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Mathematics Pre- and Post-Pandemic Comparison of Emergent Bilingual Students by Their Special Education Status: A Texas Statewide Investigation

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ABSTRACT

In this Texas multiyear investigation, the Grade 8 STAAR Mathematics performance of Emergent Bilingual students was examined by their special education status (i.e., Special Education, Not Special Education). Five years of data, two prior to the pandemic (i.e., 2017-2018 and 2018-2019) and three post-pandemic (i.e., 2020-2021, 2021-2022, and 2022-2023), were analyzed to ascertain the effects of the COVID-19 pandemic. In the two years prior to the pandemic, lower percentages of Emergent Bilingual students in special education met the three grade level standards than Emergent Bilingual students who were not in special education. After the pandemic, improved performance was present for both groups of Emergent Bilingual students. Specifically, more than 10% of Emergent Bilingual students in special education met the Meets Grade Level Standard in the 2022-2023 school year, a 4% point increase from the 2021-2022 school year, and a 7% increase from the 2020-2021 school year. Additionally, in the 2022-2023 school year, a higher percentage of both groups met the Approaches Grade Level and Meets Grade Level Standards after the pandemic.

Keywords: Emergent Bilingual students; Special Education; Approaches Grade Level Standard; Meets Grade Level Standard; Masters Grade Level Standard

INTRODUCTION

According to projections made by the National Education Association (2019), by 2025, more than a quarter of all K-12 students will be classified as Emergent Bilingual. English Learners, English Language Learners, and most recently Emergent Bilinguals are students in the United States whose native language is not English. In this proposed article, the term Emergent Bilingual will replace previously used terms. More than two decades ago, in the 2000-2001 school year, The Office of English Language Acquisition determined that more

than 3.8 million students, or 8% of the total enrollment in United States public schools were considered English Learners (Office of English Language Acquisition, 2021). By the end of the following decade, the number of Emergent Bilingual students had increased to more than 4.5 million students, or 9.2%, of all students in K-12 public schools nationwide (National Center for Education Statistics, 2023). Over the most recent decade ending in 2020, the number of Emergent Bilingual students increased by another 1.1 percentage points, resulting in about 10.3% or 5 million students nationwide (National Center for Education Statistics, 2023; Piñón et al., 2022).

Of note, the distribution of where Emergent Bilingual students live has also shifted over the past 20 years. In 2000, California had the highest percentage of Emergent Bilingual students in the nation and Texas was fifth on the list at 14.1% (Office of English Language Acquisition, 2021). As of 2023, Texas had the greatest percentage of students identified as Emergent Bilingual, which is currently more than 23% (Texas Education Agency, 2023a, 2023b). According to the National Center for Education Statistics (2023), more than 15% of the millions of Emergent Bilingual students in the United States have disabilities. In Texas, 10% of Emergent Bilingual students are dually identified and receive special education services (Texas Education Agency, 2023b).

LITERATURE REVIEW

In 2015, the Every Student Succeeds Act transferred the responsibility from the federal government to individual states to measure the yearly progress of Emergent Bilingual students through assessments chosen by individual states (Adler-Greene, 2019). For Emergent Bilingual students who perform poorly, educational decision makers often grapple with discerning whether their struggles stem from language barriers or from disabilities. This issue is noteworthy because researchers such as Kanga (2021) have established that students with disabilities were less likely to receive language support services. Students who meet the language and special education criteria should be provided those services, as researchers (e.g., Kanga, 2021) have indicated that students who receive dual services can acquire proficiency in multiple languages.

Of note, Kanga (2021) recognized that "structural and political conditions around these students inhibit their opportunity to learn" (p. 678). Hokom (2021) and Morgan et al. (2018) have also established that Emergent Bilingual students are more likely to be misidentified for special education services than are their monolingual counterparts. Orellana (2019) further supported this assertion, determining that standardized assessments are normed for non Emergent Bilingual students. The interconnectedness of language proficiency and special education status is important because researchers such as Pariseau (2019) and Taylor (2021) have documented that Emergent Bilingual students dually served in special education have lower academic outcomes than their peers.

Students who receive dual services are less likely to earn a regular high school diploma and have a higher risk of dropping out (Castro et al., 2021; Morgan et al., 2018). In a longitudinal national study, Johnson (2022) investigated trends in mathematics and reading performance for Kindergarten to Grade 4 students as a function of their language status. Specifically examined were former Emergent Bilingual students, current Emergent Bilingual students, non-Emergent Bilingual students, and Emergent Bilingual students dually served in special education. Data were obtained from the Northwest Evaluation Association Growth Research Database for 56,000 students beginning in 2014 and ending in 2019. In both reading and mathematics, Emergent Bilingual students dually served in special education had the lowest levels of achievement. Non-Emergent Bilingual students had the highest achievement rates and consistently scored above the national averages, followed by former Emergent Bilingual students and current Emergent Bilingual students.

In a national study, Trainor et al. (2016) broadened the scope of research on Emergent Bilingual students with disabilities by examining post-school outcomes in higher education and employment opportunities. Data were collected from the National Longitudinal Transition Study spanning five student cohorts from 2001 to 2009. Results were that Emergent Bilingual students with disabilities were significantly less likely than non-Emergent Bilingual students without disabilities to be employed after high school. Additionally, Emergent Bilingual students with disabilities had lower enrollment rates in higher education than non-Emergent Bilingual students without disabilities. Interestingly, the graduation rates for Emergent Bilingual students with disabilities aligned closely with the graduation rates of non-Emergent Bilingual students without disabilities, highlighting a critical need for improved transitional planning in high school settings.

In another longitudinal analysis, Cooc (2023) addressed the mathematics and reading performance of Emergent Bilingual students with disabilities compared to the mathematics and reading performance of non-Emergent Bilingual students with disabilities. Longitudinal data from the National Assessment for Educational Progress were analyzed for the 2004 through the 2020 school years. Also addressed in this study were graduation rates across these groups. Emergent Bilingual students with disabilities consistently underperformed compared to non-Emergent Bilingual students with disabilities in both subjects, disparities that widened across time and were highest among 9-year-olds. Graduation rates for Emergent Bilingual students with disabilities were lower than for Emergent Bilingual students without disabilities. The trends in graduation rates between Emergent Bilingual students with disabilities and non-Emergent Bilingual students without disabilities were commensurate to the findings reported by Trainor et al. (2016).

In a Texas study, Taylor (2021) investigated the mathematics performance of Grade 4 boys and girls enrolled in special education as a function of their economic status. Archival data were obtained from the Texas Education Agency

for the 2015-2016, 2016-2017, and 2017-2018 school years. Grade 4 boys enrolled in special education who were not economically disadvantaged outperformed Grade 4 boys enrolled in special education who were economically disadvantaged. For girls enrolled in special education who were economically disadvantaged, the same outcomes were documented. Grade 4 girls enrolled in special education who were not economically disadvantaged outperformed Grade 4 girls enrolled in special education who were economically disadvantaged (Taylor, 2021).

In a similar Texas study, Pariseau (2019) addressed the reading performance of Emergent Bilingual boys and girls enrolled in special education for the 2014-2015, 2015-2016, 2016-2017, and 2017-2018 school years. Statewide archival data from the Texas Education Agency were analyzed. Emergent Bilingual boys enrolled in special education underperformed compared to non-Emergent Bilingual boys enrolled in special education in all three Phase-in standards for the four years examined. Interestingly, the results for girls mirrored the results of boys. Emergent Bilingual girls enrolled in special education consistently underperformed in all three Phase-in standards across the four years examined compared to non-Emergent Bilingual girls enrolled in special education.

In a more recent study from Texas, Hall (2022) examined the mathematics and reading achievement of students enrolled in special education on state-mandated assessments. Data from the 2018-2019 school year were obtained for Grades 6, 7, and 8 at one middle school and compared to statewide results. Students enrolled in special education at the selected middle school had lower achievement on the mathematics and reading state-mandated assessments across all three grades compared to statewide results. Black and Hispanic students at the selected middle school scored significantly lower than students who were White or Two or More Races. Of importance is that among the students dually served in language and special education programs, only 3% met the Approaches Grade Level Standard on the reading assessment and not one student met passing standards on the mathematics assessment.

In Texas, students in Grades 3-8 are assessed annually through the State of Texas Assessment of Academic Readiness (STAAR) Mathematics test. In the Spring of 2022, among the Grade 8 students who were assessed on the STAAR Mathematics test, 69% achieved the Approaches Grade Level Standard, 38% achieved the Meets Grade Level Standard, and 13 % achieved the Masters Grade Level Standard (State of Texas Assessments of Academic Readiness, 2023). Conversely, for students served in special education programs, the percentages were considerably lower with 32% achieving the Approaches Grade Level Standard, 10% achieving the Meets Grade Level Standard, and only 2% achieving the Masters Grade Level Standard (State of Texas Assessments of Academic Readiness, 2023). Of importance to the reader is that in January 2018, the Texas Education Agency underwent corrective action by the United States Department of Education for noncompliance of ensuring that all students with disabilities were identified, located, or evaluated (DeMatthews & Knight, 2019). As of June 2023, the Texas Education Agency was in compliance with all required actions.

Additionally, the passage of House Bill 3928 mandated the Admission, Review, and Dismissal Committee to add Dyslexia services as a specialized service on a student's individualized education program (Texas Education Agency, 2023c).

Limited research studies could be located about the mathematics performance of Emergent Bilingual students dually served in special education (Cooc, 2023). A thorough search of existing research literature yielded no published studies on the relationship between language and special education status on the mathematics performance of Grade 8 students. Additionally, no studies were located on the performance of Grade 8 students in the Texas state-mandated mathematics assessments. Consequently, the interconnectedness of language and special education status of Texas Grade 8 students, both before and after the COVID-19 pandemic, will be addressed in this article.

THEORETICAL FRAMEWORK

The theoretical framework of this article was cultural-ecological theory (Ogbu & Simons, 1998), which was used as the structure within which to examine the discrepancies in the academic performance of Emergent Bilingual students. The interrelation of language proficiency and special education status is important because researchers such as Pariseau (2019) and Taylor (2021) have established that Emergent Bilingual students concurrently enrolled in special education programs have poorer academic outcomes than their peers. Furthermore, Hokom (2021) and Morgan et al. (2018) have addressed that Emergent Bilingual students are more likely to be misidentified for special education services than are their monolingual counterparts. Orellana (2019) supported this assertion, noting that standardized assessments are normed for non-Emergent Bilingual students, thereby increasing the likelihood that school personnel will perceive Emergent Bilingual students as having deficiencies. Additionally, Emergent Bilingual students with disabilities are also less likely to receive language support services and more likely to be taught by inadequately prepared teachers who may be ill-equipped to address their unique needs (Kanga, 2021). Findings from this article will expand on Ogbu's framework to examine how discriminatory practices worsen the economic and linguistic disparities among Emergent Bilingual students who are dually served in special education programs.

STATEMENT OF THE PROBLEM

Students in the United States are performing at lower levels in mathematics compared to their peers in numerous other countries (Peterson et al., 2011). Multiple researchers (e.g., Davenport & Slate, 2019; Lee & Slate, 2014; Resilla, 2017) have established disparities in mathematics achievement as a function of language status. Students with dual classifications face greater challenges in school environments because educational systems fail to accommodate their specific needs, resulting in lower performance than their peers

(Cooc, 2023; Goldschmidt et al., 2024; Shockley, 2021). Pariseau (2019) and Taylor (2021) have also established that Emergent Bilingual students enrolled in special education have poorer outcomes on standardized assessments.

Moreover, these dually served students are at a higher risk of dropping out and are less likely to achieve a regular high school diploma (Castro et al., 2021; Morgan et al., 2018). As classrooms become increasingly diverse, it is important to understand the intersection of language acquisition and learning disabilities in mathematics problem-solving skills (Lei et al., 2020). After an extensive review of the literature, no published studies could be located on the mathematics performance of Grade 8 Emergent Bilingual students dually served in special education. The COVID-19 pandemic disrupted education in 2020, leading to many students receiving online education from home or no schooling at all. Furthermore, to date, no studies could be located about the effects of the pandemic on the mathematics performance of Texas Emergent Bilingual students enrolled in special education since their return to in-person instruction.

PURPOSE OF THE STUDY

This study aimed to examine the extent to which differences existed in the Grade 8 Mathematics assessment as a function of the special education status of Emergent Bilingual students. The first objective was to ascertain the effects of special education classification on the mathematics achievement of Emergent Bilingual students by performance standard (i.e., Approaches Grade Level, Meets Grade Level, and Masters Grade Level). The second purpose was to investigate the degree to which trends were present across five school years (i.e., 2017-2018, 2018-2019, 2020-2021, and 2022-2023) which includes three years before and two years after the pandemic.

SIGNIFICANCE OF THE STUDY

The significance of this study was to determine the extent to which differences were present in the mathematics performance of Emergent Bilingual students as a function of their special education status. Researchers (e.g., Davenport & Slate, 2019; Lee & Slate, 2014; Resilla, 2017) have documented language disparities on standardized assessments. Additionally, Pariseau (2019) and Taylor (2021) have established that Emergent Bilingual students enrolled in special education have consistently lower academic outcomes than their peers. However, limited research studies are available about the relationship between language and special education status on the mathematics performance of Grade 8 students. To ensure alignment between the STAAR Mathematics test and classroom instruction, the Texas Education Agency (2023c) redesigned the assessment in the 2022-2023 school year as mandated by House Bill 3906. The redesign included the following components: new question types, online testing and accommodations, evidence-based writing, and cross-curricular passages.

Addressed in this multiyear investigation were three years of data before the COVID-19 pandemic and two years after the pandemic.

RESEARCH QUESTIONS

The primary research question addressed in this study was: What is the difference in the mathematics performance of Texas Grade 8 Emergent Bilingual students by their special education status (i.e., Special Education and not Special Education)? Specific sub questions will be: (a) What is the difference in the Approaches Grade Level standard by the special education status of Emergent Bilingual students?; (b) What is the difference in the Meets Grade Level standard by special education status of Emergent Bilingual students?; (c) What is the difference in the Masters Grade Level standard by the special education status of Emergent Bilingual students?; (d) What trend is present in grade level standard performance by the special education status of Emergent Bilingual students across five school years?

RESEARCH METHOD

Research Design

A causal-comparative research design (Johnson & Christensen, 2020) was present in this investigation due to the presence of pre-existing data. Data obtained from the Texas Education Agency Public Education Information Management System for the 2017-2018, 2018-2019, 2020-2021, 2021-2022, and 2022-2023 school years were examined. Achievement data were analyzed across three performance standards to determine the extent of differences that might exist by the special education status of Emergent Bilingual students. The independent variable was the special education status (i.e., Special Education and Not Special Education) of Grade 8 Emergent Bilingual students in Texas. Dependent variables were the three performance levels on the STAAR Mathematics exam (i.e., Approaches Grade Level, Meets Grade Level, and Masters Grade Level) for the specified school years.

Participants and Instrumentation

Participants in this study were Texas Grade 8 students who were assessed on the STAAR Mathematics exam during the 2017-2018, 2018-2019, 2020-2021, 2021- 2022, and 2022-2023 school years. In this article, Emergent Bilingual refers to students who are "in the process of acquiring English and have another language as the primary or home language" (Texas Education Agency, 2023a, p. 2). This term was used to refer to all the previous labels. Students participating in this study are dually identified as Emergent Bilingual and receiving special education services. According to the Texas Education Agency, these students have been evaluated and qualify under one of 13 eligibility definitions (Texas Education Agency, 2023b). Data were acquired from the Texas Education Public Information

Management System. A Public Information Request was submitted to the Texas Education Agency requesting: (a) grade level, (b) STAAR Mathematics performance levels, (c) Emergent Bilingual indicator, and (d) special education status. The data were then uploaded into the Statistical Package for Social Sciences software program.

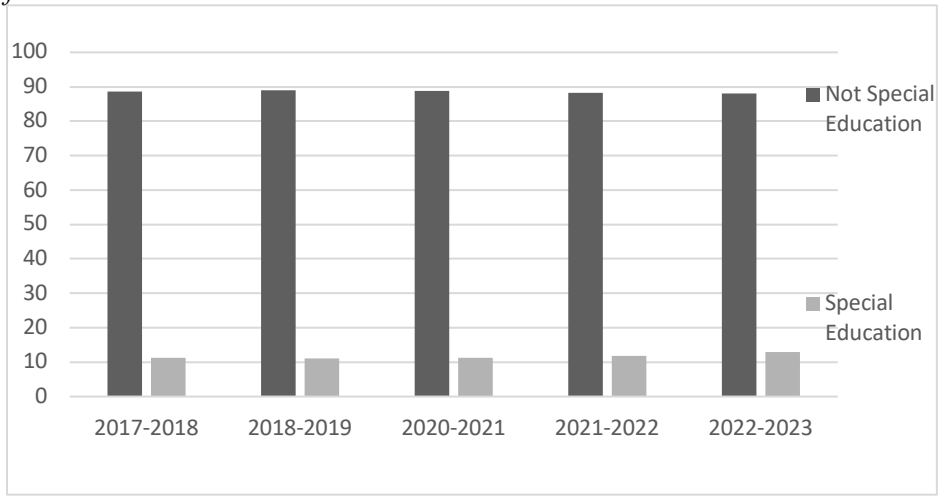
Table 1

Percentages and Frequencies of Texas Emergent Bilingual Students and Their Special Education Status for All Five School Years

School Year	Special Education *n* (%age)	Not Special Education *n* (%age)
2017-2018	*n* = 6,237 (11.3%)	*n* = 49,079 (88.7%)
2018-2019	*n* = 6,978 (11.0%)	*n* = 56,855 (89.0%)
2020-2021	*n* = 8,149 (11.2%)	*n* = 64,818 (88.8%)
2021-2022	*n* = 9,116 (11.8%)	*n* = 68,266 (88.2%)
2022-2023	*n* = 10,349 (12.9%)	*n* = 76,882 (88.1%)

Figure 1

Percentages of Emergent Bilingual Students by Their Special Education Status for All Five School Years



As delineated in Table 1, the total number of Emergent Bilingual students who participated in the Grade 8 STAAR Mathematics test, increased from 55,316 in 2017-2018 to 87,231 in 2022-2023. The number of Emergent Bilingual students receiving special education services increased from 6,237 in 2017-2018 to 10,349 in 2022-2023, an increase of 66% over the five years studied. As of note, the number of Emergent Bilingual students who did not receive special education services also increased each year from 49,079 during the 2017-2018 school year

to 76,882 in the 2022-2023 school year, however, this growth resulted in a relatively proportional decrease from 88.7% in 2017-2018 to 88% in 2022-2023. Represented in Figure 1 are these percentages across the five school years.

Three performance measures are assessed on the STAAR mathematics assessment. Students who attain the Approaches Grade Level performance standard are expected to advance successfully to the next grade or course with focused academic intervention. Generally, these students can demonstrate skills in familiar contexts (Texas Education Agency, 2017). Achievement in the Meets Grade Level standard indicates students who are likely to be successful in the next grade level or course but may still require short-term, targeted academic intervention. Students in this category generally demonstrate the ability to think critically and apply the assessed knowledge and skills in familiar contexts (Texas Education Agency, 2017). Students who achieve the Masters Grade Level performance are expected to succeed in the next grade or course with little or no academic intervention. Students in this category demonstrate the ability to think critically and apply the assessed knowledge and skills in varied contexts, both familiar and unfamiliar (Texas Education Agency, 2017). The Texas Education Agency enlisted the Human Resources Research Organization to conduct an independent evaluation of the STAAR test, assessing its validity and reliability (Texas Education Agency, 2016). The alignment of the mathematics assessment to intended expectations was determined to be 97.7% and 96.3%, respectively (Texas Education Agency, 2016). For additional information about the reliability and validity of the STAAR reading assessment, the reader is advised to consult the Technical Manuals on the Texas Education Agency website.

RESULTS

Data Analysis

To determine whether differences were present in the mathematics performance of Texas Grade 8 Emergent Bilingual students by their special education status (i.e., Special Education and not Special Education), Pearson chi-square analyses were conducted. Pearson chi-square procedures are the most appropriate statistical procedure to use when the independent variable and dependent variables are dichotomous (Slate, 2023). Prior to calculating Pearson chi-square procedures, its underlying assumptions were checked, and they were met.

Approaches Grade Level Analyses Across All Three School Years

For the first research question on the Approaches Grade Level standard for the 2017-2018 school year, the Pearson chi-square revealed the presence of a statistically significant difference, $\chi^2(1) = 1522.37$, $p < .001$, Cramer's V of .20, a small effect size (Cohen, 1988). As revealed in Table 2, a statistically significantly lower percentage of Emergent Bilingual students in special education, 26

percentage points more, met the Approaches Grade Level standard in this school year than Emergent Bilingual students who were not in special education.

Table 2

Percentages and Frequencies of Approaches Grade Level Standard by Student Special Education Status for All Five School Years

School Year and Special Education Status	Did Not Meet *n* and %age of Total	Met *n* and %age of Total
2017-2018		
Not Special Education	(*n* = 19,800) 40.3%	(*n* = 29,279) 59.7%
Special Education	(*n* = 4,137) 66.3%	(*n* = 2,100) 33.7%
2018-2019		
Not Special Education	(*n* = 20,299) 35.7%	(*n* = 36,556) 64.3%
Special Education	(*n* = 4,279) 61.3%	(*n* = 2,699) 38.7%
2020-2021		
Not Special Education	(*n* = 43,046) 66.4%	(*n* = 21,772) 33.6%
Special Education	(*n* = 6,976) 85.6%	(*n* = 1,173) 14.4%
2021-2022		
Not Special Education	(*n* = 28,830) 42.2%	(*n* = 39,436) 57.8%
Special Education	(*n* = 6,664) 73.1%	(*n* = 2,452) 26.9%
2022-2023		
Not Special Education	(*n* = 25,108) 32.7%	(*n* = 51,774) 67.3%
Special Education	(*n* = 6,390) 61.7%	(*n* = 3,959) 38.3%

With respect to the 2018-2019 school year, the Pearson chi-square revealed the presence of a statistically significant difference, $\chi^2(1) = 1722.66$, $p < .001$, Cramer's V of .16, a small effect size (Cohen, 1988). As delineated in Table 2, a statistically significantly lower percentage of Emergent Bilingual students in special education, more than 25 percentage points more, met the Approaches Grade Level standard in this school year than Emergent Bilingual students who were not in special education.

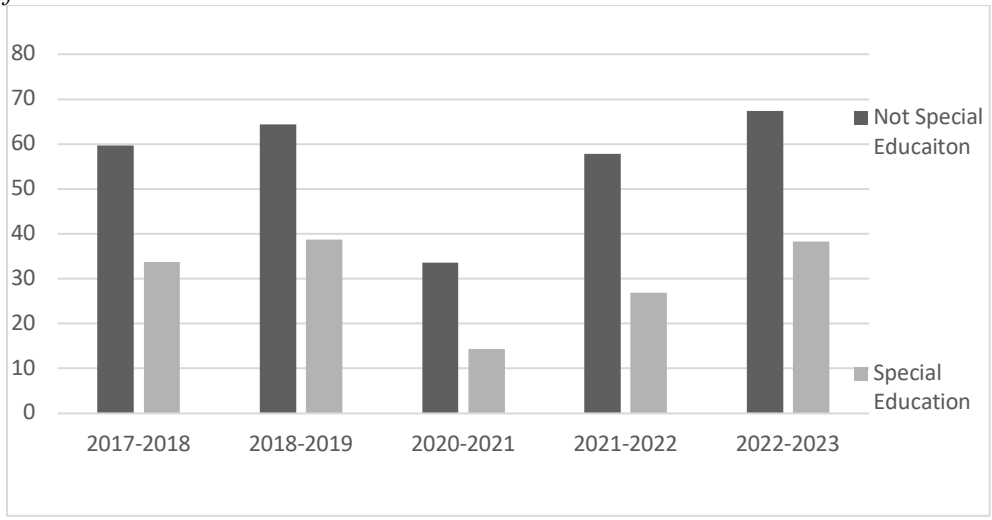
Concerning the 2020-2021 school year, a statistically significant difference was revealed, $\chi^2(1) = 1237.24$, $p < .001$, Cramer's V of .13, a small effect size (Cohen, 1988). A statistically significantly lower percentage of Emergent Bilingual students in special education, 9 percentage points higher, met the Approaches Grade Level standard in this school year than Emergent Bilingual students who were not in special education. Descriptive statistics for this analysis are contained in Table 2. Regarding the 2021-2022 school year, a statistically

significant difference was yielded, $\chi^2(1) = 3086.66$, $p < .001$, Cramer's V of .20, a small effect size (Cohen, 1988). A statistically significantly lower percentage of Emergent Bilingual students in special education, more than 30 percentage points more, met the Approaches Grade Level standard in this school year than Emergent Bilingual students who were not in special education.

With respect to the 2022-2023 school year, a statistically significant difference was revealed, $\chi^2(1) = 3345.06$, $p < .001$, Cramer's V of .02, a below small effect size (Cohen, 1988). As presented in Table 3.2, a statistically significantly lower percentage of Emergent Bilingual students in special education, 29 percentage points lower, met the Approaches Grade Level standard in this school year than Emergent Bilingual students who were not in special education. Depicted in Figure 2 are the percentages of these students regarding the Approaches Grade Level standards across all five school years.

Figure 2

Average Percentages of Emergent Bilingual Students by Their Special Education Status Who Met Grade 8 STAAR Mathematics Approaches Grade Level Standard for All Five School Years



Meets Grade Level Analyses Across All Five School Years

For the first research question on the Meets Grade Level standard for the 2017-2018 school year, the result was statistically significant, $\chi^2(1) = 990.42$, $p < .001$. The effect size for this finding, Cramer's V of .13, a small effect size (Cohen, 1988). As revealed in Table 3, a statistically significantly lower percentage of Emergent Bilingual students in special education, 18 percentage points, met the Meets Grade Level standard than did Emergent Bilingual students who were not in special education.

Table 3

Percentages and Frequencies of Meets Grade Level Standard by Student Special Education Status for All Five School Years

School Year and Special Education Status	Did Not Meet *n* and %age of Total	Met *n* and %age of Total
2017-2018		
Not Special Education	(*n* = 35,411) 72.2%	(*n* = 13,668) 27.8%
Special Education	(*n* = 5,654) 90.7%	(*n* = 583) 9.3%
2018-2019		
Not Special Education	(*n* = 37,389) 65.8%	(*n* = 19,466) 34.2%
Special Education	(*n* = 6,054) 86.8%	(*n* = 924) 13.2%
2020-2021		
Not Special Education	(*n* = 55,649) 85.9%	(*n* = 9,169) 14.1%
Special Education	(*n* = 7,850) 96.3%	(*n* = 299) 3.7%
2021-2022		
Not Special Education	(*n* = 51,293) 75.1%	(*n* = 16,973) 24.8%
Special Education	(*n* = 8,536) 93.6%	(*n* = 580) 6.4%
2022-2023		
Not Special Education	(*n* = 51,809) 67.4%	(*n* = 25,073) 32.6%
Special Education	(*n* = 9,254) 89.4%	(*n* = 1,095) 10.6%

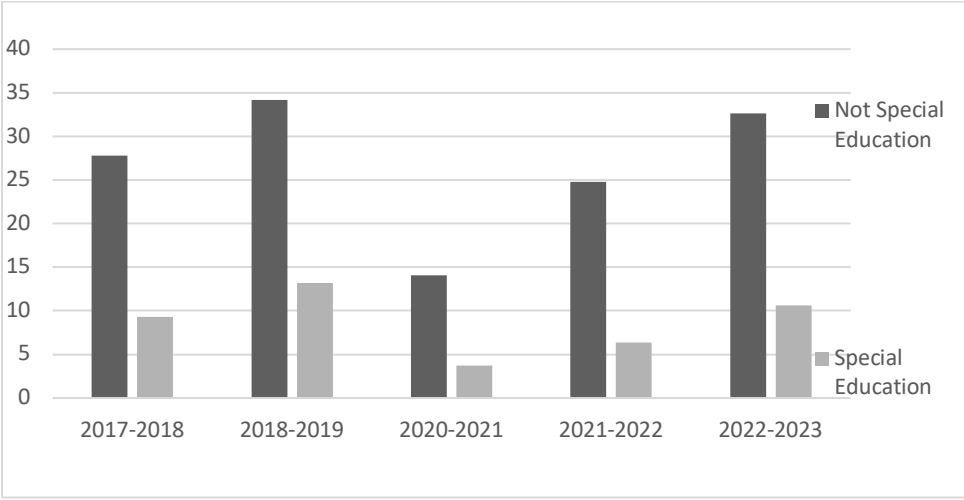
With respect to the 2018-2019 school year, a statistically significant difference was yielded, $\chi^2(1) = 1260.36$, $p < .001$, Cramer's V of .14, a small effect size (Cohen, 1988). A statistically significantly lower percentage of Emergent Bilingual students in special education, 20 percentage points higher, met the Meets Grade Level standard than did Emergent Bilingual students who were not in special education. Descriptive statistics for this analysis are contained in Table 3. Regarding the 2020-2021 school year, a statistically significant difference was revealed, $\chi^2(1) = 703.63$, $p < .001$, Cramer's V of .10, a small effect size (Cohen, 1988). As delineated in Table 3, a statistically significantly lower percentage of Emergent Bilingual students in special education, nearly 11 percentage points higher, met the Meets Grade Level standard in this school year compared to Emergent Bilingual students who were not in special education.

Concerning the 2021-2022 school year, a statistically significant presented in Table 3, a statistically significantly lower percentage of Emergent Bilingual students in special education, more than 18 percentage points higher, met the Meets Grade Level standard in this school year compared to Emergent Bilingual students who were not in special education. For the 2022-2023 school year, a

statistically significant result was revealed, $\chi^2(1) = 2108.32$, $p < .001$, Cramer's V of .16, a small effect size (Cohen, 1988). A statistically significantly lower percentage of Emergent Bilingual students in special education, 22 percentage points higher, met the Meets Grade Level standard in this school year compared to Emergent Bilingual students who were not in special education. Descriptive statistics for this analysis are contained in Table 3. Illustrated in Figure 3 are the percentages of these students regarding the Meets Grade Level standards across all five school years.

Figure 3

Average Percentages of Emergent Bilingual Students by Their Special Education Status Who Met Grade 8 STAAR Mathematics Meets Grade Level Standard for All Five School Years



Masters Grade Level Analyses Across All Five School Years

For the first research question on the Masters Grade Level standard for the 2017-2018 school year, the result was statistically significant, $\chi^2(1) = 212.48$, $p < .001$. The effect size for this finding, Cramer's V of .06, a below small effect size (Cohen, 1988). As revealed in Table 4, a statistically significantly lower percentage of Emergent Bilingual students in special education, more than 4 percentage points, met the Masters Grade Level standard than did Emergent Bilingual students who were not in special education.

With respect to 2018-2019 school year, a statistically significant difference was yielded, $\chi^2(1) = 242.92$, $p < .001$, Cramer's V of .06, a below small effect size (Cohen, 1988). A statistically significantly lower percentage of Emergent Bilingual students in special education, 4 percentage points higher met the Masters Grade Level standard than did Emergent Bilingual students who were not in special education. Descriptive statistics for this analysis are contained in Table 4. Concerning the 2020-2021 school year, a statistically significant result

was revealed, $\chi^2(1) = 159.23$, $p < .001$, Cramer's V of .05, a below small effect size (Cohen, 1988). As delineated in Table 4, a statistically significantly lower percentage of Emergent Bilingual students in special education, more than 2 percentage points higher, met the Masters Grade Level standard in this school year compared to Emergent Bilingual students who were not in special education.

Table 4

Percentages and Frequencies of Masters Grade Level Standard by Student Special Education Status for All Five School Years

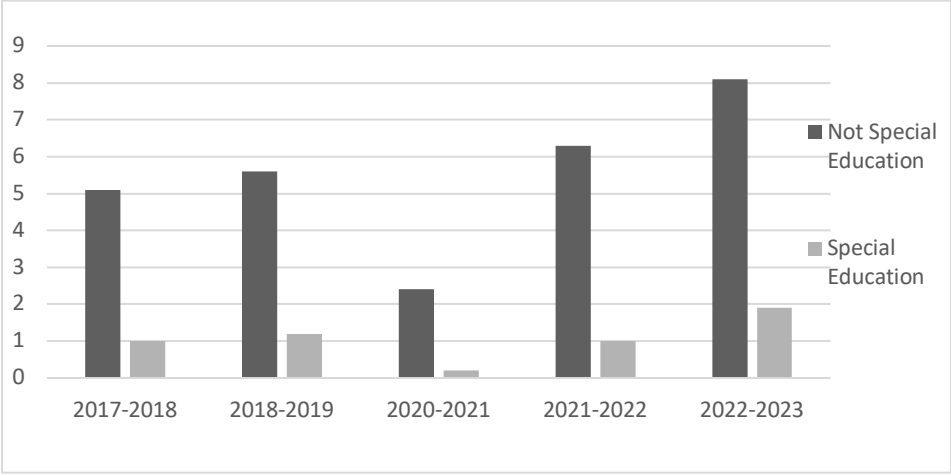
School Year and Special Education Status	Did Not Meet *n* and %age of Total	Met *n* and %age of Total
2017-2018		
Not Special Education	(*n* = 46,567) 94.9%	(*n* = 2,512) 5.1%
Special Education	(*n* = 6,175) 99%	(*n* = 62) 1%
2018-2019		
Not Special Education	(*n* = 53,666) 94.4%	(*n* = 3,189) 5.6%
Special Education	(*n* = 6,891) 98.8%	(*n* = 87) 1.2%
2020-2021		
Not Special Education	(*n* = 63,261) 97.6%	(*n* = 1,557) 2.4%
Special Education	(*n* = 8,129) 99.8%	(n = 20) 0.2%
2021-2022		
Not Special Education	(*n* = 63,956) 93.7%	(*n* = 4,310) 6.3%
Special Education	(*n* = 9,021) 99%	(*n* = 95) 1%
2022-2023		
Not Special Education	(*n* = 70,675) 91.9%	(*n* = 6,207) 8.1%
Special Education	(*n* = 10,156) 98.1%	(*n* = 193) 1.9%

Regarding the 2021-2022 school year, a statistically significant difference was yielded, $\chi^2(1) = 416.27$, $p < .001$, Cramer's V of .07, a below small effect size (Cohen, 1988). As presented in Table 4, a statistically significantly lower percentage of Emergent Bilingual students in special education, 5 percentage points higher, met the Masters Grade Level standard in this school year compared to Emergent Bilingual students who were not in special education. Lastly, for the 2022-2023 school year, a statistically significant difference was revealed, $\chi^2(1) = 517.14$, $p < .001$, Cramer's V of .08, a below small effect size (Cohen, 1988). A statistically significantly lower percentage of Emergent Bilingual students in special education, 7 percentage points, met the Masters Grade Level standard than

did Emergent Bilingual students not in special education. Descriptive statistics for this analysis are contained in Table 4. Represented in Figure 4 are the percentages of these students regarding the Masters Grade Level standards across all five school years.

Figure 4

Average Percentages of Emergent Bilingual Students by Their Special Education Status Who Met Grade 8 STAAR Mathematics Masters Grade Level Standard for All Five School Years



DISCUSSION AND CONCLUSIONS

In this Texas multiyear investigation, the Grade 8 STAAR Mathematics performance of Emergent Bilingual students was examined by their special education status. Five years of data, two prior to the pandemic (i.e., 2017-2018 and 2018-2019) and three post-pandemic (i.e., 2020-2021, 2021-2022, and 2022-2023), were analyzed to ascertain the effects of the COVID-19 pandemic. During the 2017-2018 school year, two years before the pandemic, only 33.7% of Emergent Bilingual students receiving special education services met the Approaches Grade Level standard compared to 59.7% of Emergent Bilingual students not in special education. In the 2018-2019 school year, one year preceding the pandemic, performance slightly improved, with over 38% of Emergent Bilingual students receiving special education services meeting the Approaches Grade Level standard, an increase of nearly 5 percentage points. However, in the school year after the pandemic, in 2020-2021, this percentage decreased substantially, with fewer than 15% of Emergent Bilingual students in special education meeting the standard. In the most recent data for the 2022-2023 school year, 38.3% of Emergent Bilingual students in special education met the Approaches Grade Level standard, indicating a return to pre-pandemic percentages.

With respect to the Meets Grade Level standard, in the 2017-2018 school year, two years before the pandemic, only 9.3% of Emergent Bilingual students receiving special education services met the performance standard compared to 27.8% of Emergent Bilingual students not in special education. In the 2018-2019 school year, one year preceding the pandemic, performance slightly increased, with over 13.2% of Emergent Bilingual students receiving special education services meeting the standard, an increase of nearly 4 percentage points. However, in 2020-2021, following the pandemic, this percentage dropped substantially, with fewer than 3.7% of Emergent Bilingual students in special education meeting the standard. The most recent data for the 2022-2023 school year indicated a return to pre-pandemic levels, with 10.6% of Emergent Bilingual students in special education meeting the Meets Grade Level standard.

Regarding the Masters Grade Level standards, in the 2017-2018 school year, only 1% of Emergent Bilingual students in special education met the performance standard compared to 5.1% of Emergent Bilingual students not in special education. In the 2018-2019 school year, performance slightly improved, with 1.2% of Emergent Bilingual students receiving special education services meeting the Masters Grade Level standard. However, in the 2020-2021 school year, this percentage decreased substantially, with only .02% of Emergent Bilingual students in special education meeting the standard. The most recent data for the 2022-2023 school year demonstrates that 1.9% of Emergent Bilingual students in special education met the Masters Grade Level standard, indicating a higher number of students meeting the standard than before the pandemic.

Connections to Existing Literature

Similar to this multiyear, statewide investigation, considerable research studies (e.g., Taylor, 2021; Hall, 2022; Pariseau, 2019; Castro et al., 2021; Morgan et al., 2018) have been conducted on the educational gaps between Emergent Bilingual students in special education and Emergent Bilingual students not in special education. Established in this research investigation for mathematics performance was that statistically significantly lower percentages of Emergent Bilingual students in special education met all three performance standards across the five school years examined than Emergent Bilingual students not in special education. Emergent Bilingual students in special education have more difficulties achieving success in higher education and have a higher risk of dropping out (Castro et al., 2021; Morgan et al., 2018). The information provided will address the gap in the existing literature on the mathematics performance of Emergent Bilingual students in special education, particularly after the COVID-19 pandemic.

Connections to Theoretical Framework

The outcomes of this multiyear investigation broaden the scope of Ogbu's cultural-ecological theory (Ogbu & Simons, 1998) by demonstrating that Emergent Bilingual students, classified as involuntary minorities, encounter discriminatory educational practices that negatively affect their academic

performance. The COVID-19 pandemic disrupted education in 2020, causing students to receive online education from home or experience no schooling at all. Students with dual classifications encountered significant challenges in online environments as educational systems failed to accommodate their specific needs, resulting in lower performance than their peers (Cooc, 2023; Goldschmidt et al., 2024; Shockley, 2021), a trend that worsened during the pandemic (Stelitano et al., 2022). Emergent Bilingual students and students in special education experienced chronic absenteeism, unreliable internet, unreliable technology, missing assignments, and poorer academic performance compared to their peers who were not dually served (Stelitano et al., 2022). Moreover, the referral process for special education services was halted (Mendoza et al., 20220), special education and language services were disrupted (Sahakyan & Cook, 2021), and a shortage of resources and accommodations for children with different kinds of disabilities were present (Bakaniene et al., 2023; Purwati et al., 2021). For the 10% of Emergent Bilingual students who are dually identified and receive special education services in Texas (Texas Education Agency, 2023b), the pandemic had profound negative effects on their performance on the state-mandated mathematics assessment. Lower percentages of Emergent Bilingual students in special education met all three grade level performance standards for the years following the pandemic (2021-2022 and 2022-2023) compared to Emergent Bilingual students not in special education. These results were in contrast to the 2020-2021 school year, during which the performance gap was consistent with the two years prior to the pandemic.

IMPLICATIONS

Based on the results of this multi-year investigation, several implications for policy and practice are suggested. With respect to policy implications, as the percentage of Emergent Bilingual students increases across the state, policymakers should continue funding and advocating for Emergent Bilingual students with and without disabilities. In 2015, the Every Student Succeeds Act required states to measure the yearly progress of Emergent Bilingual students through standardized assessments (Adler-Greene, 2019). Another implication for policy is for lawmakers to ensure testing for disabilities is equitable. Educational decision-makers often grapple with discerning whether Emergent Bilingual students perform poorly due to language or disability. By solidifying testing equity, the state will ensure all students have access to the services they need to be successful.

Concerning practice implications, school leaders should make efforts to recruit and retain bilingual teachers with a special education certification. The 2021 House Bill 2256, mandated that the Texas State Board for Educator Certification create a Bilingual Special Education certificate that aims to provide effective instruction to Emergent Bilingual students with disabilities (Texas Education Agency, 2022). District leaders could collaborate with university partners through Grow Your Own teacher programs and partnerships to ensure a

pipeline of certified teachers that provide equitable services for Emergent Bilingual students who are dually served.

Recommendations for Future Research

Based on the results of this investigation, several recommendations for future research can be made. First, only data on Emergent Bilingual students in Texas were analyzed. As such, it is recommended that researchers continue this study across other states with high numbers of Emergent Bilingual students such as California and Florida. Another recommendation is that researchers perform a qualitative analysis of the perceptions of administrators and teachers regarding the performance of Emergent Bilingual students in special education and Emergent Bilingual students not in special education. It is also recommended that this study be replicated with Emergent Bilingual students in special education and Emergent Bilingual students not in special education by ethnicity/race. A fourth recommendation is that researchers determine the college readiness of Emergent Bilingual students in special education and Emergent Bilingual students not in special education. Lastly, it is recommended that researchers study the effects of misidentification of Emergent Bilingual students.

CONCLUSION

In this article, the extent to which differences were present by special education status (i.e., Special Education, Not Special Education) on the Grade 8 Mathematics STAAR test's three Grade Level performance measures (i.e., Approaches Grade Level, Meets Grade Level, and Masters Grade Level) during the 2017-2018, 2018-2019, 2020-2021, 2021-2022 and 2022-2023 was addressed. Statistically significant differences were documented across the three Grade Level performance standards for all five school years. Higher percentages of Emergent Bilingual students not in special education met all three grade level performance standards than Emergent Bilingual students in special education. One interesting finding is that the gap in performance between Emergent Bilingual students in special education and Emergent Bilingual students not in special education was very close the year after the pandemic.

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