An Analysis of Standardized Test Scores in 8th and 9th Grade English Language Arts (ELA), English 1 & 2, Science, Biology 1, and Algebra 1 for Students Having Access to Proximity Learning® Virtual Instruction in Memphis-Shelby County, Tennessee

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Abstract

This study investigated standardized test scores in 8th and 9th Grade English Language Arts (ELA), English 1 & 2, Science, Biology 1, and Algebra 1 for students who have had access to Proximity Learning® Virtual Instruction and in-class facilitation in Memphis-Shelby County, Tennessee schools. The mean scores were examined in 11 areas and the study concluded that students who had Proximity Learning® pedagogical exposure had a Proximity to Proximity improvement in two subjects (English language arts and science) in years 2021 and 2022. Datasets in 2021 showed Proximity had slightly higher scores than non-Proximity exposed students in 8th grade English Language Arts, and 8th grade Science. Datasets in 2021 showed that Proximity had slightly lower scores than non-Proximity exposed students in 9th grade English 1 and 9th grade Biology.

Datasets in 2022 showed that Proximity had slightly higher scores than non-Proximity exposed students in 9th grade Algebra 1, 9th grade English 1, 9th grade English 2. Datasets in 2022 showed that Proximity had slightly lower scores than non-Proximity exposed students in 9th grade Biology 1.

Although there is a significant number of Proximity and non-Proximity exposed students who scored in Level 3 (On-Track) and Level 4 (Mastery), the mean scores for both groups were in Level 2 (Approaching).

This "performance demonstrates that students are approaching understanding having partial ability to apply grade/course-level knowledge and skills defined by the Tennessee Academic Standards."

Keywords: Streaming education; compulsory education; Post COVID-19; online teaching; school performance; tutoring; traditional teaching, team teaching

Introduction

During the Covid-19 pandemic of 2019-2021, online teaching and learning, school efficacy, and teacher/student support became a monumental task for school corporations throughout the United States. Schools were forced into transitioning their pedagogy from in-class daily instruction to virtual online instruction. However, school districts had to become proactive, adapt to the challenging circumstances, and initiate new curriculum and pedagogical methods to facilitate student learning.

Memphis-Shelby County Schools decided to contract with Proximity Learning® (an ESS Company®) to bridge the gap during and after the pandemic. The COVID-19 pandemic was a watershed moment for synchronous streaming, asynchronous, and online education. Large-scale online education was deployed for over 40 million students. Educational systems had to respond to massive public health emergencies, leading to unprecedented online implementation (Wang & Fu, 2020). All sectors of society had to stop in-person classes without a hindrance in learning (Zheng et al., 2020), and to provide various online platforms. Could a company that offers online and in-person teachers, tutoring, and technical support, be an effective resource to a school district? Can efficacy in schools be measured after a global pandemic? The Memphis-Shelby County Schools hired Proximity Learning® to assist its staff and faculty with the pedagogical challenges of teaching students in an environment of educational uncertainty.

Purpose of the Study

The purpose of this study was to investigate and analyze Standardized Test Scores in 8th and 9th Grade English Language Arts (ELA), English 1 & 2, Science, Biology 1, and Algebra 1 for students who have had access to Proximity Learning® Virtual Instruction and in-class facilitation in Memphis-Shelby County, Tennessee schools. The study will compare and contrast the 8th and 9th grade scores in the aggregate, by student groups, and by subject with Proximity Learning® assistance and Memphis-Shelby County students who did not have the same assistance.

The School District, the TNREADY TCAP EOC, and the Service Providing Company

The Memphis-Shelby County School District in southwestern Tennessee is the home of 221 schools with more than 110,780 students. The student to faculty ratio is 17:1. The district has 89 middle schools and 45 high schools. Memphis Shelby County has an ethnic population of 6% White, 73.4% Black, 1.1% Asian or Asian/Pacific Islander, 15.9% Hispanic/Latino, and 0.1% American Indian or Alaska Native.

The Tennessee Comprehensive Assessment Program (TCAP) is intended to inform a wide variety of conversations about student progress towards meeting the academic expectations for their grade level, as determined by the Tennessee Academic Standards. A student's Scale Score is a conversion of a student's Raw Score (number correct out of total questions) on a test to a common scale that allows for a numerical comparison between students. Scale Score is score that maintains the same meaning in each test administration, so scores are comparable over time and across the state regardless of which specific form was used or which year a student took their test. Performance Levels describe how well a student has met the expectations of the content area based on Tennessee Academic Standards. Scores range from 200 to 450. Performance levels align to scale scores established by Tennessee educators. Levels can be found in Table 1.

Table 1. Tennessee Scale Scoring Levels

Level 1 (Below)	Level 2 (Approaching)	Level 3 (On-track or Met)	Level 4 (Mastered or Exceeded)
Performance at this level demonstrates that the student has a minimal understanding and has a nominal ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.	Performance at this level demonstrates that the student is approaching understanding and has a partial ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.	Performance at this level demonstrates that the student has a comprehensive understanding and has a thorough ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.	Performance at this level demonstrates that the student has an extensive understanding and has an expert ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.

Proximity Learning® describes itself as "A Company Providing Certified Teachers and Accredited Courses through Online Streaming." The company pairs its own teachers with a school district's paraprofessional facilitators who have a presence in the actual/physical classroom. These facilitators go through Proximity Learning's training to be the be teammates, supporting students and the Proximity Learning® teacher. Proximity Learning also provides access to certified livestreamed teachers to fill vacancies without needing a full-time instructor. Proximity Learning® is a part of ESS which is the nation's largest education-exclusive staffing company. ESS provides full-service substitute, permanent, and virtual staffing and management to 700+ school districts across 27 states.

Method and Data Collection

The researcher was given permission to acquire the datasets from the Institutional Review board at Chicago State University and Memphis-Shelby County Schools. Researcher also has a valid certificate from CITI (Collaborative Institutional Training Initiative).

Proximity Learning® and ESS were notified that data from MSCS were to be collected on their outcomes. This study included data from over 40,000 students in the Memphis-Shelby County School System. The Memphis-Shelby County Schools Research and Performance institute provided the researcher with a MSC Dataset and a Proximity Learning Dataset. The datasets were sent via FTP (File Transfer Protocol) and were kept on a secure server at Chicago State University's Department of Advanced Studies in Education.

All Memphis-Shelby County students and students taught using Proximity Learning® systems were designated by distinct and secure coding. The researcher used Qualtrics XM and Excel to code the datasets. Students were identifiable by name, but by pupil ID number. Scaled scores were collected for each student, course, and subsequent scores for the following year, and the researcher compared, contrasted, and related the 8th and 9th grade scores for Memphis-Shelby County students and students who had access to Proximity Learning® instruction and/or facilitation. The study quantified and codified 8th and 9th Grade English Language Arts (ELA), English 1 & 2, Science, Biology 1, and Algebra 1 scores in the following 4 categories: Below Level (BL), Approaching Level (AL), On-Track/Met Level (OTL), Mastery/Exceeded Level (ML). The researcher also provided 10th grade results, however those results were subject to small datasets among the Proximity Learning scores. To avoid issues in reliability such as the number of samples not being sufficient to represent our study, the 10th grade scores are for reference only, and are not to be compared or contrasted. Small datasets can yield: an outlier or sample that significantly deviates from the rest of the dataset; overfitting or a model that performed well with the training set, but had poor performance with the test; sampling bias, or the dataset not reflecting reality, or a sample was not complete, with some missing features.

The 8th and 9th grade scores between students with a Proximity Learning instructor or facilitator should not be explicitly compared to or contrasted (no causation or correlation) with those Memphis-Shelby County students who were not instructed or facilitated by Proximity. The researcher is clear that there may be no causation and or correlation in the datasets and the outcomes, however, there may be relationships and/or association with the data.

Results

The research provided 11 figures with aggregated and stratified data from the Memphis-Shelby County Schools datasets. Student data from Proximity Learning® System instructors, facilitators, software, and streaming pedagogy inputs were compared and contrasted with students not taught, tutored, or having access to any of the Proximity Learning® System.

Overall, the 2021 data details the following:

- Students instructed, facilitated, and/or having access to software, tutoring, streaming/online pedagogical inputs from Proximity Learning® System had slightly higher mean scores in most disciplines tested;
- Students instructed, facilitated, and/or having access to software, tutoring, streaming/online pedagogical inputs from Proximity Learning® System had slightly higher 8th grade aggregated mean scores (309.45 to 298.48);

- Students instructed, facilitated, and/or having access to software, tutoring, streaming/online pedagogical inputs from Proximity Learning® System had slightly higher 8th grade ELA mean scores (314.55 to 308.12);

- Students instructed, facilitated, and/or having access to software, tutoring, streaming/online pedagogical inputs from Proximity Learning® System had slightly higher 8th grade Science mean scores (303.48 to 299.68);

- Students instructed, facilitated, and/or having access to software, tutoring, streaming/online pedagogical inputs from Proximity Learning® System had slightly lower 9th grade English 1 mean scores (316.55 to 320.44);

- Students instructed, facilitated, and/or having access to software, tutoring, streaming/online pedagogical inputs from Proximity Learning® System had slightly lower 9th grade Biology mean scores (309.67 to 314.59).

Overall, the 2022 data details the following:

- Students instructed, facilitated, and/or having access to software, tutoring, streaming/online pedagogical inputs from Proximity Learning® System had slightly higher aggregated mean score (308.66 to 298.67);

- Students instructed, facilitated, and/or having access to software, tutoring, streaming/online pedagogical inputs from Proximity Learning® System had slightly higher 9th grade English 1 mean score (323.63 to 319.01);

- Students instructed, facilitated, and/or having access to software, tutoring, streaming/online pedagogical inputs from Proximity Learning® System had slightly higher 9th grade English 2 mean score (311.42 to 303.69);

- Students instructed, facilitated, and/or having access to software, tutoring, streaming/online pedagogical inputs from Proximity Learning® System had slightly higher 9th grade Algebra 1 mean score (289.44 to 277.40);

- Students instructed, facilitated, and/or having access to software, tutoring, streaming/online pedagogical inputs from Proximity Learning® System had slightly lower 9th grade Biology 1 mean score (307.73 to 310.04).

Gains in the following year

In 2021, the 8th grade Proximity ELA mean score was 314.55. In 2022, the 9th grade Proximity English 1 mean score was 323.63, and the Proximity English 2 mean score was 311.42.

In 2021, the 8th grade Proximity Science mean score was 303.48. In 2022, the 9th grade Proximity Biology mean score was 307.73.

The following figures explain the dataset.

Figure 1

Aggregated Scaled Scores – All Grades and Subjects for 2021
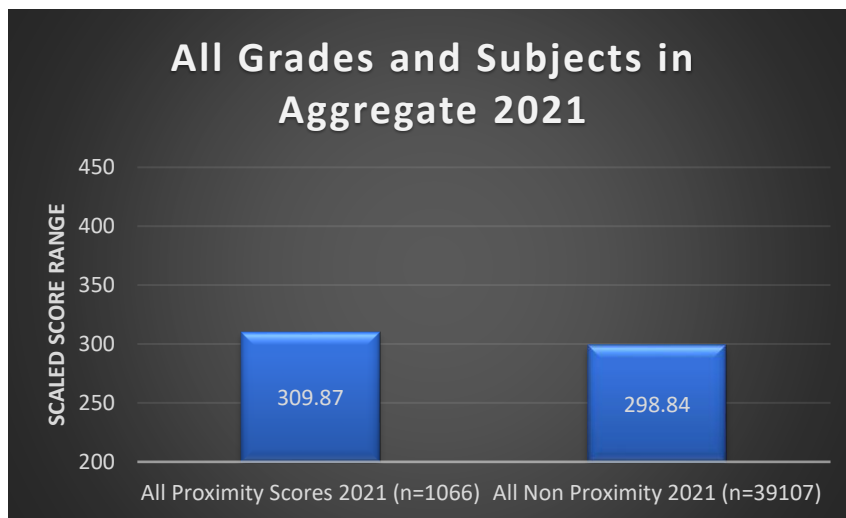
In Figure 1, all student scores in all grades and subjects were aggregated into a mean (Bio, ELA, Eng 1, Science). This includes all students from the dataset provided by Memphis-Shelby County Schools. There were 39,107 students (4th through 11th grade) who did not have Proximity Learning® system instruction or facilitation. There were 1,066 who had Proximity Learning® system instruction or facilitation. Proximity Learning® system students' mean scores were 309.37 and non-Proximity Learning® system students' mean scores were 298.84. In the aggregate, Proximity Learning® system students are at Level 2 demonstrating that the student is approaching understanding and has a partial ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.
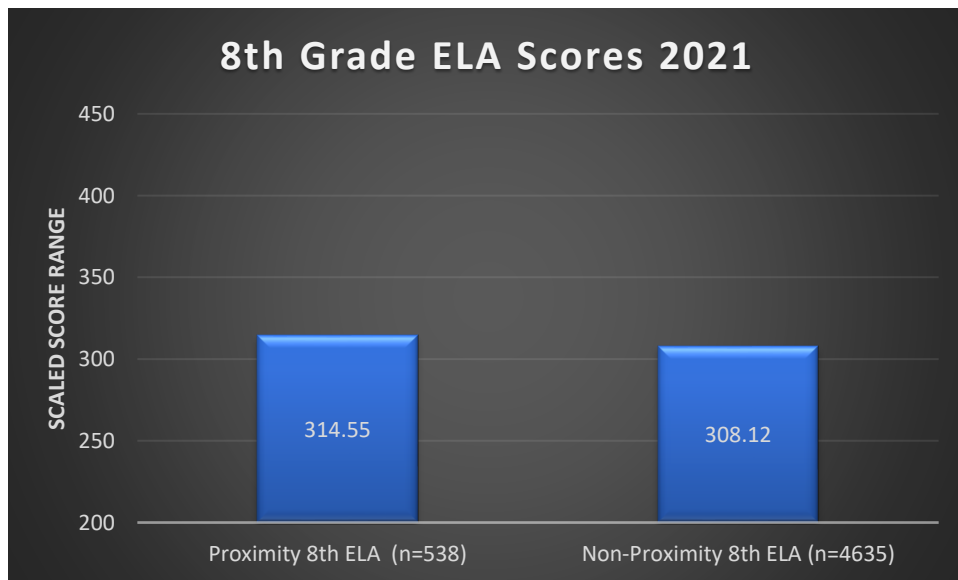
Figure 2

8th Grade Aggregated Scale Scores - All Subjects for 2021
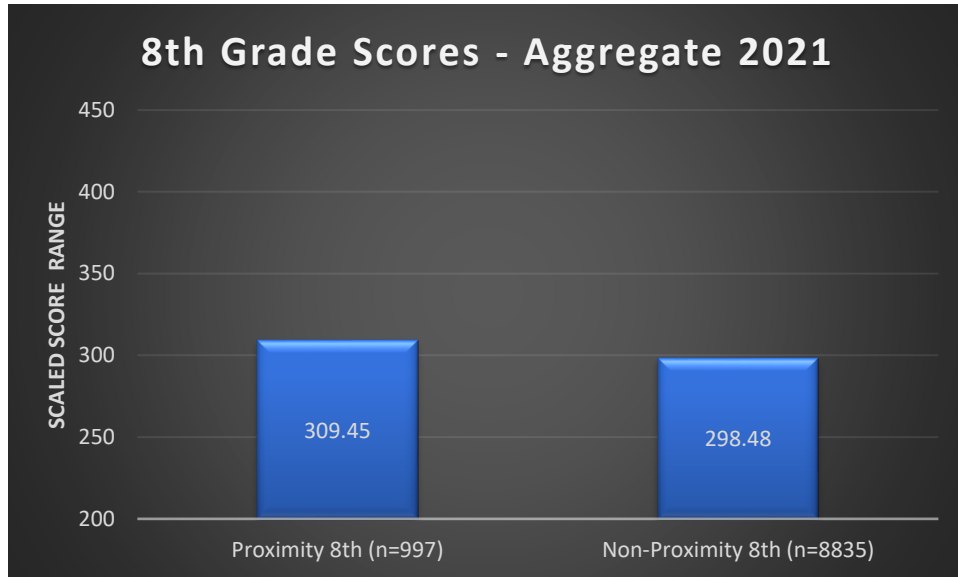
In Figure 2, all student scores in all 8th grade and all subjects were aggregated into a mean. This includes all 8th grade students from the dataset provided by Memphis-Shelby County Schools. There were 8835 students who did not have Proximity Learning® system instruction or facilitation. There were 997 who had Proximity Learning® system instruction or facilitation. Proximity Learning® system students' mean scores were 309.45 and non-Proximity Learning® system students' mean scores were 298.48. In the 8th grade aggregate, Proximity Learning® system students are at Level 2 demonstrating that the student is approaching understanding and has a partial ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.
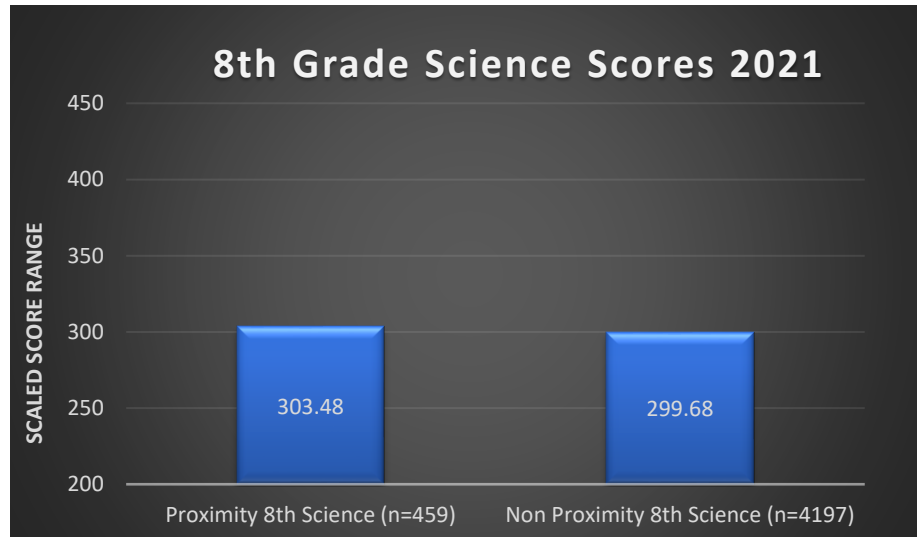
Figure 3

8th Grade English Language Arts Scaled Scores for 2021

In Figure 3, all student scores in all 8th grade ELA were calculated into a mean score. This includes all students from the dataset provided by Memphis-Shelby County Schools. There were 4,635 students who did not have Proximity Learning® system instruction or facilitation. There were 538 who did have Proximity Learning® system instruction or facilitation. Proximity Learning® system students' mean scores were 314.55 and non-Proximity Learning® system students' mean scores were 308.12. In the 8th grade ELA category, Proximity Learning® system students are at Level 2 demonstrating that the student is approaching understanding and has a partial ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.
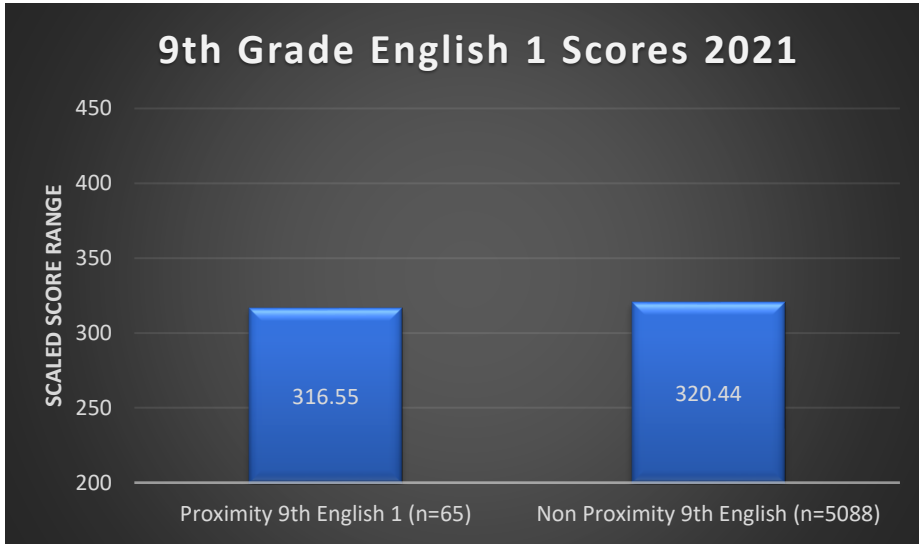
Figure 4

8th Grade Science Scaled Scores for 2021

In Figure 4, all 8th grade Science scores were aggregated into a mean score. This includes all 8th grade students from the dataset provided by Memphis-Shelby County Schools. There were 4,197 who did not have Proximity Learning® system instruction or facilitation. There were 459 who did have Proximity Learning® system instruction or facilitation. Proximity Learning® system students' mean scores were 303.48 and non-Proximity Learning® system students' mean scores were 299.68. In the aggregate, Proximity Learning® system students are at Level 2 demonstrating that the student is approaching understanding and has a partial ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.
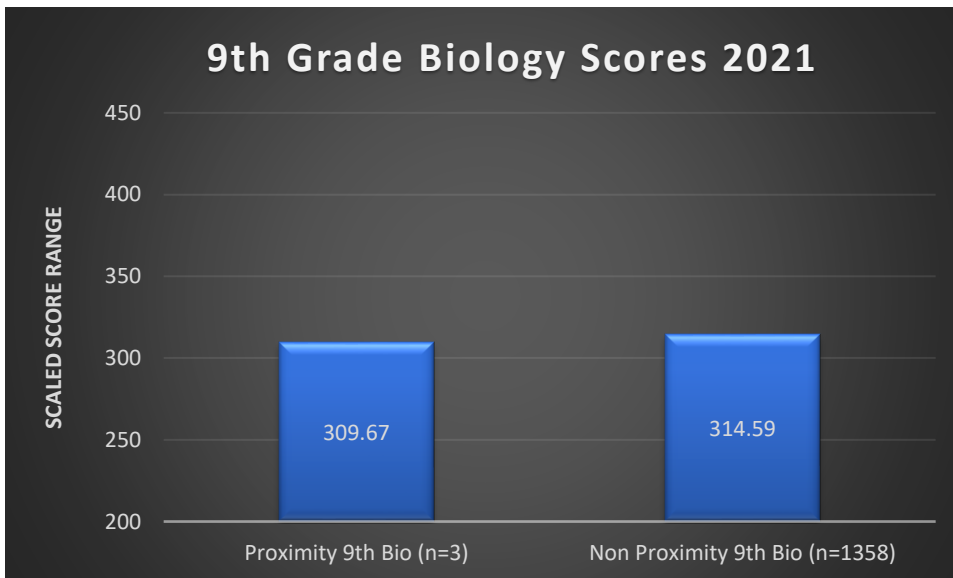
Figure 5

9th Grade English 1 Scaled Scores for 2021

In Figure 5, all 9th grade English 1 scores were aggregated into a mean score. This includes all 9th grade students from the dataset provided by Memphis-Shelby County Schools. There were 5,088 who did not have Proximity Learning® system instruction or facilitation. There were 65 who did have Proximity Learning® system instruction or facilitation. Proximity Learning® system students' mean scores were 316.55 and non-Proximity Learning® system students' mean scores were 320.44. In the aggregate, Proximity Learning® system students are at Level 2 demonstrating that the student is vastly approaching understanding and has a partial ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.

Figure 6

*9th Grade Biology Scaled Scores for 2021*

In Figure 6, all 9th grade Biology scores were aggregated into a mean score. This includes all 9th grade students from the dataset provided by Memphis-Shelby County Schools. There were 1,358 who did not have Proximity Learning® system instruction or facilitation. There were 3* who did have Proximity Learning® system instruction or facilitation. Proximity Learning® system students' mean scores were 309.67 and non-Proximity Learning® system students' mean scores were 314.59. In the aggregate, Proximity Learning® system students are at Level 2 demonstrating that the student is approaching understanding and has a partial ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.

*Note: This sample is limited. Small datasets can yield an outlier or sample that significantly deviates from the rest of the dataset.

Figure 7

*Aggregated Scaled Scores - All Grades and Subjects for 2022*
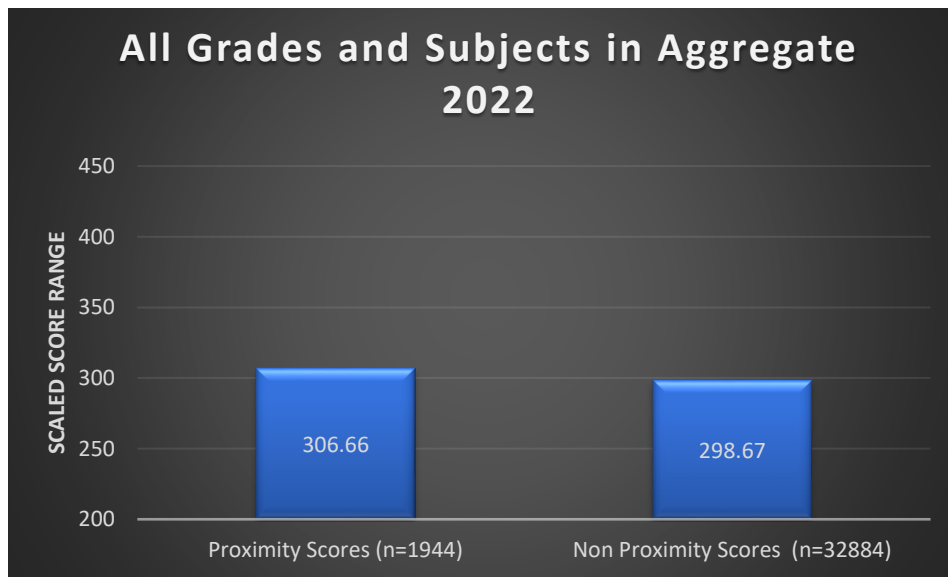
In Figure 7, all student scores in all grades and subjects were aggregated into a mean. This includes all students from the dataset provided by Memphis-Shelby County Schools. There were 32,884 students who did not have Proximity Learning® system instruction or facilitation. There were 1,944 who had Proximity Learning® system instruction or facilitation. Proximity Learning® system students' mean scores were 306.66 and non-Proximity Learning® system students' mean scores were 298.67. In the aggregate, Proximity Learning® system students are at Level 2 demonstrating that the student is approaching understanding and has a partial ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.
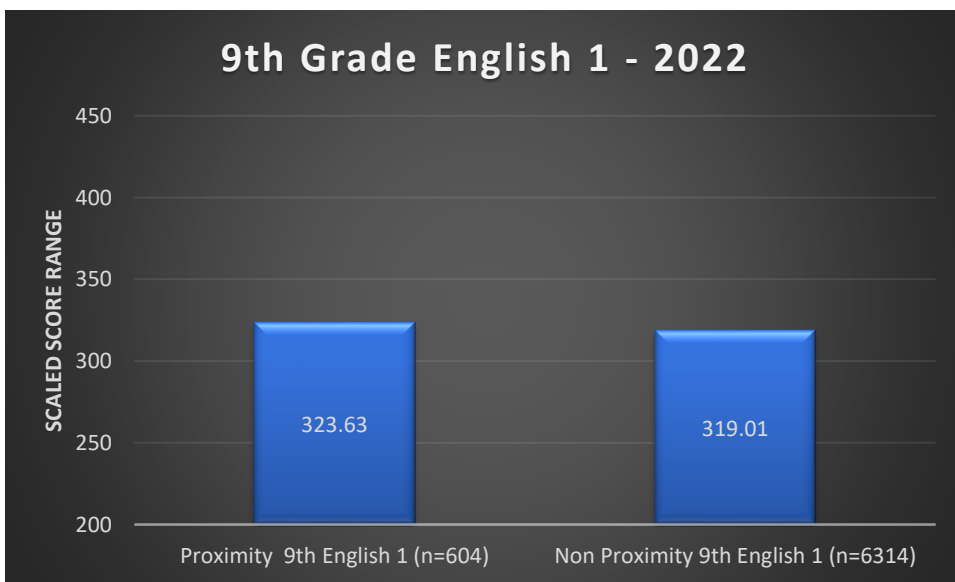
Figure 8

9th Grade Algebra 1 – 2022
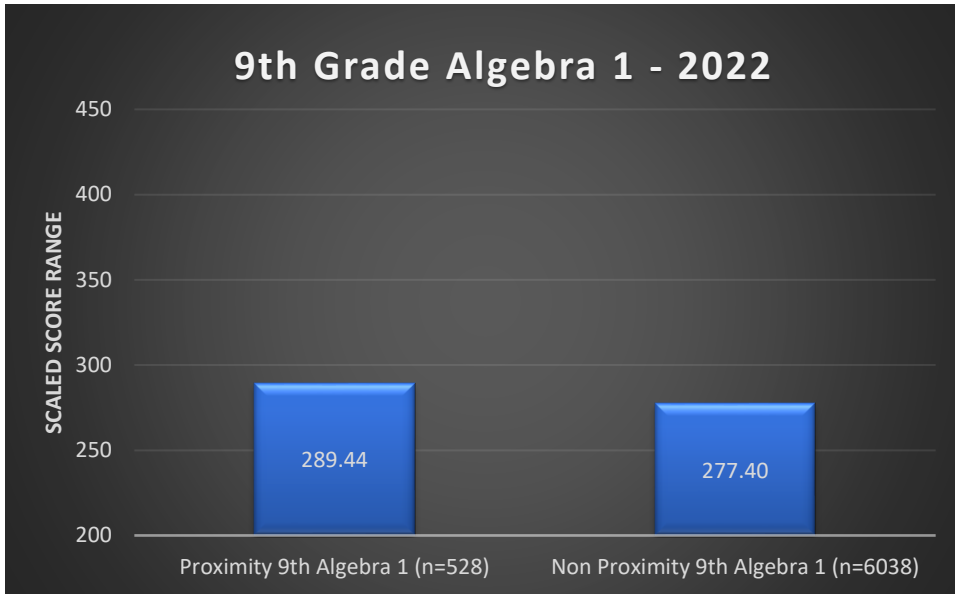
In Figure 8, all 9th grade Algebra 1 scores were aggregated into a mean. This includes all students from the dataset provided by Memphis-Shelby County Schools. There were 6,038 who did not have Proximity Learning® system instruction or facilitation. There were 528 who had Proximity Learning® system instruction or facilitation. Proximity Learning® system students' mean scores were 289.44 and non-Proximity Learning® system students' mean scores were 277.40. In the aggregate, Proximity Learning® system students are at Level 1 demonstrating that the student has minimal understanding and has nominal ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.
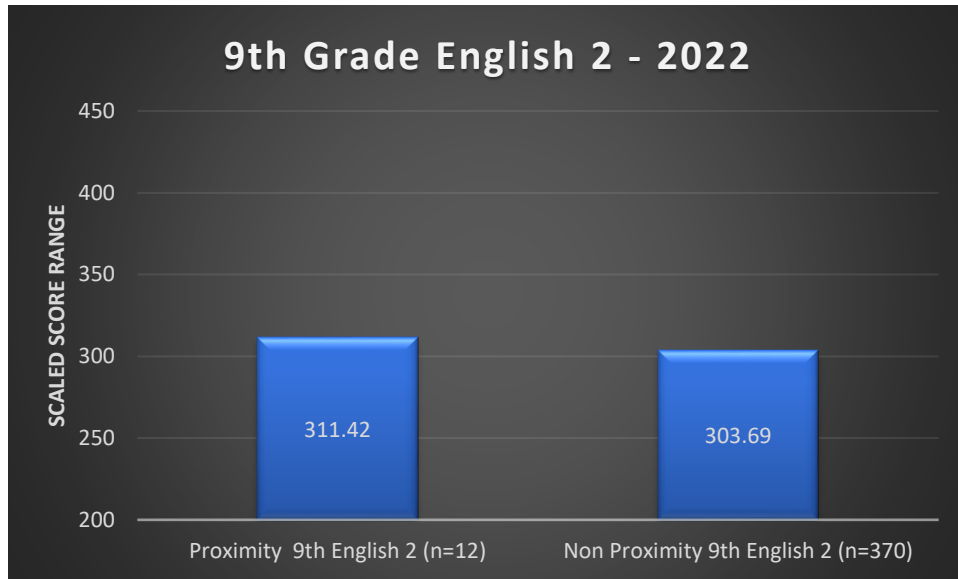
Figure 9

9th Grade English 1 – 2022

In Figure 9, all 9th grade English 1 scores were aggregated into a mean. This includes all students from the dataset provided by Memphis-Shelby County Schools. There were 6,314 students who did not have Proximity Learning® system instruction or facilitation. There were 604 who had Proximity Learning® system instruction or facilitation. Proximity Learning® system students' mean scores were 323.63 and non-Proximity Learning® system students' mean scores were 319.01. In the aggregate, Proximity Learning® system students are at a higher Level 2 demonstrating that the student is vastly approaching understanding and has a partial ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.

Figure 10

9th Grade English 2 Scaled Scores – 2022

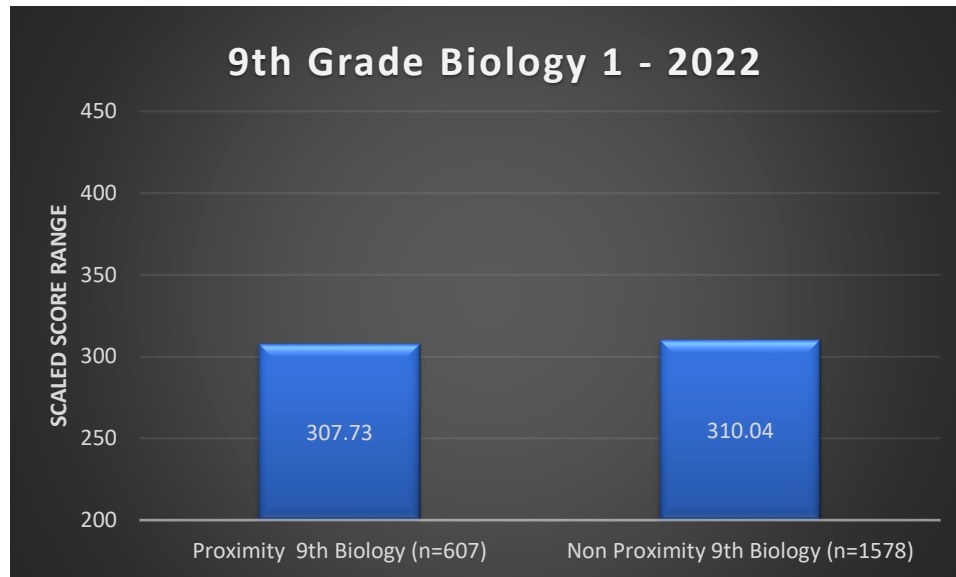In Figure 10, all student scores in 9th grade English 2 were aggregated into a mean. This includes all students from the dataset provided by Memphis-Shelby County Schools. There were 370 students who did not have Proximity Learning® system instruction or facilitation. There were 12 who had Proximity Learning® system instruction or facilitation. Proximity Learning® system students' mean scores were 311.42 and non-Proximity Learning® system students' mean scores were 303.69. In the aggregate, Proximity Learning® system students are at Level 2 demonstrating that the student is approaching understanding and has a partial ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.

*Note: This sample is limited. Small datasets can yield an outlier or sample that significantly deviates from the rest of the dataset.

Figure 11

9th Grade Biology Scaled Scores – 2022

In Figure 11, all 9th grade Biology 1 scores were aggregated into a mean. This includes all students from the dataset provided by Memphis-Shelby County Schools. There were 1,578 students who did not have Proximity Learning® system instruction or facilitation. There were 607 who had Proximity Learning® system instruction or facilitation. Proximity Learning® system students' mean scores were 307.73 and non-Proximity Learning® system students' mean scores were 310.04. In the aggregate, Proximity Learning® system students are at Level 2 demonstrating that the student is approaching understanding and has a partial ability to apply the grade/course-level knowledge and skills defined by the Tennessee Academic Standards.

Discussion

Datasets in 2021 showed Proximity had slightly higher scores than non-Proximity exposed students in 8th grade English Language Arts, and 8th grade Science. Datasets in 2021 showed that Proximity had slightly lower scores than non-Proximity exposed students in 9th grade English 1 and 9th grade Biology.

Datasets in 2022 showed that Proximity had slightly higher scores than non-Proximity exposed students in 9th grade Algebra 1, 9th grade English 1, and 9th grade English 2. Datasets in 2022 showed that Proximity had slightly lower scores than non-Proximity exposed students in 9th grade Biology 1.

Disclosure Statement

The author has no competing interests to declare. The author posed no risk to subjects. The author posed no harm to any subjects. This study received an IRB exempt status. The exemption may only be used for studies about normal educational practices. Information obtained is not identifiable. Disclosure outside of the research would not put subjects at risk of harm. None of the subjects used in the data are identifiable. No subjects had to reveal identity. None of my subjects were compensated. None of my subjects had to reveal information such as their name, address, or school. The researcher received no benefit.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request, and with permission from Chicago State University.

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