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College-Readiness Differences by Economic Status of Texas High School Students with a Learning Disability: A Statewide Multiyear Investigation

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I. INTRODUCTION

A family's socioeconomic status has been a strong predictor of academic achievement (Cabrera & La Nasa, 2001; Horn & Kojaku, 2001; Reardon, 2011) and is now a better predictor than race (Reardon, 2013). The achievement gap for students who live in poverty versus their counterparts is now greater than 50% larger than the gap between Black and White students (Reardon, 2011). With respect to the group of students relevant to this empirical investigation, children with Learning Disabilities are more likely to live in poverty (Coppin et al., 2006; Cortiella & Horowitz, 2014; Emerson, Shahtahmasebi, Lancaster, & Berridge, 2010; Spies, Morgan, & Matsuura, 2014).

Even though the Americans with Disabilities Act assures equal education and employment to those people with and without disabilities, Stoddard (2014) reported a 33.9% employment rate for people living with a disability compared to 74.2% of people living without a disability. Few people with disabilities are employed, with many of them employed in jobs that pay under the poverty level (Hughes & Avoke, 2010). DeNavas-Walt and Proctor (2015) reported 46.7 million people living in poverty and 28.5% of those people living with a disability between the ages of 18 and 64 in 2014 reported poverty income levels. Specific to anyone over the age of five

and living with a Learning Disability, the rate of living in poverty was 2.6% compared to those people not living with a Learning Disability at 1.5% (Cortiella & Horowitz, 2014).

The achievement gap for students who lived in poverty was analyzed by Lee and Slate (2014) in a quantitative study about the advanced achievement of students who were economically disadvantaged. Grade 11 students who took the 2012 Texas Assessment of Knowledge and Skills (TAKS) were examined on their Met Standard, Commended Performance, and college-readiness performance. Nearly one half of the sample size was students who were economically disadvantaged. Lee and Slate (2014) established that students who were economically disadvantaged had 20% lower Commended Performance and college-readiness rates on the TAKS Reading and Mathematics assessment than those students who were not economically disadvantaged. When analyzing the Met Standard rates, Lee and Slate (2014) documented similar rates of success for students who were in poverty and students who were not in poverty.

In this study, the college-readiness of students who had a Learning Disability will be investigated. The demands of the 21st century economy require a wider spread of skills than ever before (Brand, Valent, & Danielson, 2013). To compete with the global market, a larger percent of youth to graduate with postsecondary degrees, including students with disabilities is required (Brand et al., 2013). In conjunction with this demand, emphasized in the amendment to Public Law 94-142 was an emphasis on college-readiness for students with disabilities, it is essential to learn what is meant by college-readiness. Conley (2007, 2008) defined college-readiness as students successfully transitioning from high school to the college environment equipped to manage the demands of college without remediation. Barnes, Slate, and Rojas-LeBouef (2010) define college-readiness as academic preparedness. However, in the state of Texas, college-readiness indicators are specific to the following standardized assessments: (a) Texas Assessment of Knowledge and Skills, (b) Scholastic

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Aptitude Test, and (c) American College Test, as noted in Barnes and Slate (2011).

The group of students relevant to this investigation are students with Learning Disabilities. Students who were diagnosed with a Learning Disability are the largest group who receive special education services out of all of the other categories of disability, about 42% in 2011 for the United States and 43.2% in Texas (Cortiella & Horowitz, 2014). Of the students with a Learning Disability, one third had been retained at least one grade level and one out of every two students with a Learning Disability had been given a disciplinary consequence such as suspension or expulsion in 2011 (Cortiella & Horowitz, 2014).

Unfortunately, students who have Learning Disabilities are attending 4-year institutions at one half the rate of students without Learning Disabilities. Of those students with Learning Disabilities who are attending 4-year universities, only 17% are receiving some type of accommodation or support for their disability. Only 41% of students with Learning Disabilities complete college compared to students without Learning Disabilities (Cortiella & Horowitz, 2014). When over a lifetime, a 4-year college graduate will earn 84% more than a high school graduate (Carnevale, Rose, & Cheah, 2011), it is imperative that students with Learning Disabilities graduate from college.

Holden and Slate (2016) provided empirical evidence that low percentages of students receiving special education services were college ready. Students who were enrolled in special education in large-size high schools had low percentages who were college-ready. The percent of students receiving special education services who Met Standard in Reading was 17.60%, in Mathematics was 24.19%, and in both subjects was only 9.78%. Chandler, Slate, Moore, and Barnes (2014) also established the presence of minimal improvements in college-readiness rates for students who qualified for special education services. For the all students category in the study, Chandler et al. (2014) documented about a 20% increase in reading college-readiness rates between the 2008-2009 and the 2010-2011 school years, whereas students who received special education services demonstrated a mere 2% increase during the same time. An increase of slightly over 10% for all students' mathematics college-readiness rates was determined, whereas students who were enrolled in special education had no change in their mathematics college readiness-rates (Chandler et al., 2014). When analyzing college-readiness rates for both subjects, Chandler et al. (2014) established an increase of 17.14% for all students compared to a decrease for students who received special education services between the 2006-2007 and the 2010-2011 school years.

II. STATEMENT OF THE PROBLEM

Students are beginning college without the readiness skills to obtain their degrees (Hunt, Boyd, Gast, Mitchell, & Wilson, 2012). This lack of skills could lead to barriers for future economic success (Hunt et al., 2012). With respect to the group of students of interest in this investigation, the Center for Public Policy Priorities (2015, March) reported 60.3% of all students were economically disadvantaged in the 2013-2014 school year. With respect specifically to students who received special education services, the Employment and Disability Institute (2011) established that 27.8% were in poverty. Also noted was only 12.5% of students with disabilities graduated with a bachelor's degree, with the highest percentage of graduates being those students who were hearing impaired. Employment rates of people who had a disability were 33.4% compared to 75.6% for people who did not have a disability (Employment and Disability Institute, 2011).

a) Purpose of the Study

The first purpose of this study was to determine the extent to which differences were present in reading college-readiness as a function of economic status for students with a Learning Disability. A second purpose of this investigation was to ascertain the degree to which differences were present in mathematics college-readiness as a function of economic status for students with a Learning Disability. Thirdly, the purpose of this study was to determine the extent to which differences were present in both subjects' college-readiness as a function of economic status for students with a Learning Disability. Finally, the fourth purpose of this empirical statewide investigation was to ascertain the degree to which trends were present in the performance of students with a Learning Disability across the three years of school data that were analyzed here in.

b) Significance of the Study

Research exists on college-readiness rates, on students with Learning Disabilities, and on students in poverty; however, research is limited on all three variables concurrently. This research investigation begins to add to the body of research on these specific groups of students. With 59.2% of students in poverty and 432,763 students enrolled in special education in Texas in the 2010-2011 school year (Texas Education Agency, 2015b), results from this investigation may have practical implications for school districts to improve the college-readiness rates of students who are enrolled in special education and who are in poverty. With the improvement of college-readiness rates for students who are enrolled in special education and are economically disadvantaged, the future economic status of these students has the potential for improvement.

c) Research Questions

The following research questions were addressed in this empirical investigation: (a) What is the difference in reading college-readiness as a function of economic status for students with a Learning Disability?, (b) What is the difference in mathematics college-readiness as a function of economic status for students with a Learning Disability?, (c) What is the difference in both subjects college-readiness as a function of economic status for students with a Learning Disability?; and (d) What is the trend in reading, mathematics, and both subjects college-readiness rates over time for students with a Learning Disability? The first three research questions were repeated for the 2008-2009, 2009-2010, and 2010-2011 school years whereas the trend question was repeated for each of the three college-readiness rates across the three school years. Therefore, a total of 12 research questions was present.

III. METHOD

a) Research Design

This non experimental quantitative study was a causal comparative design because the reading, mathematics, and both subjects college readiness performance has already occurred (Creswell, 2014). Archival data for the 2008-2009, 2009-2010, and 2010-2011 school years were used to examine the relationship of college readiness by economic status of students who had a Learning Disability. The independent variable in this investigation was economic status (i.e., not economically disadvantaged or economically disadvantaged) and the dependent variables were college-readiness rates in reading, in mathematics, and in both subjects. The sample of students whose data were analyzed herein was students who were determined to have a Learning Disability.

b) Participants and Instrumentation

Archival data were requested from the Texas Education Agency Public Education Information Management System for the 2008-2009, 2009-2010, and 2010-2011 school years for high school students who had a Learning Disability. These data included: (a) grade span configuration of each high school campus, (b) student special education enrollment status, (c) reading college-readiness rates, (d) mathematics college-readiness rates, (e) both subjects college-readiness rates, and (f) economic status. Data was only used for students who were enrolled in special education in traditional public high schools. Therefore, charter schools, alternative education campuses, and high schools that did not have a grade span configuration of Grades 9-12 were excluded from the study.

Examined in this study were three college-readiness variables by student economic status for students who had a Learning Disability. Participants

were evaluated on their performance on the Higher Education Readiness Component (HERC) standard for college-readiness. The HERC was mandated under the Texas Assessment of Knowledge and Skills by Senate Bill 103. Under this legislation, a performance standard to identify college-readiness was required. The HERC standard is on the Texas Assessment of Knowledge and Skills scale score system, was established by Texas Higher Education Coordinating Board, and the Texas Education Agency (2006) is responsible for implementing and facilitating the assessment with fidelity.

College-readiness is defined by the Texas Education Agency (2014) as the following: To be considered college-ready as defined by this indicator, a graduate must have met or exceeded the college-ready criteria on the TAKS exit-level test, or the SAT test, or the ACT test. Readers are directed to Table 1 in Barnes and Slate (2011) for the breakdown of the specific scores to be deemed college-ready in Texas.

Economically disadvantaged is defined as students who are eligible for free or reduced lunch by the Texas Education Agency (2014). The United States Department of Agriculture (2015, July) outlined the eligibility requirements for acquiring free or reduced lunch.

The family-size income levels prescribed annually by the Secretary of Agriculture for determining eligibility for free and reduced price meals and free milk. The free guidelines are at or below 130 percent of the federal poverty guidelines. The reduced price guidelines are between 130 and at or below 185 percent of the Federal poverty guidelines. (p. 10)

The students whose data were analyzed herein were students determined to have a Learning Disability. Learning Disabled is generally defined as various processing disorders which affects a person's language acquisition, retention, organization, planning, reasoning, or understanding of skills (Learning Disabilities Association of America, 2016; Merriam-Webster, 2016).

The Texas Education Agency (2015a) defines Learning Disabled students as:

(B) A student with a Learning Disability is one who: (i) has been determined through a variety of assessment tools and strategies to meet the criteria for a specific Learning Disability as stated in 34 CFR, §300.8(c)(10), in accordance with the provisions in 34 CFR, §§300.307-300.311; and (ii) does not achieve adequately for the student's age or meet state-approved grade-level standards in oral expression, listening comprehension, written expression, basic reading skill, reading fluency skills, reading comprehension, mathematics calculation, or mathematics problem solving when provided appropriate instruction, as indicated by performance on multiple measures such as in-class tests; grade average over time (e.g. six weeks, semester); norm- or criterion-referenced tests; statewide

assessments; or a process based on the student's response to scientific, research-based intervention; and (I) does not make sufficient progress when provided a process based on the student's response to scientific, research-based intervention (as defined in 20 USC, §7801(37)), as indicated by the student's performance relative to the performance of the student's peers on repeated, curriculum-based assessments of achievement at reasonable intervals, reflecting student progress during classroom instruction; or (II) exhibits a pattern of strengths and weaknesses in performance, achievement, or both relative to age, grade-level standards, or intellectual ability, as indicated by significant variance among specific areas of cognitive function, such as working memory and verbal comprehension, or between specific areas of cognitive function and academic achievement (p. 7).

IV. RESULTS

To determine whether differences were present in reading, mathematics, and both subjects college-readiness rates (i.e., met standard or did not meet standard) by economic status (i.e., Not Economically Disadvantaged or Economically Disadvantaged) for Texas high school students who were Learning Disabled, Pearson chi-square statistics were calculated. Frequency data were present for the college-readiness variables and economic status; therefore, this procedure is viewed as the appropriate statistical procedure (Field, 2009; Slate & Rojas-LeBouef, 2011). When both

variables are nominal, chi-squares are the statistical procedure of choice. The available sample size per cell was more than five, therefore, the assumptions were met for using the Pearson chi-square procedure. Results will now be discussed in order of the research questions by school year.

a) Research Question One

In the first research question the focus was on whether differences were present in reading college-readiness by economic status for students who were Learning Disabled for the 2008-2009 through the 2010-2011 school years. The sample size for the 2008-2009 school year was 413 students who had a Learning Disability and who were not economically disadvantaged and 506 students who had a Learning Disability and who were economically disadvantaged ($N = 919$). With respect to the research question, the Pearson chi-square procedure revealed a statistically significant difference in reading college-readiness rates by economic status of students who had a Learning Disability, $\chi^2(1) = 53.52, p < .001$, Cramer's V of .24, small effect size (Cohen, 1988). Of the students who had a Learning Disability and who were not economically disadvantaged, 15% met the HERC Reading standard compared to 2% of students who had a Learning Disability and who were economically disadvantaged. Table 1 contains the frequencies and percentages for reading college-readiness rates by economic status of students who were Learning Disabled.

Table 1: Frequencies and Percentages of the HERC Reading Met Standard by Economic Status for Students who Were Learning Disabled for the 2008-2009, 2009-2010, and 2010-2011 School Years

	Met Standard 2008-2009	Met Standard 2009-2010	Met Standard 2010-2011
Economic Status			
Not Economically Disadvantaged	($n = 62$) 15.0%	($n = 0$) 0%	($n = 20$) 8.3%
Economically Disadvantaged	($n = 10$) 2.0%	($n = 0$) 0%	($n = 50$) 6.7%

With respect to the 2009-2010 school year, a statistically significant difference was not yielded in the reading college-readiness rates by economic status of students with a Learning Disability. No student who was Learning Disabled in this school year, regardless of economic status, met the HERC Reading standard. Frequencies and percentages for reading college-readiness rates by economic status are located in Table 1.

Concerning the 2010-2011 school year, a statistically significant difference in reading college-readiness rates was not present, $\chi^2(1) = 0.69, p = .41$. Readers should note that less than 10% of students who were Learning Disabled met the HERC Reading standard. Only 8.3% of students with a Learning

Disability and who were not economically disadvantaged met the HERC Reading standard compared to 6.7% of students with a Learning Disability who were economically disadvantaged met this reading college-readiness standard.

b) Research Question Two

The focus for the second research question was on whether differences were present in mathematics college-readiness by economic status for students who were Learning Disabled for the 2008-2009 through the 2010-2011 school years. The sample size for the 2008-2009 school year was 314 students who had a Learning Disability and who were not economically disadvantaged and 421 students who had a Learning

Disability and who were economically disadvantaged ($N = 735$). With respect to the research question, the Pearson chi-square procedure revealed a statistically significant difference in mathematics college-readiness rates by economic status of students who had a Learning Disability, $\chi^2(1) = 18.48, p < .001$, Cramer's V of .16, small effect size (Cohen, 1988). Almost 10% of students who had a Learning Disability and who were

not economically disadvantaged met the HERC Mathematics standard compared to slightly over 2% of students who had a Learning Disability and who were economically disadvantaged. Table 2 contains the frequencies and percentages for mathematics college-readiness rates by economic status of students who were Learning Disabled.

Table 2: Frequencies and Percentages of the HERC Mathematics Met Standard by Economic Status for Students who Were Learning Disabled for the 2008-2009, 2009-2010, and 2010-2011 School Years

Economic Status	Met Standard	Met Standard	Met Standard
	2008-2009	2009-2010	2010-2011
Not Economically Disadvantaged	($n = 29$) 9.2%	($n = 1$) 0.1%	($n = 12$) 6.8%
Economically Disadvantaged	($n = 9$) 2.1%	($n = 0$) 0%	($n = 48$) 7.5%

The 2009-2010 school year did not yield a statistically significant difference in the mathematics college-readiness rates by economic status of students with a Learning Disability, $\chi^2(1) = 1.40, p = .24$. Only one student who was Learning Disabled in this school year met the HERC Mathematics standard. Readers are directed to Table 2 for frequencies and percentages for mathematics college-readiness rates by economic status.

Regarding the 2010-2011 school year, a statistically significant difference in mathematics college-readiness rates was not present, $\chi^2(1) = 0.11, p = .74$. Less than 7% of students with a Learning Disability and who were not economically disadvantaged met the HERC Mathematics standard compared a similar percentage of students with a Learning Disability who were economically disadvantaged met the mathematics college-readiness standard.

c) Research Question Three

The third research question was on whether differences were present in both subjects college-

readiness by economic status for students who were Learning Disabled for the 2008-2009 through the 2010-2011 school years. For the 2008-2009 school year, the sample size was 192 students who had a Learning Disability and who were not economically disadvantaged and 236 students who had a Learning Disability and who were economically disadvantaged ($N = 428$). Pearson chi-square procedure revealed a statistically significant difference in both subjects college-readiness rates by economic status of students who had a Learning Disability, $\chi^2(1) = 10.02, p = .002$, Cramer's V of .15, small effect size (Cohen, 1988). Slightly over 4% of students who had a Learning Disability and who were not economically disadvantaged met the both subjects college-readiness standard compared to no students who had a Learning Disability and who were economically disadvantaged met the both subjects college-readiness standard. Readers are directed to Table 3 for frequencies and percentages of college-readiness rates in both subjects by economic status of students who were Learning Disabled.

Table 3: Frequencies and Percentages of the HERC Both Subjects Met Standard by Economic Status for Students who Were Learning Disabled for the 2008-2009, 2009-2010, and 2010-2011 School Years

Economic Status	Met Standard	Met Standard	Met Standard
	2008-2009	2009-2010	2010-2011
Not Economically Disadvantaged	($n = 8$) 4.2%	($n = 0$) 0%	($n = 0$) 0%
Economically Disadvantaged	($n = 0$) 0%	($n = 0$) 0%	($n = 7$) 1.5%

No student with a Learning Disability met the both subjects college-readiness standard in the 2009-2010 school year. Table 3 contains the frequencies and percentages for both subjects college-readiness rates by economic status for students with a Learning

Disability. Regarding the 2010-2011 school year, a statistically significant difference in both subjects college-readiness rates was not yielded, $\chi^2(1) = 1.23, p = .27$. Less than 2% of students with a Learning Disability and who were economically disadvantaged

met the both subjects HERC standard compared to no students with a Learning Disability who were not economically disadvantaged and who met this college-readiness standard.

V. DISCUSSION

Differences in college-readiness rates in reading, mathematics, and both subjects were analyzed by economic status for students who were Learning Disabled in this research study. Individual student level data were obtained from the Texas Education Agency Public Education Information Management System data

for the 2008-2009 through the 2010-2011 school years. For the 2008-2009 and 2010-2011 school years, students who were not economically disadvantaged had a higher met standard college-readiness rate than students who were economically disadvantaged. No students who were Learning Disabled in the 2009-2010 school year were college-ready in reading. Readers should note the very low reading college-readiness rates for students who were Learning Disabled. Reading college-readiness rates by economic status for students who were Learning Disabled are presented in Figure 1.

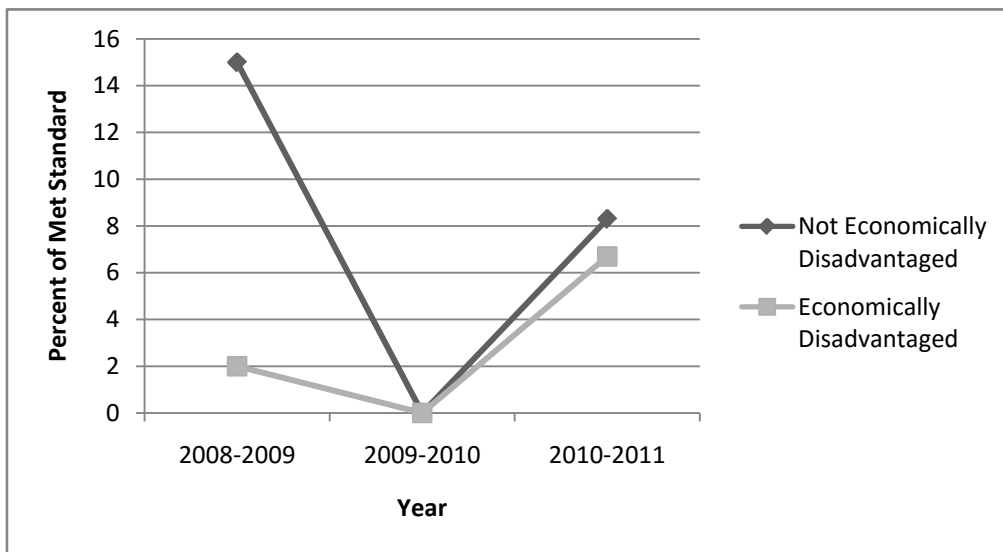


Figure 1: A 3-year trend of college-readiness rates in reading by economic status for students who were Learning Disabled in Texas.

Mathematics college-readiness rates for students who had a Learning Disability fluctuated for the three years analyzed in this investigation. Of note, in the 2008-2009 and 2009-2010 school years, students who were not economically disadvantaged had better performance on the mathematics college-readiness standard than students who were economically

disadvantaged. In the 2010-2011 school year, students who were economically disadvantaged had a slightly higher mathematics college-readiness rate than students who were not economically disadvantaged. Depicted in Figure 2 are the mathematics college-readiness rates by economic status for students who were Learning Disabled.

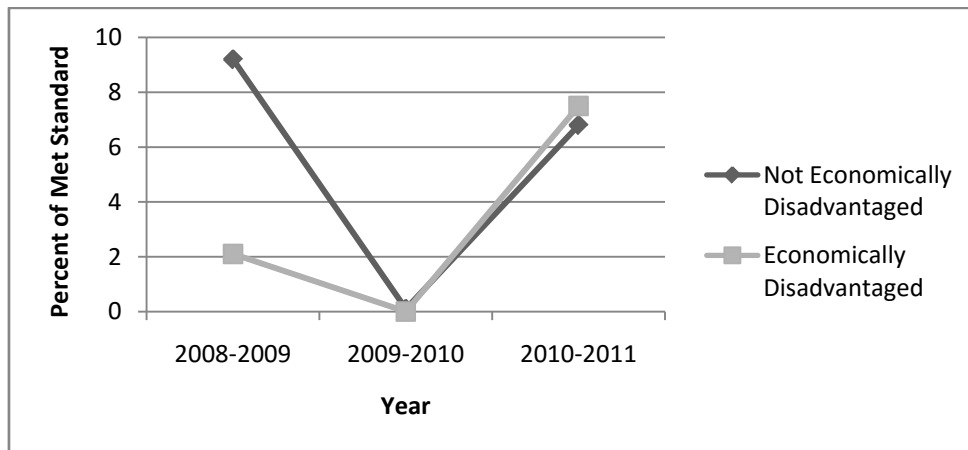


Figure 2: A 3-year trend of college-readiness rates in mathematics by economic status for students who were Learning Disabled in Texas.

Students with a Learning Disability had extremely low to nonexistent college-readiness percentages in both subjects. College-readiness in both subjects fluctuated within the three years of study.

Present in Figure 3 are both subjects college-readiness rates by economic status for students who were Learning Disabled.

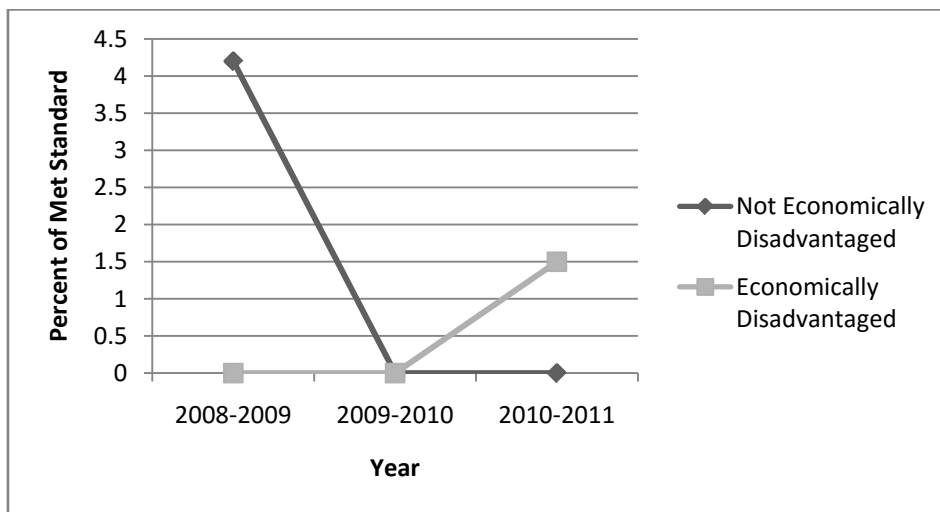


Figure 3: A 3-year trend of college-readiness rates in both subjects by economic status for students who were Learning Disabled in Texas.

a) *Implications for Policy and Practice*

With the extremely low college-readiness rates for students who were Learning Disabled, policymakers and educational leaders are strongly encouraged to consider the results of this study. Home visits have been effective in promoting academic achievement in students by deepening the understanding of student's life experiences and building trust between educators, parents, and students (Stetson, Stetson, Sinclair, & Nix, 2012). Home visits are one procedure that can be implemented in high poverty schools to begin to close the gap for students who live in poverty and have a Learning Disability.

Upper and middle class families have educational experiences with their children through vacations, summer camps, and reading at home (Lareau, 2002). These activities tend to be less available to students who live in poverty. Educational leaders and teachers can create environments in the school setting to allow all students to gain these educational experiences. Students who live in poverty would learn 21st century skills through these experiences such as communication, reading, and world knowledge.

b) *Recommendations for Future Research*

Students who are Learning Disabled receive support in many types of classroom environments (i.e., resource classroom environment, co-teach classroom environment, in class support environment, or regular classroom environment), a recommendation for future research is on investigating the effectiveness of each type of learning environment on the college-readiness of

students who are Learning Disabled. Another recommendation for a future research study is to investigate whether differences are present in college-readiness rates of students who are Learning Disabled by the age in which they were diagnosed. That is, do students who are determined to be Learning Disabled in the early elementary grades have different college-readiness skills than do students who are diagnosed in middle or high school grades? Another recommendation for future research is to analyze college-readiness rates by specific type of student learning disability. In this journal-ready dissertation, college-readiness rates were analyzed for students with a diagnosis of Learning Disability and not for specific types of learning disabilities. As such, given the different types of learning disabilities, a more nuanced approach is encouraged than was conducted in this journal-ready dissertation.

VI. CONCLUSION

In this investigation, the extent to which differences were present in college-readiness rates by economic status of Texas high school students who had a Learning Disability was addressed. Statewide data were obtained from the Texas Education Agency Public Education Information Management System for the 2008-2009, 2009-2010, and 2010-2011 school years. Inferential statistical analyses were conducted to determine the degree to which college-readiness rates in reading, mathematics, and in both subjects differed by student economic status for students who had a

Learning Disability. College-readiness rates in reading, mathematics, and in both subjects for students who were Learning Disabled were extremely low. Students who were Learning Disabled and who were not economically disadvantaged had higher college-readiness rates in most cases. In the 2010-2011 school year, students who were economically disadvantaged had slightly higher college-readiness rates than students who were not economically disadvantaged in mathematics and both subjects.

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