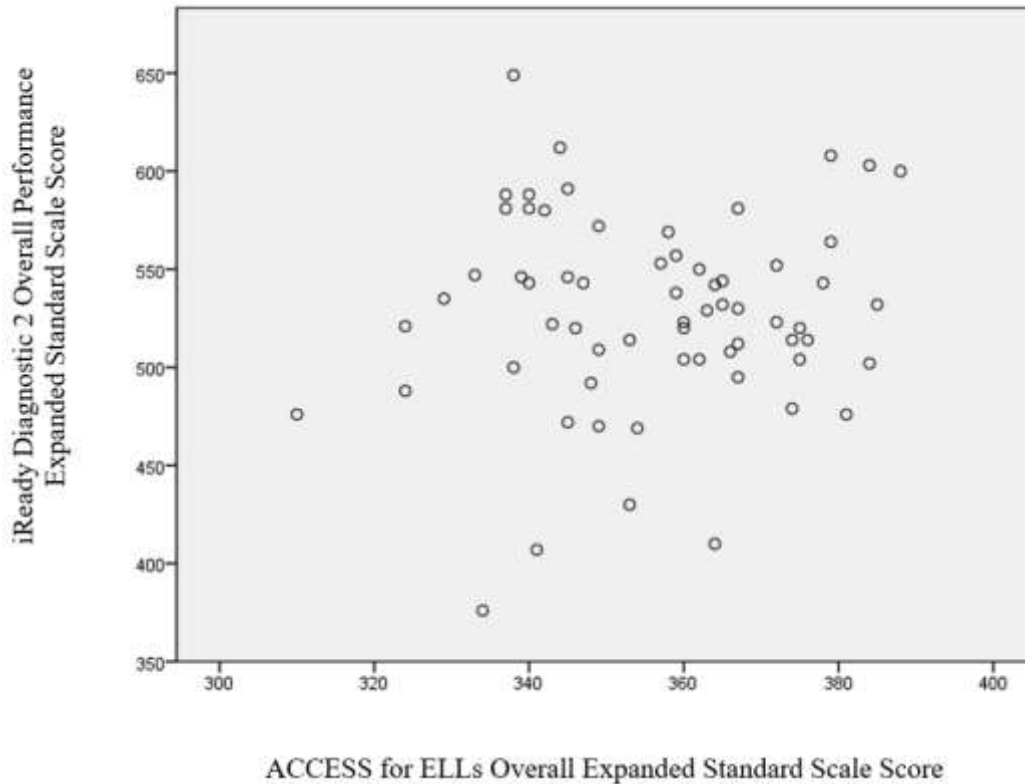


Table 2 below is a display of the correlation analysis results for the 2017-2018 school year. A  $0.0 \geq r \leq 0.6$  correlation coefficient indicates a slight correlation between the two dependent variables. The two-tailed Pearson Bivariate Correlation yielded a result of  $r=.079$ , a slight correlation between the two independent variables in dual language schools.

**Table 2***The Pearson Bivariate Correlation Results for Dual Language Schools 2017-2018*

		Ready Diagnostic 2 Tool Scale Scores (Expanded Standard Score)	ACCESS for ELLs Overall Scale Scores (Expanded Standard Score)
iReady Diagnostic 2 Tool Scale Scores (Expanded Standard Score)	Pearson Correlation Sig. (2-tailed) <i>N</i>	1.000  64.000	0.079 0.537 64.000
Access for ELLs Overall Scale Scores (Expanded Standard Score)	Pearson Correlation Sig. (2-tailed) <i>N</i>	0.079 0.537 64.000	1.000  64.000

**Academic School Year 2018-2019**

The Pearson Bivariate Correlation was used to determine if a significant relationship between dual language instruction and language acquisition exists, as well as whether there is a significant relationship between dual language instruction and reading proficiency. The correlation coefficient formula determined the strength of the relationship. The scatterplot chart in Figure 2 displays two-variable data of language acquisition and reading proficiency, representing a slight correlation for dual language EL students during the 2018-2019 school year.

**Figure 2**

*Scatterplot Correlating Language Acquisition and Reading Proficiency of ELs Enrolled in Dual Language Schools During the 2018-2019 School Year*

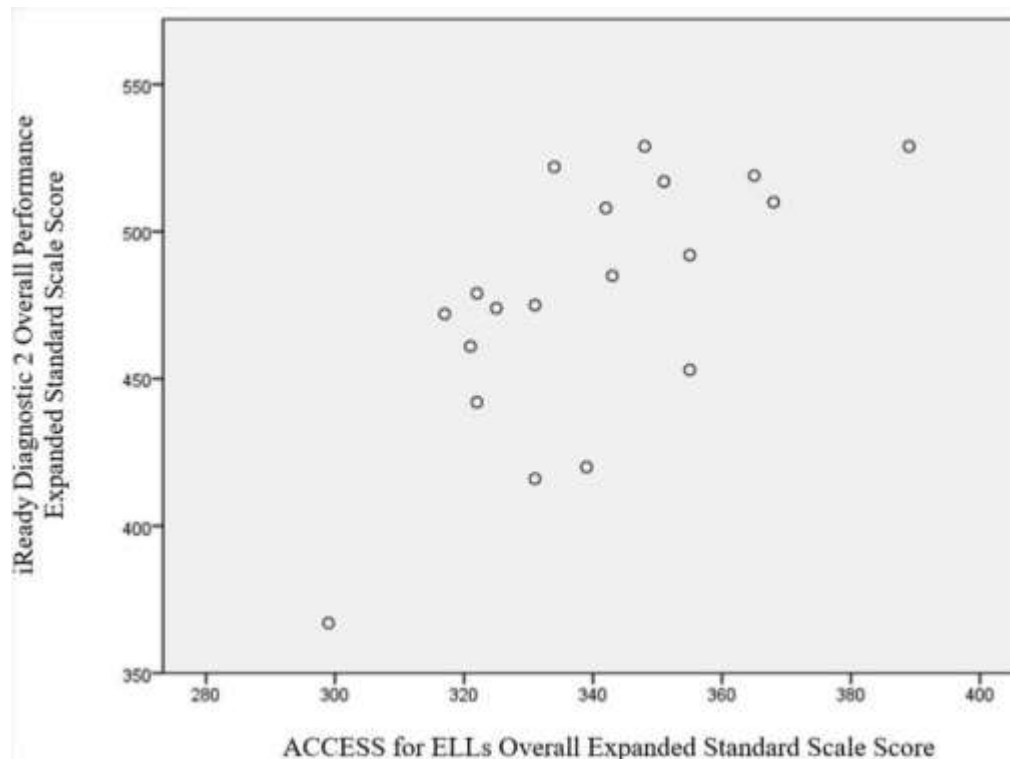


Table 3 is a display of the correlation analysis results for the 2018-2019 school year. A correlation coefficient between  $0.5 \geq r \leq 0.7$  indicates a moderate correlation is determined between the two dependent variables. The two-tailed Pearson Bivariate Correlation yielded a result of  $r=.675$ , a moderate correlation between the two independent variables in dual language schools. The correlation is significant at the .01 level (2-tailed).

**Table 3***The Pearson Bivariate Correlation Results for Dual Language Schools 2018-2019*

		iReady Diagnostic 2 Tool Scale Scores (Expanded Standard Score)	ACCESS for ELLs Overall Scale Scores (Expanded Standard Score)
iReady Diagnostic 2 Tool Scale Scores (Expanded Standard Score)	Pearson Correlation Sig. (2-tailed) <i>N</i>	1.000  19.000	0.675 0.002 19.000
Access for ELLs Overall Scale Scores (Expanded Standard Score)	Pearson Correlation Sig. (2-tailed) <i>N</i>	0.675 0.002 19.000	1.000  19.000

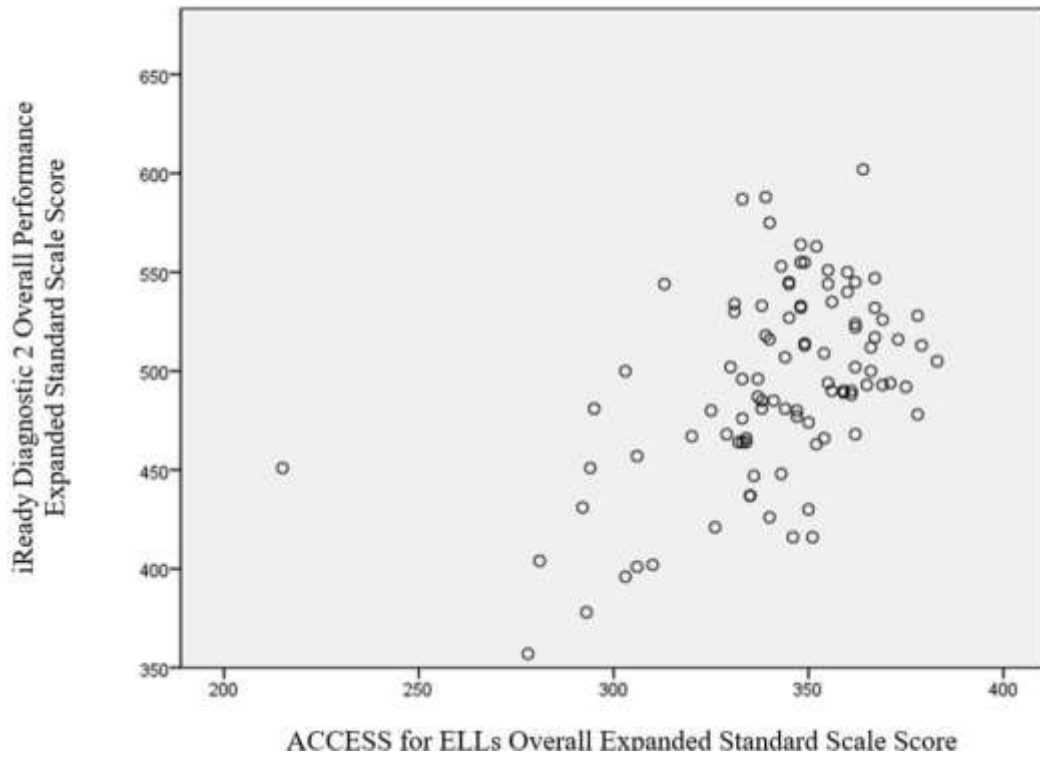
**Research Question Two:** Does a significant relationship exist between the use of mainstream instruction and (a) language acquisition as measured by ACCESS for ELLs and (b) reading proficiency as measured by the iReady Diagnostic 2 Tool among third-grade ELA students at five elementary school sites?

#### **Academic School Year 2017-2018**

The Pearson Bivariate Correlation determined if a significant relationship between mainstream instruction and language acquisition existed, as well as whether there was a significant relationship between mainstream instruction and reading proficiency. The scatterplot chart in Figure 3 below displays the two-variable data of language acquisition and reading proficiency, representing moderate correlation for EL students receiving mainstream instruction during the 2017-2018 school year. The correlation coefficient formula determined the strength of the relationship.

**Figure 3**

*Scatterplot Correlating Language Acquisition and Reading Proficiency of ELs Receiving Mainstream Instruction During the 2017-2018 School Year*



A correlation coefficient between  $0.5 \geq r \leq 0.7$  indicates a moderate correlation between the two dependent variables. Table 4 is a display of the correlation analysis results for mainstream schools during the 2017-2018 school year. The two-tailed Pearson Bivariate Correlation yielded a result of  $r=.492$ , which indicated a moderate correlation between the two independent variables. The correlation is significant at the .01 level (2-tailed).

**Table 4***The Pearson Bivariate Correlation Results for Mainstream Instruction Schools 2017-2018*

		iReady Diagnostic 2 Tool Scale Scores (Expanded Standard Score)	Access for ELLs Overall Scale Scores (Expanded Standard Score)
iReady Diagnostic 2 Tool Scale Scores (Expanded Standard Score)	Pearson Correlation	1.000	0.492
	Sig. (2-tailed)		0.000
	<i>N</i>	97.000	97.000
Access for ELLs Overall Scale Scores (Expanded Standard Score)	Pearson Correlation	0.492	1.000
	Sig. (2-tailed)	0.000	
	<i>N</i>	97.000	97.000

**Academic School Year 2018-2019**

The Pearson Bivariate Correlation determined if a significant relationship between mainstream instruction and language acquisition existed, as well as whether there was a significant relationship between mainstream instruction and reading proficiency. The scatterplot chart in Figure 4 below displays the two-variable data of language acquisition and reading proficiency, representing moderate correlation for EL students receiving mainstream instruction during the 2018-2019 school year. The correlation coefficient formula determined the strength of the relationship.

**Figure 4**

*Scatterplot Correlating Language Acquisition and Reading Proficiency of ELs Receiving Mainstream Instruction During the 2018-2019 School Year*

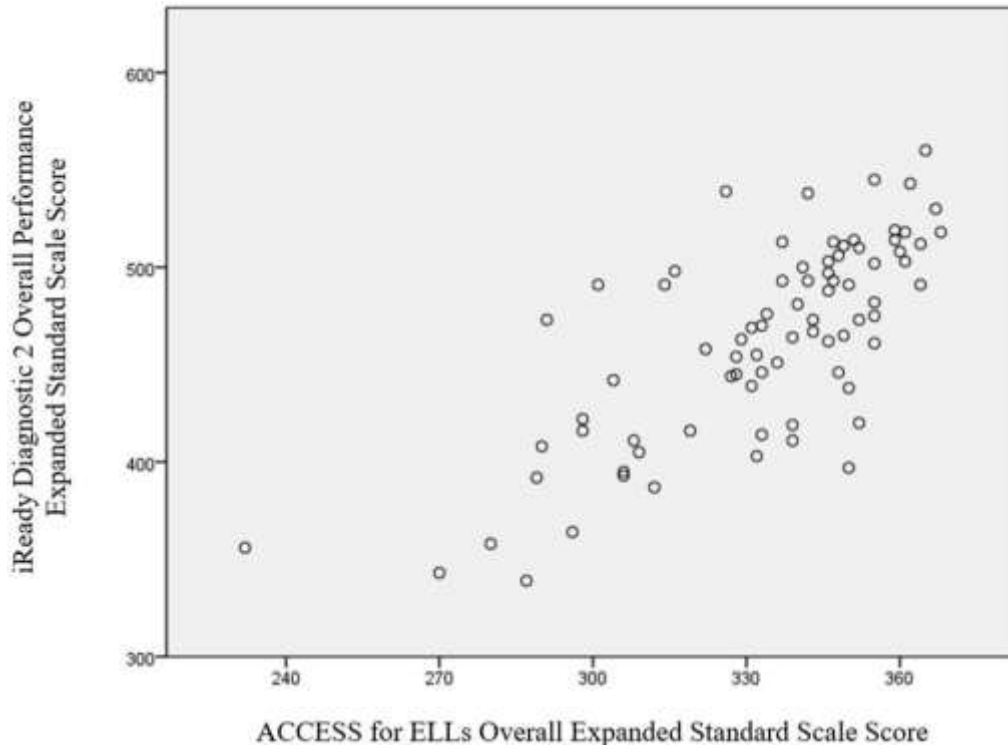


Table 5 is a display of the correlation analysis results for the 2018-2019 school year. A correlation coefficient between  $0.5 \geq r \leq 0.7$  indicates a moderate correlation is determined between the two dependent variables. A correlation coefficient  $r \geq 0.8$  indicated a moderate correlation determined between the two dependent variables. The two-tailed Pearson Bivariate Correlation yielded a result of  $r=.737$ , a moderate correlation between the two independent variables in mainstream instruction schools. The correlation was significant at the .01 level (2-tailed).



**Table 5***The Pearson Bivariate Correlation Results for Mainstream Instruction Schools 2018-2019*

		iReady Diagnostic 2 Tool Scale Scores (Expanded Standard Score)	ACCESS for ELLs Overall Scale Scores (Expanded Standard Score)
iReady Diagnostic 2 Tool Scale Scores (Expanded Standard Score)	Pearson		
	Correlation	1.000	0.737
	Sig. (2-tailed)		0.000
	<i>N</i>	79.000	79.000
ACCESS for ELLs Overall Scale Scores (Expanded Standard Score)	Pearson		
	Correlation	0.737	1.000
	Sig. (2-tailed)	0.000	
	<i>N</i>	79.000	79.000

### Interpretations

The quantitative correlational study determined a significant relationship exists between ACCESS for ELLs and iReady Diagnostic 2 Tool for English learner (EL) students at five elementary school sites. Dual language and mainstream instruction showed a significant correlation between second language acquisition and reading proficiency. The significant correlation in mainstream instruction was consistently moderate between the 2017 and 2019 school years. The significant correlation in dual language ranged between slight to moderate between the 2017 and 2018 academic school years.

Exclusively considering correlation findings, consistencies between this study results and the research by Barrow and Markman-Pithers (2016) exist as their study concluded that English learners participating in dual language programs did not exhibit short-term benefit when compared to English learners in mainstream instruction in accelerating language acquisition. However, their study did not address correlations between language acquisition and reading proficiency or considered the long-term benefits of developing bilingualism.

Further data analysis detected a trend beyond correlations in the present study. The iReady Diagnostic 2 and ACCESS for ELLs overall scale scores of EL students receiving mainstream instruction correlated at higher levels than the overall scale scores of EL students receiving dual language instruction. The mean of the overall scale scores in the iReady Diagnostic of EL students in dual language instruction surpassed the mean of the overall scale scores of the EL students in mainstream instruction by 19%.

The significant difference in reading proficiency between EL students receiving dual language and mainstream instruction in ELA evidenced a correlation between partner or heritage language instruction and reading proficiency, also found by Genesee et al. (2006). The dual language instructional model created bridges between the cultural, language acquisition, and academic needs of English learners. For example, a previous study identified notable gains in vocabulary and skill performance in narration in 67% of students (Miller et al., 2017). Typically, English learner academic language scores lagged at the beginning, but dual language students reached the level of non-English learner peers in academic growth at the end of the year (Huerta et al., 2016). Both seminal and recent research supports the findings of the present study indicating greater instances of reading proficiency for EL students receiving dual language instruction while acquiring a second language as compared to EL students receiving mainstream instruction.

The instrumentation provided insight into the reasoning for the significant correlation between language acquisition and reading proficiency for EL students receiving dual language and mainstream instruction. EL students receiving dual language instruction outperformed in reading proficiency when compared to EL students receiving mainstream instruction. ACCESS for ELLs measured a greater depth of language, which accounted for the similarity in language

acquisition correlations to reading proficiency. ACCESS for ELLs required students to respond using a wider range of language by incorporating listening, speaking, reading, and writing in English in the assessment questions and responses (Mitchell, 2015).

iReady Diagnostic 2 Tool provided individualized instruction on foundational skills, such as phonological awareness, phonics, and high-frequency words. Most notably, iReady measured student level of vocabulary and comprehension. The students demonstrated the skills by reading and responding using multiple-choice (Curriculum Associates, 2019). EL students who received dual language instruction were able to build on the language acquired and achieved greater reading proficiency at a faster rate than EL students in mainstream classes, not yet evidenced in the more complex assessment of ACCESS for ELLs.

### **Conclusion**

Analysis of the data in the study revealed a significant relationship between the use of dual language instruction as measured by ACCESS for ELLs and reading proficiency as measured by the iReady Diagnostic 2 Tool for third-grade EL students enrolled in ELA classes. A significant correlation between language acquisition and reading proficiency was confirmed for EL students receiving dual language instruction and mainstream instruction. The quantitative correlational study contained data, which allowed the generalization of findings to the overall population.

The present quantitative correlational study included findings, which substantiated a relationship between dual language instruction for EL students and language acquisition to narrow the achievement gap. While EL students who received dual language and mainstream instruction showed a significant correlation between language acquisition and reading proficiency, EL students receiving dual language instruction increased reading proficiency at a

greater rate as compared to EL students who received mainstream instruction. The English learner experience in mainstream instruction focuses predominantly on syntax of language and language forms, not the conceptual understanding necessary to meet the demands of academic language development in the content area.

Achievement gaps between EL students and non-EL peers continue from primary education through post-secondary education (Florida Department of Education, 2019). The significantly higher reading proficiency scores of EL students receiving dual language instruction supported the assertion that deeper language learning leads to higher levels of concept proficiency in heritage and English languages (Barrow & Markman-Pithers, 2016).

Understanding the reason for the reading proficiency gap existing between EL students receiving dual language instruction and EL students receiving mainstream instruction in the present study revealed implications of program models and implementation. EL student performance increased when language and content education include instructional strategies in the home language (Genesee et al., 2006). Utilizing English and the target language through dual language instruction simultaneously developed two languages ensuring students acquired grade-level content while developing second language skills (Barrow & Markman-Pithers, 2016).

### **Future Recommendations and Leadership Implications**

Colleges, universities, and school districts should create teacher preparation programs, which encompass diversity, English language, dual language development programs, and second language acquisition in content areas (Romo et al., 2018). Administrators should attain an understanding of programmatic needs and support with allocations (Valdez et al., 2016). School districts should assess and revise administrator and teacher credentialing programs to meet the needs of EL students. Policy makers should enact policy, which requires structured expectations

for dual language instruction. State departments of education should eliminate deficit-based practices and implement asset-based practices, such as providing high-stakes tests in heritage languages.

The commissioner of education should require teachers and administrators serving EL students to engage in preparation programs and professional development, which require mastery of language acquisition in content areas, structures of dual language programs, and working knowledge of diversity and culturally relevant education (Romo et al., 2018). Policymakers should fund research to inform future laws and policies. Creating, enacting, implementing, and monitoring policies requiring socially relevant structures to meet the programmatic needs of school districts working with EL students should be a priority for leadership. Further research on bridging heritage language to target language should inform language development, which Lindholm-Leary (2012) identified as critical to gain language acquisition and academic achievement across subject areas. Recommendations for future research include qualitative research to measure the effect of bilingual and bicultural dual language instruction on the attitudinal perspectives of EL students.

School leaders should create structured systems with language and academic supports to influence the ability of the parents to exercise parental rights and contribute to the learning process. Leaders in schools, districts, state departments of education, and the United States Department of Education should ensure instructional decisions are aligned with social justice at the classroom, organization, state, and national levels. School and district leaders should enlist others to work on social justice within the educational system by providing professional development on EL family involvement, cultural diversity, and language acquisition across all content areas. School and district leaders should facilitate organizational changes at the school

and district levels including professional development and an accessible curriculum. School and district leaders should improve teacher and administrator preparation programs. School leaders should meet the linguistic and academic needs of EL students by providing purpose, principles, and understanding to internalize target language and culture to show socially responsible traits as decision-makers (De Santis & Willis, 2016).

The long-term benefits of dual language instruction supersede the challenges. While bridging heritage language to target language requires an investment in professional learning, the dual language instructional model is critical to gain language acquisition and academic achievement across subject areas. Language and content instruction with strategies in the heritage language increased the reading performance of EL students (Genesee et al., 2006). Vocabulary development strategies used to bridge heritage language to English have the potential to narrow academic achievement gaps (Gibson, 2016). The present study does not represent completed research, but rather a call to action for application of research-informed practices and for further study, which may narrow the achievement gap by improving EL student academic proficiency in dual language classrooms.

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