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A Mirage of Learning Loss?

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by

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A Capstone Report
Submitted in Partial Fulfillment of the Requirements for the
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TITLE: A MIRAGE OF LEARNING LOSS?

MAJOR PROFESSOR: Dr. William Colwell

According to recent studies, learning loss due to the disruption of in-person K-12 learning after March of 2020 should be pervasive. The blanket application of learning loss among all students ignored the nuanced ways that students at Giant City School performed before and after March 2020. Researchers have demonstrated specific best practices of conducting remote learning for learning that is not in-person but have not established how those protocols came to fruition at a small, rural 200 student school. The purpose of this quantitative capstone project was to explore how Giant City School students performed on the Renaissance Learning Star Math and Star Reading assessments from fall of the 2017-2018 school year through the winter of the 2022-2023 school year. The results of these analyzes indicated that students performed similarly before and after March 2020 on the Star benchmark assessments within a discernible drop in scale scores. From this study's results, Giant City School's results highlighted the error in applying blanket learning loss during this time period as well as a set of instructional practices that should be scrutinized for their replication at other schools.

ACKNOWLEDGMENTS

Under the mentorship of Dr. Brad Colwell and Dr. Gary Kelly, I completed this project as well as the necessary coursework. Dr. Colwell and I first met in the Summer of 2004 when I began my master's degree two years into my teaching career. His unwavering support, guidance, and friendly ear over nearly twenty years have left a lasting impact upon my career and shaped who I am as an administrator. As my "sherpa," he was with me throughout and our long hours of consultation resulted in this culminating research project. Dr. Kelly's role was that of a sounding board and practitioner's perspective of my project with slight course adjustments along the way.

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Last, thank you to Dr. Chapman and Dr. Hibdon as well as Dr. Colwell and Dr. Kelly for serving on my committee and assisting with the focus of this project and guiding me to the capstone's finish line.

DEDICATION

The road to completion of my doctoral degree and completion of this project began in the fall of 2020. With the love and support of Caroline, my wife, as well as Owen and Eli, our sons, I returned to graduate school to complete my doctorate of education degree. Their understanding and patience with me throughout this project has been unreal. I would also like to dedicate this work to Peggy Davis, my mother, for her push from an early age to strive for excellence and complete an endeavor once begun.

PREFACE

This study explores the effect(s) that changes in instructional delivery had on Giant City School's students' universal screening scores. As tracked by these two data reference points, cohorts of Giant City School students will serve as sample sets to determine how students may or may not have experienced learning loss as disaggregated by their academic characteristics.

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CHAPTER 1

INTRODUCTION

Remote learning. Hybrid/blended learning. In-person learning. Prior to March of 2020 and the rise of the COVID-19 pandemic, these words appeared sparingly in educators' lexicon. From March of 2020 and beyond, the terms have crept into daily language as schools adjusted to global, national, state, and local directives regarding their utilization. These transitions in delivery models resulted in K-12 institutions' pivoting on a seemingly daily, weekly, or monthly basis and creating a disruptive educational environment. Secretary of Education Miguel Cardona stated:

> Learning disruptions have been very real. As communities and as a country, we need to contend with the pandemic's wide-ranging impacts on students and families. So many students have experienced interrupted and unfinished instruction. (Rebora, 2021)

Headlines such as one from ABC News' Meredith Delisio read "*Parents in 'limbo' as schools close, return to virtual learning amid COVID-19 surge,"* highlighting the learning uncertainties of students and their families as schools closed and reopened for in-person instruction (2022).

The early days of the COVID-19 pandemic in the United States saw each state follow one of three paths regarding instructional delivery. States such as California, Kentucky, and Maine recommended schools close for the academic year; Montana and Wyoming allowed local decisions on schools remaining open; and others like Illinois, New York, and Texas ordered schools closed (Peele & Riser-Kositsky, 2022). For Illinois, beginning on March 13, 2020, Governor J.B. Pritzker began issuing a series of executive orders to schools:

- Executive Order 2020-05 (2020) required all public and non-public Illinois schools to

close from Tuesday, March 17 through Monday, March 30, and allowed schools flexibility with the design and implementation of e-Learning plans.

- Executive Order 2020-10 (2020), issued on March 20, 2020, continued the suspension of in-person learning through April 7, 2020.
- Executive Order 2020-15 (2020) created remote learning days and remote learning planning days, which had not existed prior to this time.
- Executive Order 2020-18 (2020), released on April 1, 2020, suspended in-person learning through April 30, 2020.
- Executive Order 2020-31 (2020), released on April 24, 2020, waived certain graduation and coursework requirements for students.
- Executive Order 2020-33 (2020) extended the suspension of in-person instruction for the entirety of the 2019-2020 school year on April 30, 2020.

The Executive Order 2020-33 brought an effective end to the 2019-2020 school year's multiple modifications to the Illinois School Code.

For the 2020-2021 school year, the Illinois State Board of Education (ISBE) released various documents in June and July of 2020 to guide schools in their return to in-person learning. Beginning with the *Starting the 2020-21 School Year* resource, ISBE provided operational guidance to schools (2020d). ISBE detailed how schools should implement P.A. 101-0643, which mandated Illinois school districts to create remote and blended remote learning plans (Illinois, 2020). These plans were to ensure that "all students have access to remote instruction" with "the necessary technology, training, support and connectivity to engage in the instruction [of] the school" (2020d, 12). ISBE highly encouraged schools to provide in-person instruction, but they allowed for hybrid models of in-person and remote instruction. Students with

Individualized Education Programs (IEP), Americans with Disabilities Act Section 504 Plans (504 Plan), and English language services received an in-person learning recommendation of "high priority." Additionally, students, teachers, and communities were mandated to follow the quarantine guidance as provided by the Centers for Disease Control and Illinois Department of Health (2020d). Approximately a month thereafter, through its *Fall 2020 Learning Recommendations*, ISBE specifically outlined how schools should approach in-person, blended, and remote learning for early childhood through high school (2020c). ISBE's *Illinois Priority Learning Standards*, released in early August of 2020, outlined those standards that should receive the most focus during instruction for Pk-12 students (2020b). These recommendations remained consistent for the entirety of the 2020-2021 school year.

With the start of the 2021-2022 school year, all schools were expected to return to in-person learning. On August 31, 2021, ISBE released a frequently asked questions (FAQ) document that directed schools to use remote days exclusively for those students subject to quarantine. If local conditions necessitated an adaptive pause of a school in its entirety, defined as a temporary return to remote learning, a remote plan that included synchronous instruction was to be implemented (State, 2021).

Background

Giant City School is the single school within Giant City Community Consolidated District No. 130, located approximately 6 miles southeast of Carbondale, Illinois. The district comprises portions of the Carbondale and Makanda townships. 51% (approximately $1.835 million) of the district's funding is from local property tax revenue. According to the District's 2020-2021 Illinois School Report Card, Giant City School consisted of 225 students: 155 students were White; 25 were Black; 13 were Asian; 23 were of two or more races; and 9 were

classified as Hispanic, American Indian, or Pacific Islander. 27 students qualified for special education services and have an individualized education plan (IEP). 92 students were classified as low income. The District spent $10,336 per student during the 2020-2021 school year. The District consisted of 17 total teachers, 13 female and 4 male with all of them of white ethnicity. The District maintained one female, white administrator who served as superintendent and principal (*Giant*, 2022).

Giant City School adhered to Illinois executive orders, Illinois statutes, and Illinois State Board of Education mandates as it related to the COVID-19 pandemic from March, 2020 through May, 2022. On March 13, 2020, superintendent/principal Belinda Hill announced that Giant City School would be closed from March 16, 2020 through March 30, 2020. Teachers met at the school on Monday, March 16, 2020 to develop learning expectations and activities for students (Appendix A). Giant City School released a formal remote learning plan on April 2, 2020, and Hill updated families on the district's remote learning plans for the remainder of the school year with a letter on April 3, 2020 (Appendix B). For the conclusion of the 2019-2020 school year, students would have non-instructional days on Mondays. During the rest of the week, classes were asynchronous. Assignments consisted of paper copies and were evaluated for completion. Parents received weekly, written check-offs as teachers received the assignments. Each day, teachers held scheduled office hours and contacted parents and students via platforms such as Remind, Bloomz, or Blackboard Connect (Appendix B). This process continued for the remainder of the 2019-2020 school, with at-risk students prioritized for assistance.

For the 2020-2021 school year, Giant City School transitioned from a fully remote instructional model to a hybrid model as the year progressed. The school chose to not implement the *Illinois Priority Learning Standards*. In August, the school began the year fully remote.

Teachers sent initial messages to families regarding Zoom "open house" events (Appendix C). Superintendent Hill directed teachers to construct synchronous instructional schedules where students could work with teachers and their peers in real time over a digital platform. At-risk students, defined as those not completing assignments or possessing an IEP or 504 plan, were brought to the school daily to work with paraprofessionals on their missing work from 8:00 A.M. to 11:00 A.M. The school returned to in-person instruction with a hybrid model in January 2021 (Appendix D). Then, students without an IEP or 504 plan were divided into two groups (M/Th and Tu/F) and attended school twice a week. Those students with an IEP or 504 plan attended M/Tu/Th/F. Wednesdays were reserved for asynchronous instruction, and teachers could use the time for instructional planning. After following this process for the 2020-2021 school year, the District returned to in-person instruction for the 2021-2022 school year (Illinois, 2021). The District reserved remote learning for students under Jackson County Health Department quarantine protocols..

Problem Statement

Beginning in March of 2020, schools nationwide adjusted their instructional delivery from an in-person format to a multi-faceted one consisting of combinations of remote, hybrid, and in-person models. Students also faced the possibility of quarantine from school by their local health department due to a positive case of COVID-19, exposure to a positive COVID-19 individual, or symptoms of COVID-19. Referencing this nationwide break with in-person instruction, Margaret Raymond, director of the Center for Research on Education Outcomes at Stanford University, stated that "we found the learning loss experience was quite pervasive, that almost all students were negatively impacted by the pandemic and pivot to remote learning" (Dwyer, et al., 2021). Raymond's statement blanketly inferred a level of missed learning for all

students and assumed that all students were behind in the acquisition of knowledge and skills from previous years. Consequently, did the assumption that all students experienced learning loss ignore the nuanced way students performed academically after March 2020 in their local schools?

Statement of Purpose

The purpose of this study is to explore the effect(s) that changes in instructional delivery had on Giant City School's students' universal screening scores. As tracked by these two data reference points, cohorts of Giant City School students will serve as sample sets to determine how students may or may not have experienced learning loss as disaggregated by their academic characteristics.

Research Questions

In this study, the research will address the following questions:

1. How did the Renaissance Learning Star Assessment Reading and Math mean scores of Giant City School students evolve from the 2017-2018 to the 2022-2023 school year?
    a. What impact did the various instructional delivery models used by the District after March of 2020 have on the mean students' universal screening scores?
    b. What impact did the various instructional delivery models used by the district after March 2020 have on academically similar students' universal screening scores?
2. How did the Renaissance Learning Star Assessment scores of Giant City School students in the same grade level compare from the 2017-2018 to the 2022-2023 school year?
    a. How do academically similar students' universal screening scores compare at the same grade level over the measured time?

3. How will the trends in data support future instructional delivery methods at Giant City School under similar disruptions to in-person learning?

Research Design

Within this study, the researcher used quantitative research methods to analyze Giant City School's universal screening data as measured by Renaissance Learning's Star Assessment in reading and mathematics. Giant City School students were grouped into cohorts based upon their projected year of high school graduation. Through statistical analyses, the researcher examined trends across the same grade level over multiple years as well as academic subgroups as the school utilized various instructional delivery models between August of 2017 and March of 2023.

Significance of Study

In the conducting of this research, Giant City School's students served as the sample population in the exploration of how these students performed during the disruptions to in-person they experienced from March of 2020 through May of 2022. The assumption that learning loss affected the whole population uniformly distorts the unique way individual students, grade levels, and academic subgroups may have performed on benchmark testing. Reflection on the students' true academic standing allows resources to be allocated and targeted strategically to provide educational programming that best meets the needs of its learners.

Positionality

On July 1, 2022, the researcher began his tenure as superintendent/principal of Giant City Community Consolidated School District #130 and Giant City School. In evaluating current student levels of learning, a thorough understanding of their academic performance wass imperative. As an incoming observer of past practices and performance, the researcher utilized

the data analyses to direct future educational decisions without influencing the sample or assessment data measured.

Definition of Terms

The following terms with their applied definitions were used within the scope of the findings:

- Asynchronous learning: Asynchronous learning is a model of distance education where students have the tools and ability to complete their classwork on their own time with direct teacher involvement occurring at any time (Lieberman, 2020).
- Hybrid (blended) learning: Hybrid learning "means combining traditional, in-person teaching with remote experiences, conducted through technological or non-technological means" (ISBE, Fall, 2020, p. 29). There is no single blended learning model (ISBE, Fall, 2020).
- In-person learning: In-person learning is student instruction that occurs at school with a teacher.
- Learning loss: Learning loss is defined as the instruction and acquisition of information students are assumed to not have gained from March of 2020 through May of 2021 (ISBE, Fall, 2020).
- Remote learning: Remote learning is the student assignment responsibilities when school is not in session for any in-person instruction.
- Remote learning day: A remote learning day is a pupil and teacher non-attendance day that is allowed in Illinois in lieu of a regular pupil attendance day.
- Synchronous learning: Synchronous learning is a model of distance education in which teachers offer a lesson to a class of students at the same time (Lieberman, 2020).

- Universal screening: Universal screening is the process by which teachers assess all of their students on the acquisition of knowledge, typically math and reading, at defined points in the school year.

Limitations and Delimitations

For the purposes of this study, limitations center on the sampled population and assessment of students.

1. The sample includes Giant City School students who have Star Assessment reading and math scores from the 2017-2018 through the 2022-2023 school year.
2. These students may not have been continuously enrolled during the observed period.
3. Students who were not able to be assessed will have score gaps that may limit the ability to draw mathematical conclusions over the time period.
4. The suspension of state assessments and alteration of classroom expectations for grades resulted in a lack of alternative data options. The Star Assessment is the only measure available to judge academic performance during this time aside from classroom performance.
5. The faculty providing instruction at Giant City School experienced turnover from the 2017-2018 school year to the 2022-2023 school year.

Aside from the study's limitations, the study faced delimitations in its design. For applicability to his current position, the researcher focused on the student population of Giant City School. The analysis did not compare that population to other schools of similar characteristics. This intense review of Giant City School's universal screening data enabled the researcher to become familiar with the current academic standing of the students. Further, in the analysis of the mean of all students outliers were removed using the formula noted in Chapter 3.

Overview of Study

In Chapter 2, the researcher reviewed current literature regarding remote learning and the pandemic's effect upon K-12 education. The literature review included an exploration of remote learning, recommended professional development for teachers to sustain remote learning, sustained effects upon students from remote learning, and social and emotional effects upon students. In Chapter 3, the researcher reviewed the study's methods. Chapter 3 included information on why these five Giant City School cohorts were chosen. In Chapter 4, the researcher reviewed the findings of the study. In Chapter 5, the researcher discussed the conclusions, recommendations, and results and set forth a plan of action for the District based upon the findings.

CHAPTER 2

LITERATURE REVIEW

According to McMillan and Schumacher (2001), a literature review is "usually a critique of the status of knowledge of a carefully defined topic" and enables a "reader to gain further insights from the study" (p. 108). This literature review is divided into five sections by theme:

- An overview of remote learning,
- Effective practices for remote learning,
- Teacher professional development for remote instruction,
- Long-term academic effects upon students, and
- Emotional and physical implications for students.

A summary follows summarizing the findings and providing a basis for the research project.

Remote Learning

In 1996, Chickering and Ehrmann stated "students do not learn much just sitting in classes listening to teachers, memorizing prepackaged assignments, and spitting out answers" (p. 10). Their article, written twenty-six years ago, provided an early view of how to effectively implement virtual instruction at the undergraduate level. The concept of remote learning can be defined in various ways. Frumos (2020) defined remote instructional occurrences when "teachers and students are separated by and/or distance and therefore cannot meet in a traditional classroom setting" (p. 139). She explored the effect of remote learning on students with educational needs (SEN). Educators have two choices to consider when meeting the needs of all students: "(1) the additional needs approach (that focuses only on the student who has SEN and the demand of additional support) and (2) the inclusive pedagogical approach (that focuses on all the students of the classroom)" (p. 140). It is suggested that the first approach is acceptable for

short amounts of time, but the latter may work better as it aligns with the conceptual framework of the Universal Design for Learning (UDL).

UDL is a way to "guide the critical elements of teaching and learning and address a wide range of individual differences" for all students (p. 140). UDL guidelines are "(1) providing multiple means of engagement; (2) providing multiple means of representation; (3) providing multiple means of action and expression" (p. 141). The implications are that not only will students with special learning needs, but all students, could benefit from choice and multimodal forms of instruction. While not focusing specifically on remote instruction, Cole, et al. (2021) found that special education students demonstrated significantly higher scores compared to peers placed in self-contained classrooms. Frumos (2020) applied inclusion to the remote setting and asserted that inclusive practices benefit all learners. The framework of UDL allows teachers to overcome barriers ahead of time for students with special needs, so remote content and delivery can be accessible. Teachers work to meet each student's unique needs, so learning can be designed and modified to account for attainment of curricular goals rather than scaffolding layers to overcome barriers.

In a similar fashion, Verawadina et al. (2020) defined online learning as "learning that uses internet technology that allows teachers and students to carry out learning wherever and whenever outside the classroom" (p. 386). Countries are in the fourth phase of the industrial revolution whereby information technology and automation are emphasized. Teachers are expected to be able to "facilitate as facilitators, collaborators, mentors, trainers, directors and study partners and can provide choices and great accountability to students to learn" (p. 386). Within these roles, teachers should design lessons and activities that are individualized, targeted toward student preferences, and designed around student choice. Online learning is explored as a

vehicle to continue instruction during the COVID-19 pandemic.

In their exploration of online learning, Verawadina et al. (2020) asserted that education practices mimic the industrial revolution 4.0 and put aside traditional, in-person classroom models of instruction. Online learning allows for students to learn more beyond textbook classrooms and provides a greater depth of information that will assist students as they exit school. E-learning websites can supplement and supplant traditional instructional models that permit flexibility to learn through personal convenience. When incorporating an online or remote learning educational program, schools, educators, and students should be familiar with the "appropriate online learning process, starting from the preparation of equipment and applications, learning steps, the role of teachers and students, the activities required in learning must be clear, so that is expected to creating the effectiveness of online learning" (p. 388-389). In its totality, remote learning has become synonymous with online learning as the vehicle to provide instruction out of in-person settings.

Effective Instructional Practices for Remote Learning

The effectiveness of remote learning may be encompassed in various forms. Reich et al. (2020) reviewed remote learning guidance across the United States as outlined by each state's department of education. Across the state agencies, a common theme presented was the importance of the "physical health, mental health, and emotional needs of students" (p. 4). Four major structures for effective virtual K-12 schooling included these constructs:

- While at home, "schools and state agencies should assume that young students will require direct supervision to participate in remote schooling" (p. 2).
- "Typical approaches from virtual schools emphasize asynchronous learning" which "may prove infeasible" for some student populations (p. 2).

- "The teacher plays two major roles: curating asynchronous curriculum and providing regular feedback, coaching, and support" (p. 2).
- As it relates to time on task, "students, especially the youngest students, will not be able to participate in school activities for lengths of time equivalent to a typical school day" (p. 2).

In reviewing the guidance of various states, Reich el al. (2020) highlighted important areas of emphasis and offered three recommendations to state agencies for quality remote learning structures. The authors applauded states that provided recommended daily schedules for students, families, and educators as well as those states that included the arts and physical education. One area of emphasis was equity. If remote learning will be used, special populations such as those with special needs or English Language Learners must be considered and addressed. Additionally, guidance documenting recommended instructional practices via remote learning should be made available. How to provide distance learning when students and families may not have internet or a device capable of accessing instruction materials should be provided, how to properly use synchronous and asynchronous modes of instruction effectively, and how to properly plan for instruction with the knowledge that students finished the 2019-2020 school year early are all areas of emphasis. Finally, it is imperative that all school communications should be clearly stated, so they are accessible by multiple audiences.

Darling-Hammond et al. (2020) explored how incorporating blended learning into a distance learning model would allow districts to improve the quality of learning where remote and in-person practices may be fluid. The authors believed the first step is to highlight those districts who have utilized blended learning in the past. Miami-Dade County Public School District is noted due to the propensity of the region to see major hurricane activity during the

school year. Their model and its plan highlighted the need for "access to devices and connectivity, and supports for parents and teachers that are activated whenever needed to ensure that instruction continues seamlessly" (p. 11). Another district identified is Lindsay Unified School District in California for its efforts to ensure free Wi-Fi access to its families. 91% of its students are from low-income families, and 41% are English language learners (p. 11). The district has experienced a graduation rate and standardized testing improvements.

In order to succeed, Darling-Hammond et al. (2020) stated that districts should "support high-quality distance and blended learning models with educator training and materials," "give special consideration to early childhood learning," "develop standards for digital learning that articulate how technology should be used to empower learners," and "shift from measuring seat time to engagement" (pp. 11, 14, 15). The teacher training allows educators to be fully immersed in what technologies are available and how best to use them. The foundation with early childhood education sets the stage to introduce students and their families into blended learning models and what technologies the district will emphasize. The standardization of remote learning practices creates uniformity at the state and district level. The authors provided examples from Wyoming and Portland, OR, where educators have specific indicators on how to design, implement, and engage students. Engagement is a priority in terms of diversifying lessons and activities to encourage students to complete high quality instructional undertakings.

With the increased use of remote learning, the well-established concept of learner choice has taken on renewed importance. In designing effective remote learning strategies, Carter et al. (2020) explored the interaction between learner choice during instruction and theories that support structured course design during remote learning. Carter's team defined students' self-regulation of learning as individual "learner effort towards academic performance" (p. 322).

Self-regulated learning asks students to think about what they will do through activation of prior knowledge, completing a task or activity involving the concept, and then reflecting upon the experience and knowledge gained. Apart from self-regulation of learning, much of the theory in learner choice in instructional design comes from higher education learner models that have been applied to K-12 students. Learners engaging in K-12 environments utilizing choice typically ask students to select a unique (or a subset) of activities from a larger group. However, the downside of student choice is noted by supporters of the cognitive load theory, where research suggests that "choices can be confusing, distracting, and/or mentally taxing on learners' cognitive processing" (p. 323).

Finally, challenges exist in the implementation of remote learning in today's post-Covid environment. The ability to supervise students as they engage with the material can be difficult as is the needed support for families who may not be able to fully understand or grasp the instructional technologies required. Carter et al. (2020) specifically described the challenges present in the current learning environment for student choice to be fostered. There is also a concern that English Language Learners, special needs students, and other special populations may inherently be at a disadvantage due to a lack of resources to provide remote instruction. Parental limitations to support remote learning can be due to the lack of parental understanding of their child's academic content as well as the parents' technological and/or pedagogical deficits to facilitate remote learning. Ultimately, the authors hoped that their research provided a "starting point for research on implementing online and distance learning" (p. 327). The ability of students to have choice while receiving structured curriculum needs to be explored further.

Effective School Practices for Remote Instruction

With the construction of the remote learning environment, Clausen et al. (2020) focused

their research on one school's professional development push to assist K-12 teachers in successfully communicating with students and their families during periods of remote learning. The authors found that there has been an emphasis on providing internet availability to families and instructional design professional development but little to assist in bridging the "homework gap." Clausen et al. defined the homework gap as "student difficulty completing online work" and "evidenced by the frequency students access course materials because of limited connectivity at home, a single shared device among family members, or the device being a smartphone" (p. 444).

Clausen et al. used an Indiana school corporation as a case study to examine the school system's communication practices. Initially, administrators sent a Google Form to faculty to assess the lack of student submission of homework. Data showed that faculty only received homework and/or communication from 41% of their students. Administration contacted the 59% of students and their families that were unresponsive to homework and communication requests from teachers. Information gained from those conversations found that "parents/guardians were unaware of assignments, how to check for them, or when they were due" (p. 447). To address situations such as presented in the Clausen et al. case study, Carter et al. (2020) believed that "a focus on building relationships will help identify who has access before it is needed, as well as create PD opportunities that focus on community engagement through communication technologies" using school or classroom websites, phone apps, social media platforms, and email (p. 447). Carter et al. provides a list of various communication tools available to schools that could be used to strengthen the relationship between school and home.

Morgan (2020) highlighted examples of ineffective remote learning implementation practices across the United States. Challenges presented initially included a lack of instructional

delivery; no plan for meal distribution; no child care programs; and the emotional toll upon families, students, and school staff. The author suggested the use of the International Society for Technology in Education's (ISTE) framework to standardize and provide an effective basis for remote learning practices. Initially, districts should close the equity gap. If digital remote learning will be used, schools must ensure that all students have access to a device and have internet access within their homes. Moreover, communication with families and students should be early and clearly define expectations. FAQs or similar step-by-step guides should be provided to families to define how the school will operate and to map the pathways for accessing remote learning materials and resources. The learning should be student-centered and engaging to promote discovery versus lower level regurgitation of facts. "Live chats, virtual meetings, and video tutorials" are all encouraged during assignment creation (p. 137). Free resources are aplenty on the internet and should be used to enhance the curriculum, and an awareness given to heavy screen time requirements. Finally, educators must recognize the emotional effects upon students, families, and themselves during periods of remote instruction.

Morgan (2020) used the ISTE standards as the foundation to more clearly define the roles of students and teachers during remote instruction. As a student, one should aspire to be an empowered learner, digital citizen, knowledge constructor, innovative designer, computational thinker, creative communicator, and global collaborator. On the other hand, teachers should be a learner, leader, citizen, collaborator, designer, facilitator, and analyst. Morgan (2020) asserted that by "using the standards and articles published by notable organizations like the ISTE will mitigate these challenges and guide schools and teachers to help students make academic gains" (p. 140).

Long-Term Academic and Financial Implications upon Students

With traditional in-person learning and annual standardized testing disrupted from March of 2020 through May of 2021, the necessity of measuring remote learning's impact as it relates to academic attainment and future financial implications for current students is critical. In their analysis, Azevedo et al. (2020) presented a data simulation on the impact of school closings on K-12 schooling and learning as well as the future impact this loss of learning may have on students as they one day enter the labor force. They presented two direct impacts upon students not attending school: "children do not have an opportunity to learn, and they forget what they had learned" (p. 20). Their data were extrapolated across three scenario simulations:

1. "Optimistic – schools are closed only for 3 months of a 10-month school year, and the effectiveness of mitigation measures put in place by governments (such as remote learning) is high.
2. Intermediate – schools are closed for 5 months, and the mitigation measures have a middle level of effectiveness.
3. Pessimistic – schools are closed for 7 months, and the mitigation measures have low levels of effectiveness" (p. 3).

Their research did not take into account possible remediation strategies schools and governments used outside of various remote instructional delivery methods. Azevedo, et al. mathematically analyzed how previous disruptions in continuous in-person education, such as natural disasters, have affected learning and labor markets. They reported a noticeable decline among adolescent girls and marginalized groups such as "indigenous peoples, refugees, displaced children, Afro-descendants, and children who identify as LGBTI" due to their inability to remain actively engaged in their education (p. 27). Azevedo, et al. projected a correlation

between dropouts, defined as those who do not continue their education after a disruption to in-person instruction, and a drop of gross domestic product. The researchers projected that by May 2020, 6.8 million dropouts would result in a 3.4% decrease in growth projections.

Azevedo et al. (2020) proposed numerous solutions for governments to curb the learning losses attributed to the lack of in-person during the COVID-19 pandemic. It was their recommendation that governments invest heavily in schools. The influx of funds would allow schools to have the resources to "blur the walls to allow children to continuously learn at school and at home" (p. 31). Investments should focus on "learners, teachers, learning resources, learning spaces, and school leaders" (p. 32). Ultimately, without additional action, "exclusion and inequality will likely be exacerbated if already marginalized and vulnerable groups, like girls, ethnic minorities, and persons with disabilities, are more adversely affected by the school closures and corresponding off-setting action is not taken" (p. 32).

With a focus upon minority populations, Dorn et al. (2020) explored the effect of school closures upon low-income, Black, and Hispanic Americans as well as the economy of the United States. The authors created models to explore the projected learning loss across three spectrums of remote instruction. If a student receives average remote learning, remote learning where the students progress but at a slower pace than if they are in-school, the projected loss of learning using NWEA RIT scores is 3-4 months. Low quality remote learning, stated as instruction where students are neither gaining or losing knowledge, could lead to a 7-11-month loss. No instruction, defined as those students not receiving any instruction and are losing significant knowledge, would see a 12- to 14-month drop.

The effects are projected to be greatest among low-income, Black, and Hispanic populations. Using data from Curriculum Associates' i-Ready digital instruction, roughly 60

percent of low-income students logged in regularly versus 90 percent of high-income students during the Spring of 2020. The probability of an increase in dropout rate also grows across all populations because the "supports that can help vulnerable kids stay in school: academic engagement and achievement, strong relationship with caring adults, and supportive home environments" are non-existent (p. 6).

The lasting impact of COVID-19 may expand beyond the classroom to have an economic impact. Dorn et al. (2020) proposed that the impact may have a long-term negative effect upon individuals as well as society. The economic impact may translate into a loss of $110 billion in annual earnings for those students currently enrolled K-12. The individual impact may translate into less skilled laborers. However, Dorn et al. proposed that additional training for teachers on remote learning best practices and for parents on the best home environments conducive to learning could change the course and lessen the negative effects of prolonged distance learning.

Emotional and Physical Implications upon Students

Beyond the educational impact of remote learning upon students, the effect upon students' emotional and physical well-being is also an area of concern. Baron et al. (2020) explored the reporting of child maltreatment to the Florida Department of Children and Families (DCF) and, in their study, illustrated a correlation between in-person versus remote instruction and the number of reports submitted. Outside of the COVID-19 pandemic and school closures, school personnel, as mandated reporters, are the primary individuals who report child maltreatment to DCF. Based upon county data, evidence supported a significant decline (27 percent) over expected reports for March and April 2020. Baron et al. (2020) compared data from previous years and the number of investigations that occur when school is typically in-session. Baron et al. (2020) showed "(i) in the context of COVID-19, school personnel

continue to be an important resource for child maltreatment reporting" and (ii) the "magnitude of a disruption of this reporting mechanism in this setting" (p. 3). From an accumulation of Florida DCF data, their research showed that approximately 19,000 actual allegations were received versus "counterfactual" (expected) of almost 30,000 based on previous years' data. Accepted allegations were close to 12,000 while the counterexample was expected to be close to 20,000. Conceivably, roughly 8,000 cases were not accepted that may have been if schools had been in session.

Baron et al. (2020) differentiated their research away from learning loss to illuminating how the lack of in-person contact has affected victims of maltreatment and mandated reporters. Policymakers have focused on learning loss, lack of access to school lunches, and lack of childcare for parents. The removal of school personnel who are mandated reporters has left a vulnerable population of students exposed without anyone to report possible maltreatment. In the context of continued remote learning, Baron et al. (2020) proposed that government entities purposefully share information on how to report child abuse to state agencies and that schools should revise their methods of protecting students. One solution presented was virtual check-ins where teachers or other school personnel may see the child and attest to the wellbeing observed. Regardless, schools have a responsibility to protect children and ensure safety during times when schooling may be remote.

Conclusions

The COVID-19 pandemic's impact upon society cannot be understated. Its lasting impact upon kindergarten through twelfth grade students shall have effects not only upon current knowledge acquisition but also the emotional and physical wellbeing of students. In the United States, school districts have followed their state education agency's guidance to develop plans to

meet their community's local need to educate students under various formats of remote learning, traditional in-person learning, and hybrid formats. Educational leaders have developed plans to address learning loss and deliver instructional content through various digital mediums. The logistics of teacher training in new methods and technology availability of home internet access and devices for students weigh heavily on school administrators in meeting local needs to address computer-based remote learning.

CHAPTER 3

METHODOLOGY

Beginning in March 2020, schools nationwide adjusted their instructional delivery from an in-person format to a multi-faceted method consisting of combinations of remote, hybrid, and in-person models. Students also faced the possibility of quarantine from school by their local health department due to a positive case of COVID-19, exposure to a positive COVID-19 individual, or symptoms of COVID-19. The purpose of this study was to explore the effect(s) that changes in instructional delivery from March of 2020 through May of 2023 had on Giant City School's students' universal screening scores as measured by Renaissance Learning's Star Reading and Star Math assessments.

Research Questions

In this study, the research addressed the following questions:

1. How did the Renaissance Learning Star Assessment Reading and Math mean scores of Giant City School students evolve from the 2017-2018 to the 2022-2023 school year?
    a. What impact did the various instructional delivery models used by the District after March 2020 have on the mean students' universal screening scores?
    b. What impact did the various instructional delivery models used by the district after March 2020 have on academically similar students' universal screening scores?
2. How did the Renaissance Learning Star Assessment scores of Giant City School students in the same grade level compare from the 2017-2018 to the 2022-2023 school year?
    a. How do academically similar students' universal screening scores compare at the same grade level over the measured time?

3. How will the trends in data support future instructional delivery methods at Giant City School under similar disruptions to in-person learning?

Research Design

For research design, three approaches were available to the researcher: quantitative, qualitative, and mixed-methods. McMillan, et al. (2001) defined quantitative research as a presentation of "statistical results represented with numbers" (p. 15). Queirós, et al. (2017) added that "quantitative research focuses on objectivity and is especially appropriate when there is the possibility of collecting quantifiable measures of variables and inferences from samples of a population" (p. 369). Quantitative researchers measure variables to establish causal relationships between data elements. The quantitative design is structured to reduce potential errors and bias by structuring procedures in such a way that there can be very little delineation by the researcher. The researcher plays a passive role using this methodology and focuses upon the use of an instrument to gather data (McMillan, et al., 2001). Further, quantitative research focuses upon large samples of a population to build a data set that can be applied to generalize the population as a whole (Martin, et. al, 2012).

With quantitative research, the aim is to provide an objective, numbers-based process to to generalize findings in a sample to a much larger population. Quantitative research is inherently limited because the data cannot provide an explanation as to "why" the participants behave in certain ways. Also, some demographic groups may not be fully represented in data because of historically poor participation. Some quantitative studies require vast amounts of time with data collection occurring over multiple years in order to fully sample a given population (Goertzen, 2017). The collection of data is key in any quantitative study with the research question driving the scope and design necessary for a thorough analysis of the research question.

In contrast to the objectivity of quantitative analysis, qualitative methods provide a subjective exploration of a given research question. Sofaer (1999) presented that qualitative research methods are "valuable in providing rich descriptions of complex phenomena" (p. 1101). Unlike quantitative design, qualitative research cannot be reduced to variables. Relationships are to be understood beyond quantifiable means (Maxwell, 2013). Farghaly (2018) stated that the aim of qualitative research was a search for "understanding more about situations from the viewpoint of the research participants, and without trying to control anything" (p. 6). Researchers using a qualitative approach assume that individuals interpret the world around them through realities based upon their perspective. Therefore, it is essential for a researcher to gather how the individual understands specific social situations. The researcher uses subjectivity with care throughout the study as the lines between subject and researcher can blur depending upon the depth of the researcher's immersion into the subject's social environment (McMillan, et al., 2001). Lastly, an important consideration with qualitative research is that the findings pertain to the specific case studied. Consequently, overviews at the end of a qualitative study provide analysis based upon the exact situation studied without making the broad generalizations found in quantitative research (McMillan, et al., 2001).

Quantitative and qualitative research have been considered separately to this juncture. However, a third design exists where a researcher uses both methods within his research project. Tashakkori, et al. (2007) defined mixed methods research as "research in which the researcher collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or program of inquiry" (p. 4). Creswell, et al. (2018) asserted the use of both methods provides researchers an opportunity to utilize more than one data source and corroborate the results, both quantifiably and qualitatively,

and that mixed methods work best based upon the research problem presented. However, there are limits to this type of design—expertise and time. Researchers with extensive experience in both qualitative and quantitative research design should implement mixed methods due to the complexities of interweaving both methods into a coherent design. Additionally, Creswell, et al. (2018) asserted that the researcher needs extensive amounts of time to conduct the gathering and analysis of the qualitative and quantitative data samples. Nonetheless, mixed methodology generates a blend of information that allows researchers to approach a question with data as well as individual case studies.

In consideration of the three design approaches, a quantitative design was utilized for this study. Research included the analysis of pre-existing internal assessment data of the population. The first research question and its sub-questions explored the impact that disruptions to in-person learning had on the mathematical mean student for a grade level's testing window as well as those academically similar. Quantitative methods were applied to the data to interpolate that effect. The second research question compared the mathematical mean students' Star scores for those in the same grade level at similar testing windows. The third research question followed the trends in data if a disruption to learning occurs again. The data and subsequent analysis guided the future protocols to be implemented based upon the population's Star Assessment scores in the given date range.

Research Methodology

In this research project, a quantitative approach was used to analyze how periods of remote learning from March of 2020 through May of 2022 affected the educational outcomes of Giant City School's students. The researcher used quantitative methods to explore former students' assessment data from Renaissance Learning's Star Assessments in reading and

mathematics, which are administered to all kindergarten through eighth grade students at Giant City School from the 2017-2018 school year to present. Using this information and referencing available literature, a detailed analysis of the data and overview of the actual, or perceived, impact of the disruptions to in-person learning at Giant City School was explored.

Population/Sample

Within quantitative research design, the subjects, population, and sampling technique provide a basis upon which the data can be applied from the studied individuals to other groups. The subjects are the people who have been selected to be researched. The population is the group to which the subjects belong that are chosen for the specific research study. A sample is the representative group of the population (McMillan, et al., 2001). Further, sampling of a population is divided into probability-based and nonprobability-based. Probability-based sampling dictates choosing research participants from the population by a specific means over which the researcher does not have direct control. The terms simple random, systematic, stratified random, and cluster can describe probability sampling. Conversely, a researcher using nonprobability sampling chooses subjects out of convenience to their accessibility or their profile to the research being studied. Nonprobability sampling measures include convenience, purposeful, and quota. The sample size for a quantitative research design reflects the number of participants involved in the study and is based on the following: the type of research required, the hypotheses, the financial considerations, the quantity of variables, the data collection method, the data's accuracy, and the size of the population (McMillan, et al., 2001). Sample sizes are critical for quantitative researchers to approximate how the chosen group represents the targeted whole.

For this project, the population was the students of Giant City School, the single school

of Giant City Community Consolidated School District #130 in Carbondale, Illinois who have been enrolled in grades 3-8, inclusively from the 2017-2018 through 2022-2023 school years. The district is one of four feeder elementary school districts that send their students to Carbondale Community High School District #165 for grades 9-12. According to the District's 2020-2021 Illinois School Report Card, Giant City School consisted of 225 students: 155 students were White; 25 were Black; 13 were Asian; 23 were of two or more races; and 9 were classified as Hispanic, American Indian, or Pacific Islander. 27 students qualified for special education services and have an individualized education plan (*Giant*, 2022).

A purposeful sample was used for analysis. A researcher who uses purposeful sampling "selects particular elements from the population that will be representative or informative about the topic of interest" (McMillan, et al., 2001, p. 175). For Giant City School, the purposeful sample was the students who possess Star Assessment scores from the 2017-2018 school year through the 2022-2023 school year. Student groups who were tracked over time were designated as cohorts and labeled by their year of expected high school graduation. For math and reading, the approximate student populations by year of high school graduation were 22 (Class of 2023), 21 (Class of 2024), 17 (Class of 2025), 20 (Class of 2026), 12 (Class of 2027), 17 (Class of 2028), 13 (Class of 2029), 14 (Class of 2030), 15 (Class of 2031), 15 (Class of 2032), and 23 (Class of 2033).

Data Description

Within Illinois statute 105 ILCS 5/2-3.64a-5, the Illinois State Board of Education (ISBE) is directed to create a standardized assessment for all public school districts to administer (105 ILCS 5/2). ISBE developed the Illinois Assessment of Readiness (IAR) which is used to assess students in grades 3-8 once per year. Districts serving grades 3-8 typically adopt assessments

that allow them to track or screen students at multiple times during the school year. One assessment package available is Renaissance Learning's Star Assessments. These assessments are computer-adaptive tests that are structured to be used as both a screening and benchmark test as well as a progress-monitoring tool. The Star Reading K-12 Assessment is a 34-question test, aligned to the Common Core Standards, that is expected to be completed by students in less than 20 minutes. The Star Math K-12 Assessment is also a 34-question test aligned to the Common Core Standards, but differs from Star Reading in that its completion time is approximately 25 minutes. The computer adaptivity of the assessment permits student test questions to adjust in difficulty level based upon their responses; questions may increase or decrease difficulty to avoid student frustration with the Assessment's rigor (*Research foundation for star adaptive assessments: science of star,* 2020).

With the Star Reading and Star Math Assessments, student performance is measured using three indicators. First, the scaled score (SS) is a performance level a student achieves at a specific grade level and in a specific subject area. The percentile rank (PR) is a measure of student performance compared nationally to students in the same grade level and on the same subject-area assessment. The grade equivalency (GE) is the measure of a student's performance in his or her academic grade reading or math level that ranges from 0.0 to 12.9+. For example, a student's Star Reading GE of 5.6 would approximate a score statistically similar to a student in the fifth grade, sixth month in reading. Lastly, the student growth percentile (SGP) is a comparison of a specific student's growth to his nationally represented academic peers. Academic peers are other students who (1) are in the same grade level, (2) scored a similar SS on the previous assessment, and (3) tested at a similar time on the previous assessment. The SGP is reported on a scale of 1-99 with lower values representing lower growth. An SGP of 80 means

that a student demonstrated 80% better growth than his academic peers. The SGP provides context for teachers and administrators to measure how a student's learning has progressed over a period of time (*Research foundation for star adaptive assessments: science of star,* 2020).

Giant City School utilizes Star Assessments in two distinct ways. As a screening and benchmarking tool, all students in a grade level are administered the Star Assessment in reading and mathematics three times a year to monitor growth and to assess attainment of standards. These time periods are in the fall, winter, and spring, with the exact dates fluctuating between August and September for fall screenings, December and January for winter screenings, and April and May for spring screenings. In addition, interventionists, teachers or aides who provide remediation of specific skills in reading and/or mathematics at Giant City School, use Star Assessments to monitor student progress. As a progress monitoring instrument, students complete additional Star Assessments between school-wide screenings to measure performance after the application of specific interventions to address areas of student weakness (*Research foundation for star adaptive assessments: science of star,* 2020). Over the course of a school year at Giant City School, it is possible for one student to have three Star Assessment scores in reading and mathematics while another, who received interventions, has many more.

Data Collection

As a measure of academic progress, Giant City School used Renaissance Learning's Star Assessments (Star) in mathematics and reading to assess all students in grades 2 through 8 from the 2017-2018 through the 2022-2023 school years. Previously administered assessments like Star are a secondary data source. The district universally assessed student progress in August as a fall window, in December as a winter window, and in May as a spring window. The researcher relied upon Giant City School to provide Star Assessment data. Illinois Statute 105 ILC 10/6

(2022) provided that student record information may be disclosed to "any person for the purpose of research, statistical reporting, or planning, provided that such research, statistical reporting, or planning is permissible under and undertaken in accordance with the federal Family Educational Rights and Privacy Act (F.E.R.P.A.)" (105 ILCS 10/6). Within F.E.R.P.A., a student's educational record that may include their name and test scores may be released without prior consent to individuals who are conducting research for or on behalf of the school [34 C.F.R. 99.31 (2022)].

In cooperation with the school, the researcher accessed historical extracts of Giant City School's Star Assessment results in reading and mathematics. All information was accessed through Renaissance Learning's website. 6 extracts each of Giant City School historical mathematics and reading data were imported into Google Sheets, a spreadsheet program. Essential information maintained from those extracts were the school year of the assessment, student username, current grade, test completion date, scaled score, and percentile rank. The data was sorted by activity completed date. Anomalies were found in this section:

- Some students had multiple scores with different test completion dates within a week or two. The researcher and statistician addressed this by only taking the higher of the two scores.
- Some students had more than 3 screening scores that were outside the aforementioned anomaly. The district identified those students as having been assessed a Star test during the progress monitoring of their interventions. Those scores were not considered in this study.
- Student scores were duplicated upon the export. Multiple entries of the same data were deleted from the spreadsheet.

- All enrolled students were assessed remotely during the Fall and Spring of 2020-2021. Through the Zoom platform, they were supervised by Giant City School's interventionist while they completed the assessments.

Through the sorting of that data, academic cohorts were derived based upon the student's initial Star Assessment percentile rank. Student names and personal identifiers were removed to maintain compliance with federal and state regulations prior to the researcher receiving any data.

Data Analysis

This study analyzed student universal screening assessment scores over time. In consultation with a statistician, the scaled score (SS) and percentile rank (PR) for each student served as the quantifying score for measuring student performance and mathematical placement during the measured 2017-2018 to 2022-2023 time frame. Those scores allowed the researcher and statistician to formulate academic subgroups based upon initial percentile rank as provided by Renaissance Learning. As mentioned previously, it should be noted that the universal screening data measures may be collected inconsistently for one of these possible reasons: (1) no universal screening occurred; (2) a student was not continuously enrolled during the time period; (3) the student received intervention services that required additional testing data collected for them; or (4) the student tested multiple times within a one to two week window. The filtered data from Google Sheets was then imported into the StatCrunch software to ascertain the following summary stats: sample size, mean, median, standard deviation, and quartiles. An example of the distribution shapes explored is the following box plot for those students in current grade 10, class of 2025:

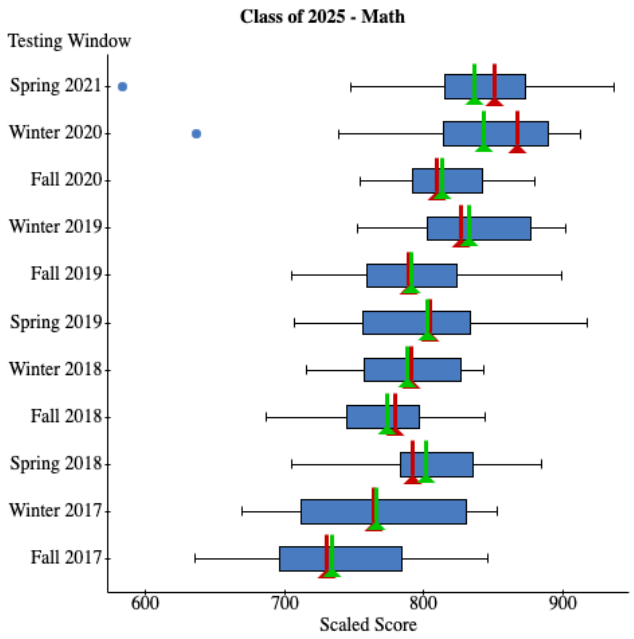


Figure 1

Class of 2025 Star Math Distribution of Scores over Time

Individual students were placed into subgroups using the percentile rank of their first assessment. Anyone in the lower 25th percentile was placed in the low subgroup. Those in the 26th through 75th percentiles were placed in the middle subgroup. Those above the 75th percentile were in the high group. The student stayed within that original subgroup and tracked over time regardless of their future performances. Further, subgroups were compared against one another over multiple-year grade bands. One target, for instance, was a group whose scores lied in 2nd through 4th grades before March of 2020 and those whose scores begin with 2nd through 4th grade in March of 2020. Throughout the analysis, it was necessary to remove outliers from the whole groups before the mean was calculated to avoid having an extraordinarily high or low student score skew the whole group data. Outliers were found using the following formulas with quartile scores: $Q1 - 1.5(IQR)$ and $Q3 + 1.5(IQR)$. Outliers were excluded

using the aforementioned formulas.

With the descriptive statistics, the summary statistics were used for analysis. The statistics were placed in another Google Sheet with the following information:

- Cohort ID - grade level as of the Spring of 2023
- Grade level tested
- Testing window (year follow by month, e.g. 3.5 would correspond to 3rd grade, December)
- Testing year
- Pre-/post-March of 2020
- Testing season (fall, winter, or spring)
- Mean
- Median
- Standard deviation
- Mean with no outliers

Univariate data and bivariate data were analyzed. Univariate, or one variable, data was used to simplify the test data into a manageable data set. Every SS for each student on every test date would have created a large group of overlapping scores. The univariate data used the center as measured by the mean SS for each test date for a cohort and subgroup without the inclusion of outliers. Because the data was approximately normal, symmetric, the mean was the best illustration of the data. The spread, or standard deviation, was used to identify the relative similarity of the students compared to their cohort or subgroup peers and illustrate the academic diversity within the group.

In addition to the univariate data, the bivariate, or two variables, was compared. The

explanatory (independent) variable was the testing times, and the response (dependent) variable was the measure of center, mean, of each cohort and subgroup. Simple linear regression was used to find the regression line (line of best fit) for the data for each cohort/subgroup. Rates of change measured if the cohorts were growing at the same rate and if the test dates before, during, or after the disruption to in-person learning had more of an effect upon the scale score. The initial values demonstrated relative starting points for each group to gauge their beginning academic level. The correlation coefficient showed how well the cohort and subgroup behaved together. A regression equation was used to calculate the residual (error) of specific test dates. Specifically, did the cohorts/subgroups see a significant shift in the residuals before, during, or after March of 2020? It was expected that every test date would have a residual. The residual was positive if the data is above the regression line, and negative if the score was lower than the expected value.

Using charts and graphs, the univariate and bivariate data were represented visually in the analysis for a discussion on inferential statistics. Initially, the univariate data was summarized in a table. Inferential statistics were applied when noticeable trends are drawn. In addition, the bivariate data was plotted on a scatter plot along with the regression line. The scatter plot and regression line showed when the data was above or below the expected value. The regression lines for the cohort and subgroup scaled scores provided rates of change, initial values, and correlation coefficients as well as another means for comparison. Explicitly, inferential statistics were used when the cohorts and subgroups were compared and the effect testing dates had upon student assessment growth progress. A color coded multi-plot was used to illustrate multiple cohorts and subgroups on the same plot for comparison. Specific observations regarding the different cohorts and subgroups were discussed and illustrated.

Assumptions, Limitations, and Delimitations

Limitations center on the constructed sample and assessment of students.

1. The sample included Giant City School students who have Star Assessment reading and math scores from the 2017-2018 through the 2022-2023 school year.
2. These students may not have been continuously enrolled during the observed period.
3. Students who were not able to be screened will have assessment score gaps that may limit the ability to draw mathematical conclusions over the time period.
4. The suspension of state assessments (e.g., Illinois Assessment of Readiness) and an alteration of classroom grading scales resulted in a lack of alternative data options. The Star Assessment is the only measure available to judge academic performance during this time aside from classroom performance.
5. The faculty providing instruction at Giant City School experienced turnover from the 2017-2018 school year to the 2022-2023 school year.

Aside from the study's limitations, the study faced delimitations in its design. For applicability for his current position, the focused on the student population of Giant City School. The analysis did not compare that population to other schools of similar characteristics. This intense review of Giant City School's universal screening data enabled me to become familiar with the current academic standing of the students. Further, in the analysis of the mean of all students outliers were removed using the formula noted.

Summary

Quantitative research methods were to analyze Giant City School's universal screening data as measured by Renaissance Learning's Star Assessment in reading and mathematics. Giant City School students were grouped into cohorts based upon their 2022-2023 year in school.

Through recommended statistical analyses, trends in academically similar groups were examined for mathematical significance.

CHAPTER 4

RESULTS AND DISCUSSION

In this study, March 2020 held significance because it served as a moment in time when a change occurred in typical classroom instruction. Namely, students were no longer in person for instruction. Instruction evolved at Giant City School with periods of in-person, remote, and hybrid models of both. Throughout this time, Giant City School utilized Renaissance Learning's Star Assessments to monitor student academic progress. The Renaissance Learning Star (Star) Assessment universal screening data in mathematics and reading for Giant City School were compiled from 2017-2018 to January of the 2022-2023 school year. The historical extracts include students in grades 2-12 for the 2022-2023 school year. The results and discussions are separated into the following two sections, each with multiple subsections:

- Mathematics
    - Star Math pre-/post-March 2020 performance by cohort
        - Analysis of all students
        - Analysis of academic subgroups of students
    - Star Math grade level performance from August 2017 through January 2023
        - Analysis of all students
        - Analysis of academic subgroups of students
- Reading
    - Star Reading pre-/post-March 2020 performance by cohort
        - Analysis of all students
        - Analysis of academic subgroups of students

- Star Reading grade level performance from August 2017 through January 2023
  - Analysis of all students
  - Analysis of academic subgroups

The collected data provided context for addressing this study's research questions. To address the first research question, the researcher explored the growth of students' scaled scores as they progressed in grade levels as complete cohorts as well as within academic tracks of low, middle, and high. For the second question, the researcher compared the student scale scores of the same grade levels from 2017 to 2023 as a group as well as within academic subgroups.

Star Math

Star Math Pre-/Post-March 2020 Performance by Cohort

In the presentation of the Star Math data, the findings are presented first with a dissemination of how the scores were dispersed before and after March 2020. Subsequent illustration and discussion describe the behavior of the overall cohort's data as well as that of the academic subgroups.

Analysis of All Students

Table 1 below lists the mean scale scores for cohorts of all students from the fall 2017-2018 through winter 2022-2023 Star Math assessment. Listed by year of high school graduation, 12 cohorts are tracked. The spring of 2019-2020 test is unavailable due to the closure of schools at that time. The spring of 2022-2023 test is unavailable due to its placement outside the time frame of this study. The class of 2022 has no results due to its unavailability within the historical extract from Renaissance Learning's database.

Table 1

Star Math Scores from 2017-2018 to 2022-2023 School Years by Cohort - All

		2017-2018			2018-2019			2019-2020			2020-2021			2021-2022			2022-2023		
		Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring
ALL	2022	n/a	n/a	n/a															
	2023	816.50	861.00	854.27	850.09	864.80	895.48												
	2024	734.11	774.05	796.70	784.95	794.45	809.52	815.52	834.15	n/a									
	2025	733.59	765.33	795.11	772.00	784.65	800.76	786.35	828.29	n/a	811.18	843.11	849.00						
	2026	600.05	645.47	670.72	668.35	723.70	758.90	746.50	763.88	n/a	766.25	791.17	794.11	816.47	824.35	851.06			
	2027	505.38	618.08	659.09	637.08	686.75	753.25	718.58	756.31	n/a	767.73	775.36	840.08	803.62	812.38	853.50	839.58	863.83	n/a
	2028	435.71	493.94	538.25	540.53	582.65	608.63	554.28	625.88	n/a	645.86	693.87	729.38	714.24	762.80	781.82	775.35	800.47	n/a
	2029				436.31	521.36	584.00	555.33	605.83	n/a	592.00	651.45	709.42	685.77	737.31	780.58	757.54	791.92	n/a
	2030							453.93	522.00	n/a	520.43	572.33	617.13	610.60	674.21	754.92	714.71	753.43	n/a
	2031										401.67	482.54	553.87	525.71	594.60	635.73	613.20	674.27	n/a
	2032													428.93	505.89	557.80	528.00	571.47	n/a
	2033																426.04	507.17	n/a

From this table, there are observations to note. All but one cohort saw an increase in scale score from fall to winter to spring screenings and in fall to fall screenings. The exception is the class of 2023 cohort which dipped from winter to spring of 2017-2018. Additionally, there are 21 instances where the spring scale score exceeded the fall score. In all but one of the post-March 2020 groups, this occurred. The classes of 2029 and 2030 are the only two to demonstrate a drop in scale score from their winter of 2019-2020 to fall of 2020-2021 benchmark. This comparison will be later explored in the analysis of the academic cohorts. Using the data from Table 1, the researcher explored how student scale scores tracked for cohorts 2025 through 2030, which are those with the largest sample size of Star Math scores.

The residual values were explored from Table 1 and listed in Table 2. Residual value is the difference between the observed mean and the expected mean as projected by the pre-March 2020 regression lines. Assuming linear growth with an unvarying rate of change from 2nd through 8th grade, the residual values were calculated for the classes of 2025 through 2030 in Table 2. The residuals vary drastically depending upon the class as demonstrated in Table 2,

ranging from 1.38 to -245.19. While regression lines can be of use, their inclusion as a benchmark and mathematical significance is called into question. Do Star Math scale scores follow linear growth based upon regression lines utilizing 2nd, 3rd, and 4th grade data?

Table 2

Star Math for Cohorts 2025 through 2030 with Residual Calculation

Class of 2025			
Pre-March 2020 Regression Line		$\hat{y} = 587.38 + 31.69x$ where $\hat{y}$ is the Math Mean and x is the Math Grade Level; and where 587.38 is the initial score when tested and 31.69 is the expected 31.69 rate of growth. *Sample size: 8* *R (correlation coefficient) = 0.88*	
Post-March 2020 Grade	Expected Mean	Observed Mean	Residual
8.0	840.89	812.83	-28.06
8.4	853.57	853.94	0.37
8.9	869.41	849	-20.41
Class of 2026			
Pre-March 2020 Regression Line		$\hat{y} = 323.55 + 71.31x$ *Sample size: 8* *R (correlation coefficient) = 0.98*	
Post-March 2020 Grade	Expected Mean	Observed Mean	Residual
7.0	822.74	777.41	-45.33
7.3	844.14	781.63	-62.52
7.9	886.93	805.39	-81.54
8.0	894.06	800	-94.06
8.4	922.58	830.07	-92.51
8.9	958.24	828.55	-129.69
Class of 2027			
Pre-March 2020 Regression Line		$\hat{y} = 286.61 + 88.64x$ *Sample size: 8* *R (correlation coefficient) = 0.94*	
Post-March 2020 Grade	Expected Mean	Observed Mean	Residual
6.0	818.49	749.10	-69.40

6.3	845.07	766.71	-78.36
6.9	898.26	817.46	-80.81
7.0	907.12	806.61	-100.51
7.4	942.58	819.48	-123.1
7.9	986.91	821.08	-165.83
8.0	995.77	822.44	-173.33
8.4	1031.2	845.22	-185.98
Class of 2028			
Pre-March 2020 Regression Line		*$\hat{y}$ = 278.99 + 79.30x* *Sample size: 8* *R (correlation coefficient) = 0.97*	
Post-March 2020 Grade	Expected Mean	Observed Mean	Residual
5.0	675.52	637.37	-38.15
5.3	699.31	689.35	-9.96
5.9	746.89	730.13	-16.76
6.0	754.82	741.79	-13.03
6.4	786.54	787.92	1.38
6.9	826.2	760.36	-65.84
7.0	834.13	780.82	-53.31
7.4	865.85	800.21	-65.64
Class of 2029			
Pre-March 2020 Regression Line		*$\hat{y}$ = 226.42+ 114.60x* *Sample size: 8* *R (correlation coefficient) = 0.99*	
Post-March 2020 Grade	Expected Mean	Observed Mean	Residual
4.0	684.84	590.15	-94.69
4.3	719.22	648.17	-71.05
4.9	787.98	697.92	-90.06
5.0	799.44	668.88	-130.57
5.4	845.28	729.6	-115.68
5.8	891.13	739.29	-151.84
6.0	914.05	691.53	-222.52
6.4	959.89	769.06	-190.83
Class of 2030			
Pre-March 2020 Regression Line		*$\hat{y}$= 148.98+ 154.42x* *Sample size: 5* *R (correlation coefficient) = 0.98*	
Post-March 2020 Grade	Expected Mean	Observed Mean	Residual

3.0	612.24	501.81	-110.43
3.3	658.56	553.71	-104.85
3.9	751.22	616.75	-134.47
4.0	766.66	617.63	-149.03
4.4	828.42	648.29	-180.13
4.8	890.19	734.84	-155.35
5.0	921.08	705.95	-215.13
5.4	982.84	737.65	-245.19

Post-March 2020 groups are notably farther below their predicted mean than their comparable pre-March 2020 peers as illustrated in Tables 1 and 2.

In order to analyze data sets based upon the same grade levels prior to March 2020, the classes of 2028 and 2029 were compared. Growth rates were demonstrated in Table 2 to vary widely, and arguably misleadingly. The researcher and statistician compared the only cohorts that overlapped grade levels pre-March 2020 and post-March 2020. While the scope shown in Table 3 is a single measure, this is a better comparison than residual values that cross grade levels, as expected growth rates decrease as students enter higher grade levels. Table 3 compares 4th grade growth to 4th grade growth. Everything is fixed while the only differences are the students, which are accounted for by the rate of change and initial value of the regression line as well as the pre-March 2020 and post-March of 2020 time period.

Table 3

Early Elementary Star Math Residual for Class 2029 vs 2030 Residual Calculation

Class of 2029 Grade 6 and Class of 2028 Grade 7 Math								
	Class of 2029 Grade 6				**Class of 2028 Grade 7**			
	Pre-March 2020 Regression Line Grade 2 through Winter Grade 3 only $\hat{y} = 220.31 + 116.49x$				Pre-March 2020 Regression Line Grade 2 through Winter Grade 3 only $\hat{y} = 250.93 + 91.26x$			
Grade Level	x	Expected Mean	Observed Mean	Residual	x	Expected Mean	Observed Mean	Residual
Grade 3	n/a	n/a	n/a	n/a	3.9	606.84	595.58	-11.26

Spring								
Grade 4 Fall	4.0	686.27	590.154	-66.12	4.0	615.97	566.14	-49.83
Grade 4 Winter	4.3	721.22	648.167	-73.053	4.4	652.47	633.45	-19.02
Grade 4 Spring	4.9	791.11	697.923	-93.187	n/a	n/a	n/a	n/a
Pre March 2020 Spring 2020 Post March 2020								

Table 3 shows items to note. The class of 2029 scored lower initially on their Star Math math assessment (220.31) versus that of the class of 2028 (250.93), but their growth rate tracked higher. In comparing Grade 4 fall and winter screenings, the class of 2029 scored higher than the class of 2028 which tested pre-March 2020.

Analysis of Academic Subgroups of Students

Table 4 is an illustration of the Star Math scores for each high school graduation class that has attended Giant City School from 2017-2018 through 2022-2023 by low, middle, and high subgroups. Subgroups were established by each student's percentile rank on his or her initial Star Math score. Once separated, subgroups were tracked over time. For the low subgroup, three of the classes (2026, 2027, and 2028) demonstrated lower scale scores during their fall of 2020-2021 screening than their winter of 2019-2020. Classes of 2029 and 2030 increased their scale scores. For the middle subgroup, classes of 2025, 2029, and 2030 show lower scale scores with 2026, 2027, and 2028 increasing theirs. For the high group, 2026 and 2028 increased their scale scores from winter of 2019-2020 to fall of 2020-2021 with all others showing a drop in score. While this effect is not isolated to the comparison of winter of 2019-2020 to fall of 2020-2021, it occurs much more often in the table than in any other similar comparison.

Table 4

Star Math Scores from 2017-2018 to 2022-2023 School Years by Cohort - Academic Subgroups

		2017-2018			2018-2019			2019-2020			2020-2021			2021-2022			2022-2023		
		Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring
LOW	2022	n/a	n/a	n/a															
	2023	634.50	801.50	789.00	777.00	766.50	806.00												
	2024	583.67	724.33	752.00	670.25	688.00	723.50	781.67	785.67	n/a									
	2025	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a						
	2026	462.00	539.60	516.00	545.20	602.60	654.20	620.40	693.80	n/a	633.80	694.80	695.20	715.40	721.86	752.40			
	2027	408.33	523.33	559.50	612.00	629.00	717.33	648.67	695.50	n/a	694.00	712.00	806.33	797.67	807.67	825.00	821.00	815.00	n/a
	2028	330.50	421.50	442.50	436.25	492.50	489.25	449.25	588.25	n/a	536.67	570.00	579.00	605.17	678.29	711.25	654.50	712.75	n/a
	2029				344.50	395.00	528.00	491.00	544.00	n/a	561.00	690.00	614.00	636.00	647.00	722.00	679.00	736.00	n/a
	2030							321.50	440.00	n/a	464.50	532.50	589.00	536.50	674.00	709.00	670.50	687.50	n/a
	2031										336.50	440.43	525.25	485.00	559.11	600.33	561.63	606.50	n/a
	2032													307.67	435.00	535.00	439.33	551.33	n/a
	2033																344.00	450.00	n/a
MIDDLE	2022	n/a	n/a	n/a															
	2023	774.38	826.75	826.63	839.88	843.25	862.13												
	2024	725.91	761.09	782.90	777.18	783.20	780.36	793.64	813.60	n/a									
	2025	683.00	683.00	759.56	754.50	753.25	774.75	748.75	810.13	n/a	783.00	818.33	815.44						
	2026	613.56	658.44	674.13	687.33	740.00	762.89	758.00	761.73	n/a	780.44	793.83	803.11	817.17	855.71	855.14			
	2027	485.83	613.60	648.60	601.80	680.20	723.60	698.40	760.80	n/a	794.75	759.50	835.00	784.67	779.17	854.20	826.40	859.40	n/a
	2028	440.11	487.91	524.30	566.00	601.89	632.33	559.40	618.00	n/a	671.33	713.33	753.89	746.45	794.44	790.33	804.78	820.22	n/a
	2029				422.43	505.00	552.17	540.57	597.43	n/a	577.67	635.17	729.83	674.13	736.25	777.57	771.57	796.71	n/a
	2030							425.29	509.29	n/a	506.43	550.50	604.63	604.13	656.00	734.86	688.86	745.86	n/a
	2031										431.00	514.67	526.00	585.33	588.33	634.33	654.00	697.67	n/a
	2032													428.75	509.22	540.00	539.00	560.13	n/a
	2033																418.65	498.82	n/a
HIGH	2022	n/a	n/a	n/a															
	2023	874.92	893.75	883.58	869.08	901.70	925.17												
	2024	811.71	815.71	835.57	828.14	835.43	866.43	864.43	884.29	n/a									
	2025	778.56	804.13	830.67	787.56	812.56	823.89	819.78	844.44	n/a	836.22	867.89	879.20						
	2026	694.83	728.00	769.33	742.50	800.17	840.17	834.33	810.63	n/a	855.33	866.17	876.80	900.00	907.33	928.50			
	2027	607.50	694.75	722.00	700.00	738.25	817.25	796.25	811.50	n/a	796.00	838.75	870.50	836.50	865.75	874.00	870.00	906.00	n/a
	2028	531.00	541.50	605.25	600.25	629.50	649.75	646.50	681.25	n/a	704.00	759.33	787.00	789.25	839.50	833.25	830.00	843.75	n/a
	2029				506.50	577.50	645.75	597.25	636.00	n/a	629.00	666.25	704.00	721.5	762.00	800.50	772.25	811.50	n/a
	2030							547.00	572.60	n/a	562.40	601.25	648.40	650.6	699.8	792.2	768.60	790.40	n/a
	2031										510.00	548.67	632.00	582.75	664.75	691.75	685.75	792.25	n/a
	2032													520.25	587	613.25	572.50	609.25	n/a
	2033																498.50	571.25	n/a

Star Math Grade Level Performance

Analysis of All Students

In Figure 2, a representation of all student scale scores before and after March 2020 is shown. In blue, the scale scores represent those students who tested before March 2020. The red dots represent the student scores after March 2020. Visually, the scores display a similar rate of

change until grade 5. However, the rate of change decreases at grades 6, 7, and 8. Further, scale scores before March of 2020 are noticeably higher than their post counterparts.

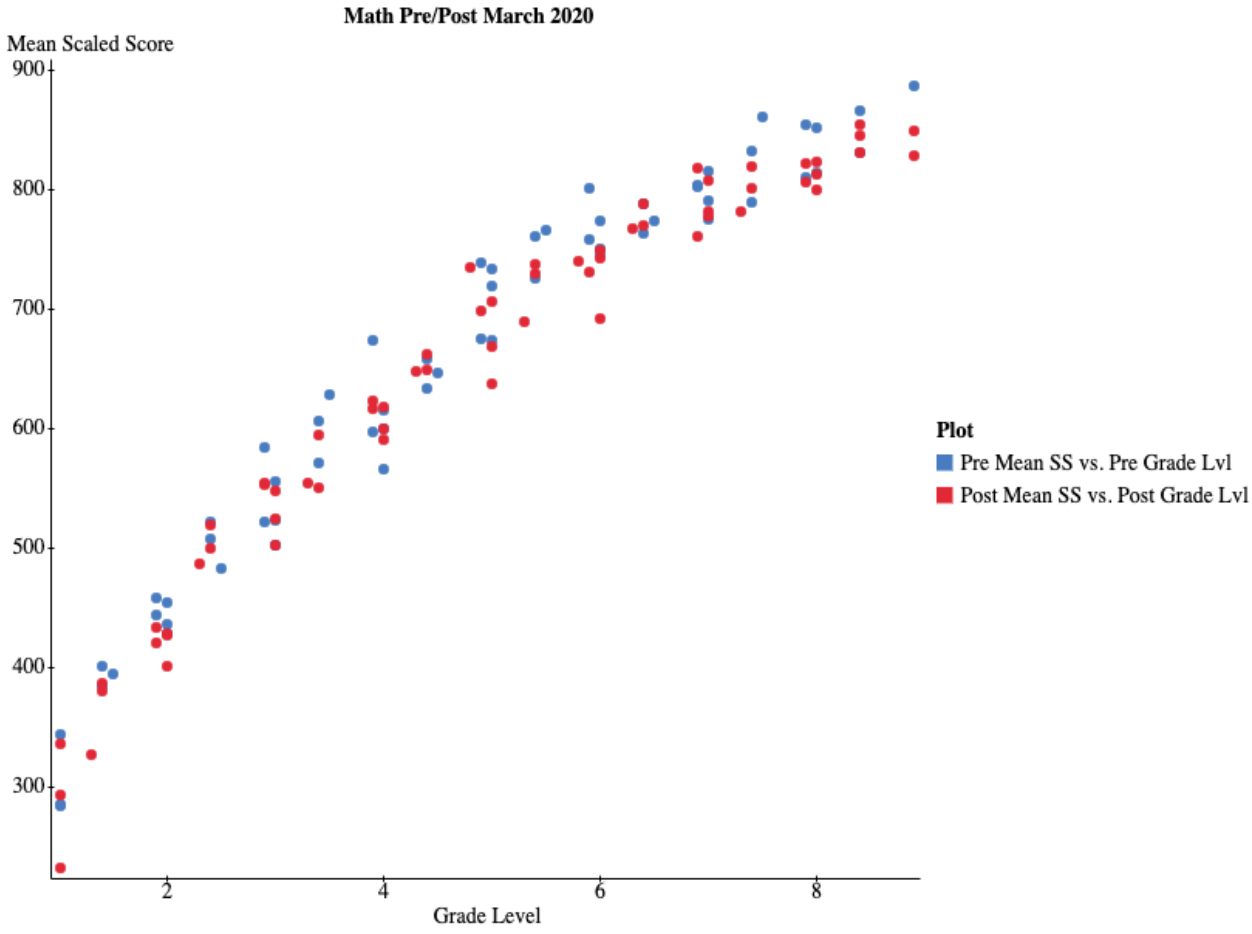


Figure 2

Star Math Scale Scores Pre-March of 2020 and Post-March of 2020

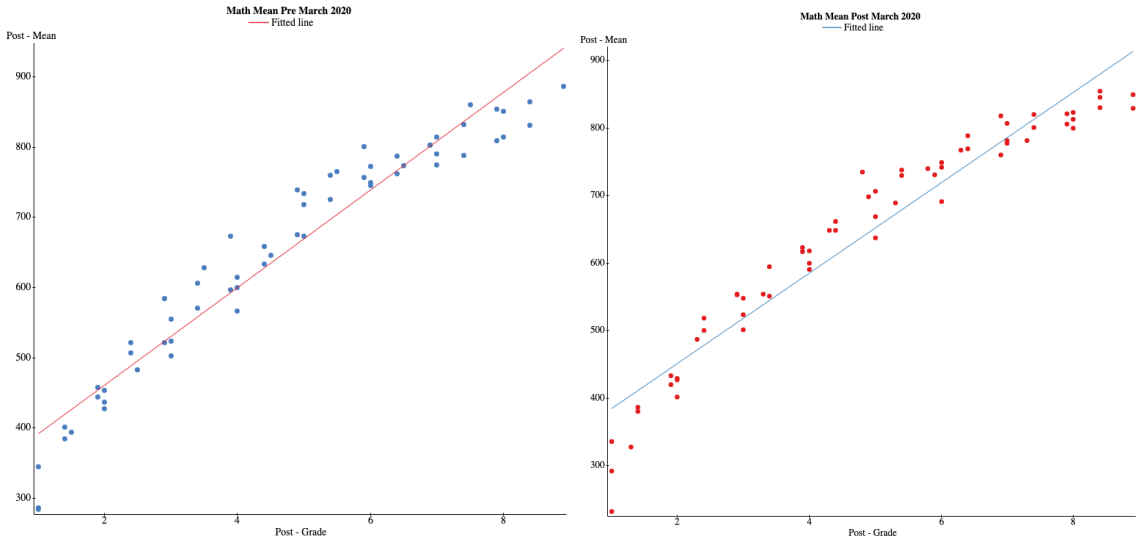


Figure 3

Star Math Scale Scores Pre-March of 2020 vs Post-March of 2020 Lines of Best Fit

Separating the Figure 2 scatter plot into separate before and after March 2020 plots creates the two graphs above in Figure 3. The lines of best fit have been added. Star Math data show that before, 61 test samples, and after, 64 test samples, March 2020 display similar initial scale scores of 321.91 for before and 317.90 for after March 2020. The rates of change are 69.56 and 66.87, respectively. Table 5 illustrates by lines of regression. Please note the *b* represents a predicted initial test score when a grade is tested, and *m* is the expected increase in scale score. However, the researcher urges the same caution as before in applying linear relationships to data that visually, Figure 2 is not adhering to those trends.

Table 5

Predicted Star Math Mean $(\hat{y})$ for a Given Grade Level (x)

Grade	$\hat{y} = b + mx$ where $\hat{y}$ represents the predicted mean for a given grade level, x	
	Pre March of 2020	**Post March of 2020**

All	$\hat{y}$ = 321.91 + 69.56x Sample size: 61	$\hat{y}$ = 317.90 + 66.87x Sample size: 64
2	$\hat{y}$ = 194.41 + 124.58x Sample size: 8	$\hat{y}$ = 129.18 + 150.12x Sample size: 8
3	$\hat{y}$ = 159.09 + 124.85x Pre Sample size: 8	$\hat{y}$ = 205.68 + 106.55x Sample size: 8
4	$\hat{y}$ = 92.70 + 125.12x Sample size: 8	$\hat{y}$ = 81.73 + 130.60x Sample size: 8
5	$\hat{y}$ = 307.49 + 80.64x Sample size: 8	$\hat{y}$ = 286.01 + 78.27x Sample size: 8
6	$\hat{y}$ = 448.30 + 51.11x Sample size: 8	$\hat{y}$ = 322.23 + 68.88x Sample size: 8
7	$\hat{y}$ = 462.66 + 47.80x Sample size: 8	$\hat{y}$ = 581.99 + 29.49x Sample size: 8
8	$\hat{y}$ = 368.60 + 57.68x Sample size: 5	$\hat{y}$ = 566.41 + 31.50x Sample size: 8

Table 5 provides a representation of the predicted mean, $\hat{y}$, for a grade level before or after March of 2020. The sample sizes for all groups provide 61 to 64 elements to consider when using the equation. However, at the grade level, the equations are based upon small sample sizes. Both the rate of change and the initial starting scale score changed before and after March 2020. The initial values (scale scores) were lower after than before March 2020. Rate of growth, as represented linearly, varied by grade level. Post-March 2020 rates of growth in 6th through 8th grades were dramatically lower.

Table 6 establishes the raw mean scores for each grade level from the fall testing window of the 2017-2018 school year to the winter screening of 2022-2023. In addition to the yearly benchmark scores, an “all” set is shown. The all compilation is the mean of all scores, including outliers, for a specific testing window and grade level. For the 2020-2021 school year, all benchmark scores were below their equivalent all compilation scores except for grade 6 in the winter and spring. For 2021-2022 and 2022-2023, additional grade levels begin to exceed the

all comparison. The 2nd grade group of 2017-2018 remains consistently below the all compilation throughout their progression to 2022-2023.

Table 6

Grade Level Star Math Scale Scores from 2017-2018 to 2022-2023 School Year - All

		2017-2018			2018-2019			2019-2020			2020-2021			2021-2022			2022-2023			All		
		Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring
ALL	2nd	435.71	493.94	538.25	436.31	521.36	584.00	453.93	522.00	n/a	401.67	482.54	553.87	428.93	505.89	557.80	426.04	507.17	n/a	429.81	505.08	556.33
	3rd	505.38	618.08	659.09	540.53	582.65	608.63	555.33	605.83	n/a	520.43	572.33	617.13	525.71	594.60	635.73	528.00	571.47	n/a	528.90	589.77	625.69
	4th	600.05	645.47	670.72	637.08	686.75	753.25	554.28	625.88	n/a	592.00	651.45	709.42	610.60	674.21	754.92	613.20	674.27	n/a	598.74	657.55	717.07
	5th	733.59	765.33	795.11	668.35	723.70	758.90	718.58	756.31	n/a	645.86	693.87	729.38	685.77	737.31	780.58	714.71	753.43	n/a	693.60	736.97	765.56
	6th	734.11	774.05	796.70	772.00	784.65	800.76	746.50	763.88	n/a	767.73	775.36	840.08	714.24	762.80	781.82	757.54	791.92	n/a	745.28	773.65	801.22
	7th	816.50	861.00	854.27	784.95	794.45	809.52	786.35	828.29	n/a	766.25	791.17	794.11	803.62	812.38	853.50	775.35	800.47	n/a	788.80	814.98	826.00
	8th	n/a	n/a	n/a	850.09	864.80	895.48	815.52	834.15	n/a	811.18	843.11	849.00	816.47	824.35	851.06	839.58	863.83	n/a	826.66	844.53	866.47

In the analysis of all students by grade level, the standard deviation of the distribution of Star Math scale scores was calculated. Within the two scatter plots below (Figure 4), the standard deviation of students before March 2020 and those after March 2020 were illustrated. The line of best fit was plotted to examine correlation.

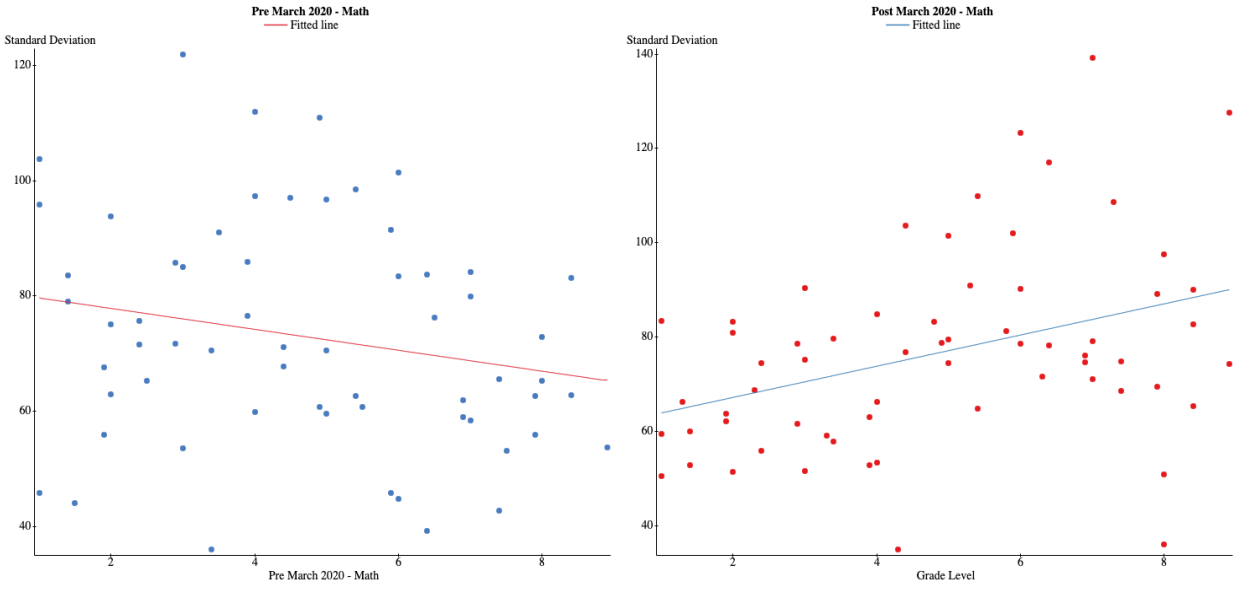


Figure 4

Star Math Standard Deviation Pre-March 2020 vs Post-March 2020 Lines of Best Fit

As demonstrated by the line of best fit, the distribution of student scale scores before March 2020 narrowed. Student scores grew closer together as shown by the negative slope of the line over time. Constrastingly, student scores saw an increase in their standard deviation after March 2020 with the line of best fit reflecting a positive slope. Student Star Math scale scores grew farther apart over time.

Analysis of Academic Subgroups of Students

Table 7 is a representation of Table 6 by academic subgroup. The disaggregation of scores into ability groups presents nuanced information on how grade levels performed over time. The 5th grade group of 2017-2018 (6th grade 2018-2019, 7th grade 2019-2020, etc.) shows no scores in the low subgroup because no student scored below the 25th percentile on the initial screening utilized to separate subgroups.

Table 7

Grade Level Star Math Scale Scores from 2017-2018 to 2022-2023 School Year - By Subgroup

		2017-2018			2018-2019			2019-2020			2020-2021			2021-2022			2022-2023			All		
		Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring
LOW	2nd	330.50	421.50	442.50	344.50	395.00	528.00	321.50	440.00	n/a	336.50	440.43	525.25	307.67	435.00	535.00	344.00	450.00	n/a	331.29	434.24	506.56
	3rd	408.33	523.33	559.50	436.25	492.50	489.25	491.00	544.00	n/a	464.50	532.50	589.00	485.00	559.11	600.33	439.33	551.33	n/a	459.04	538.00	570.00
	4th	462.00	539.60	516.00	612.00	629.00	717.33	449.25	588.25	n/a	561.00	690.00	614.00	536.50	674.00	709.00	561.63	606.50	n/a	526.29	601.22	615.44
	5th	n/a	n/a	n/a	545.20	602.60	654.20	648.67	695.50	n/a	536.67	570.00	579.00	636.00	647.00	722.00	670.50	687.50	n/a	589.93	635.13	636.67
	6th	583.67	724.33	752.00	n/a	n/a	n/a	620.40	693.80	n/a	694.00	712.00	806.33	605.17	678.29	711.25	679.00	736.00	n/a	627.58	699.90	752.00
	7th	634.50	801.50	789.00	670.25	688.00	723.50	n/a	n/a	n/a	633.80	694.80	695.20	797.67	807.67	825.00	654.50	712.75	n/a	681.59	738.82	760.00
	8th	n/a	n/a	n/a	777.00	766.50	806.00	781.67	785.67	n/a	n/a	n/a	n/a	715.40	721.86	752.40	821.00	815.00	n/a	764.54	759.20	761.33
MIDDLE	2nd	440.11	487.91	524.30	422.43	505.00	552.17	425.29	509.29	n/a	431.00	514.67	526.00	428.75	509.22	540.00	418.65	498.82	n/a	426.18	504.84	544.84
	3rd	485.83	613.60	648.60	566.00	601.89	632.33	540.57	597.43	n/a	506.43	550.50	604.63	585.33	588.33	634.33	539.00	560.13	n/a	533.53	587.13	626.96
	4th	613.56	658.44	674.13	601.80	680.20	723.60	559.40	618.00	n/a	577.67	635.17	729.83	604.13	656.00	734.86	654.00	697.67	n/a	594.78	650.90	712.85
	5th	683.00	683.00	759.56	687.33	740.00	762.89	698.40	760.80	n/a	671.33	713.33	753.89	674.13	736.25	777.57	688.86	745.86	n/a	682.59	734.27	762.65
	6th	725.91	761.09	782.90	754.50	753.25	774.75	758.00	761.73	n/a	794.75	759.50	835.00	746.45	794.44	790.33	771.57	796.71	n/a	752.68	770.84	789.68
	7th	774.38	826.75	826.63	777.18	783.20	780.36	748.75	810.13	n/a	780.44	793.83	803.11	784.67	779.17	854.20	804.78	820.22	n/a	778.61	802.08	808.97
	8th	n/a	n/a	n/a	839.88	843.25	862.13	793.64	813.60	n/a	783.00	818.33	815.44	817.17	855.71	855.14	826.40	859.40	n/a	809.16	834.21	842.58
HIGH	2nd	531.00	541.50	605.25	506.50	577.50	645.75	547.00	572.60	n/a	510.00	548.67	632.00	520.25	587	613.25	498.50	571.25	n/a	520.00	567.42	624.06
	3rd	607.50	694.75	722.00	600.25	629.50	649.75	597.25	636.00	n/a	562.40	601.25	648.40	582.75	664.75	691.75	572.50	609.25	n/a	586.12	639.25	676.24
	4th	694.83	728.00	769.33	700.00	738.25	817.25	646.50	681.25	n/a	629.00	666.25	704.00	650.6	699.8	792.2	685.75	792.25	n/a	669.15	717.35	768.30
	5th	778.56	804.13	830.67	742.50	800.17	840.17	796.25	811.50	n/a	704.00	759.33	787.00	721.5	762.00	800.50	768.60	790.40	n/a	758.87	791.93	820.30
	6th	811.71	815.71	835.57	787.56	812.56	823.89	834.33	810.63	n/a	796.00	838.75	870.50	789.25	839.50	833.25	772.25	811.50	n/a	800.18	818.53	836.63
	7th	874.92	893.75	883.58	828.14	835.43	866.43	819.78	844.44	n/a	855.33	866.17	876.80	836.50	865.75	874.00	830.00	843.75	n/a	844.57	862.10	876.71
	8th	n/a	n/a	n/a	869.08	901.70	925.17	864.43	884.29	n/a	836.22	867.89	879.20	900.00	907.33	928.50	870.00	906.00	n/a	865.42	891.28	909.46

Using the information from Table 7, Figure 5 was created to visually display how the all subgroups progressed over time. The high group (green) remains high throughout second through eighth grades. The middle (red) and low (blue) subgroups remained below the all (yellow) group throughout second through eighth grades. This performance may be attributed to relative strength of the high subgroup's scores and their effect upon the mean to raise the overall all mean score.

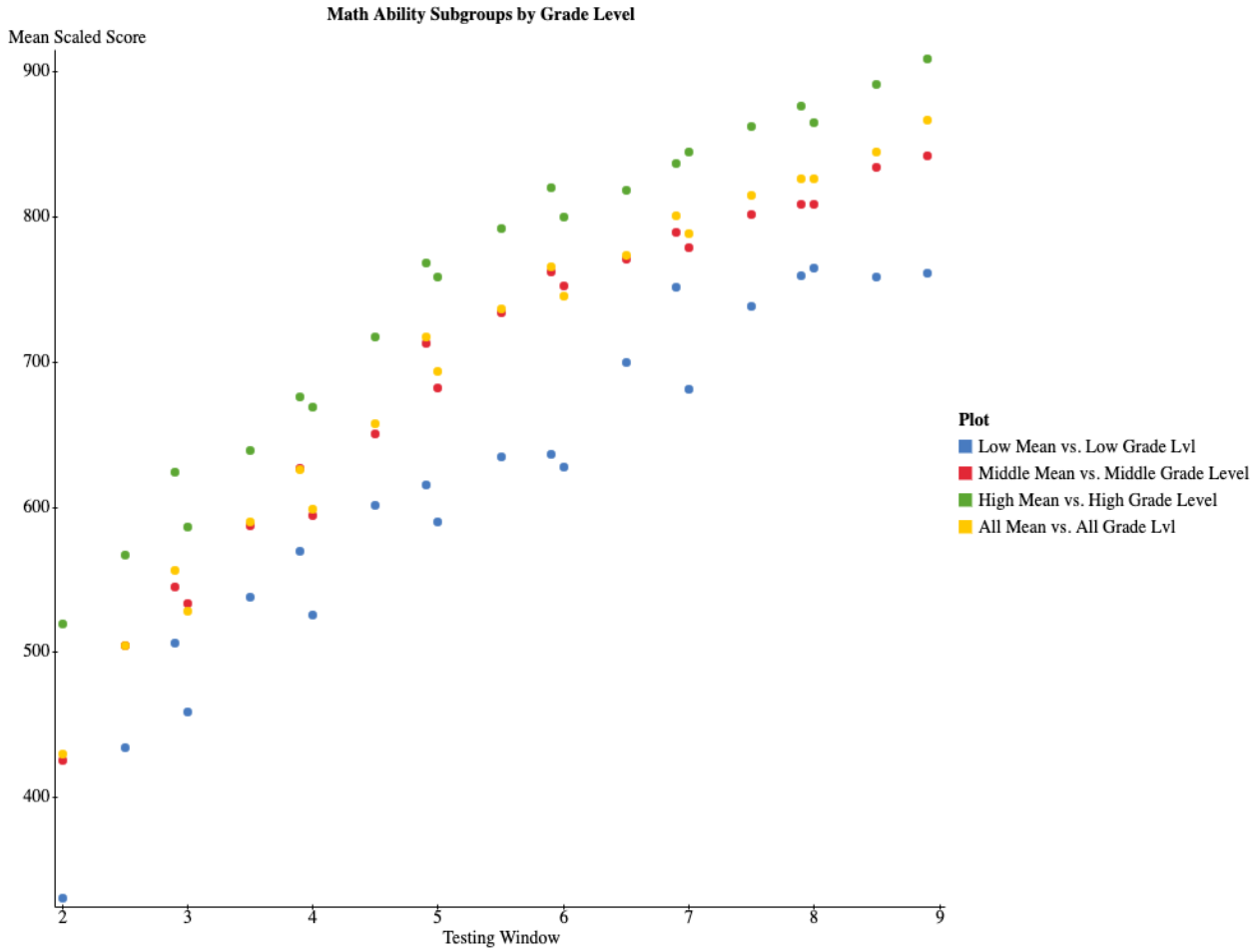
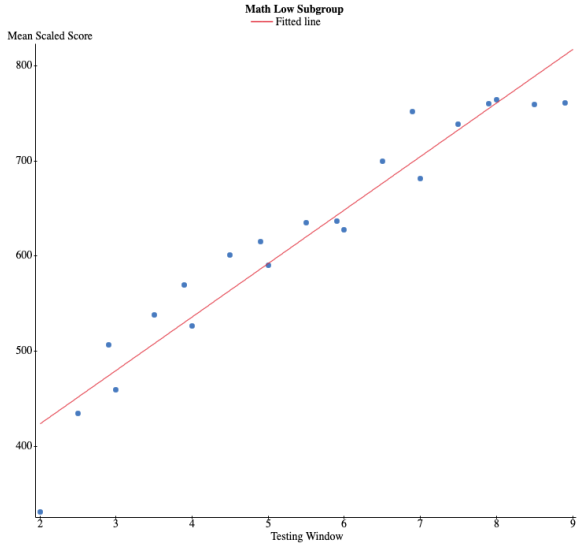


Figure 5

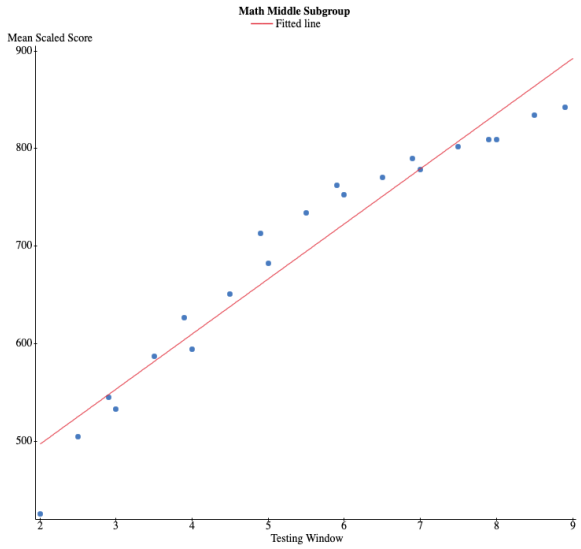
Grade Level Star Math Scores from 2017-2018 to 2022-2023 School Year - By Subgroup

The information in Figure 5 is segregated into individual plots with lines of best fit in

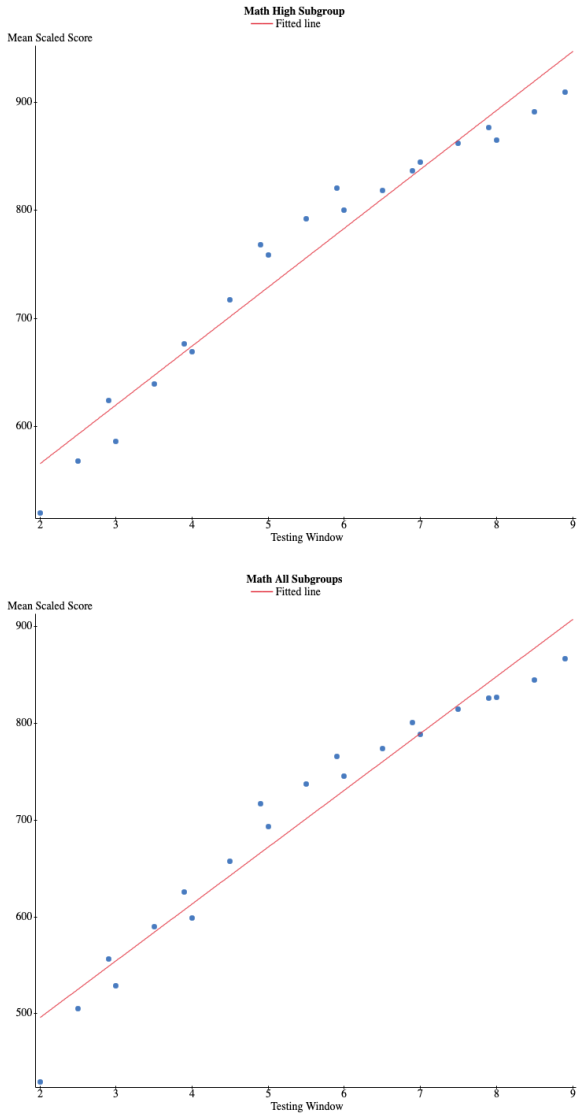
Figure 6. In addition, the equations of the regression lines are included as well. For the low, middle, high, and all groups the expected initial scale score for each group is 310.97, 384.39, 456.18, and 378.36, respectively. Growth as measured by the expected rate of change is 56.26, 56.43, 54.56, and 58.77 for the same groupings. The growth is remarkably consistent between the subgroups. The consistency demonstrates that all subgroups will continue to grow over time, but, at no point, do the low and middle groups gain on their high peers.



$y = 310.97 + 56.26x$



$y = 384.39 + 56.43x$



$y = 456.18 + 54.56x$

$y = 378.36 + 58.77x$

Figure 6

Lines of Best Fit with Regression Line Equations for Math Subgroups and All Group

Star Reading

Star Reading Pre-/Post-March 2020 Performance by Cohort

Parallel to the presentation of the Star Math findings, the Star Reading data are presented with an exploration of how the scores for specific cohorts reacted to testing before and after March 2020. Subsequent illustrations and discussions describe the behavior of the overall

cohort's Star Reading results as well as that of the academic subgroups within the cohort.

Analysis of All Students

Within the analysis of all students, Table 8 below details the mean scale scores for cohorts of all students from the fall 2017-2018 through winter 2022-2023 Star Reading assessment. As mentioned earlier, twelve cohorts are tracked and listed by year of high school graduation. The spring of 2019-2020 test is unavailable due to the closure of schools at that time. The spring of 2022-2023 test is unavailable due to its placement outside the time frame of this study. The class of 2022 has no results due to its unavailability within the historical extract from Renaissance Learning's database.

Table 8

Star Reading Scores from 2017-2018 to 2022-2023 School Years by Cohort - All

		2017-2018			2018-2019			2019-2020			2020-2021			2021-2022			2022-2023		
		Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring
ALL	2022	n/a	n/a	n/a															
	2023	1033.48	1049.24	1078.81	1108.23	1102.00	1161.48												
	2024	779.10	778.19	899.76	971.29	961.76	1016.29	961.68	1023.76	n/a									
	2025	710.12	786.88	832.35	847.35	893.65	935.00	934.35	978.00	n/a	1000.47	928.21	1048.72						
	2026	492.20	591.10	634.00	607.10	720.15	778.60	766.48	875.42	n/a	865.45	815.82	930.21	946.89	983.05	919.71			
	2027	456.42	541.50	528.27	567.67	701.75	737.91	772.67	833.42	n/a	815.36	873.91	997.18	982.00	957.93	971.92	1027.00	1093.42	n/a
	2028	280.12	419.12	474.12	455.94	509.53	574.82	518.12	598.06	n/a	700.80	678.69	781.18	775.60	837.33	867.19	961.00	953.06	n/a
	2029				260.92	385.73	505.10	424.38	574.31	n/a	570.67	641.27	696.90	739.17	803.75	888.33	858.92	879.46	n/a
	2030							244.38	372.18	n/a	439.92	429.45	522.00	524.09	576.00	634.36	622.62	727.08	n/a
	2031										261.50	306.15	372.54	367.13	438.41	498.72	573.29	593.43	n/a
	2032													214.13	276.29	360.60	359.87	399.07	n/a
	2033																211.30	292.88	n/a

From this table, the researcher observed various behaviors within the data. First, all but one cohort saw an increase in scale score from fall to to fall screenings. The exception is the class of 2023 cohort which dipped from fall of 2018-2019 to fall of 2019-2020. In nine instances, the winter score dipped below that of the fall score. Of the six cohorts with data before and after March 2020, three cohorts exceeded their winter 2019-2020 scale score with their fall 2020-2021

score. This anomaly failed to occur once before March 2020 and did not occur post-March 2020 other than with the 2020-2021 fall scale scores. In 2021-2022, the classes of 2026 and 2027 demonstrated negative growth from fall to spring of that year.

Using the data from Table 8, the researcher explored how student scale scores behaved linearly for cohorts 2025 through 2030, which are those with Star Reading scores before and after March 2020. The residual values were calculated in Table 9. Unlike their representation with the Star Math data, the residual values using Star Reading scores have an outlier to note. First, the residuals vary in Table 9, ranging from 56.71 to -394.03. The Class of 2028 behaves differently than the other observed classes. Five out of their eight residual values track above the regression line and show a continuation of early elementary Star Reading growth. For the class of 2029, the residual values are the highest of any class measured for reading or math. Their initial elementary growth is greater than 200, which is an anomaly among the regression lines.

Table 9

Star Reading for Cohorts 2025 through 2030 with Residual Calculation

Class of 2025			
Pre-March 2020 Regression Line		$\hat{y} = 201.79 + 104.23x$ where $\hat{y}$ is the Reading Mean and x is the Reading Grade Level; and where 201.79 is the initial score when tested and 104.23 is the expected rate of growth. *Sample size: 8* *R (correlation coefficient) = 0.94*	
Post-March 2020 Grade	Expected Mean	Observed Mean	Residual
8.0	1035.7	1015.44	-20.26
8.4	1077.4	927.63	-149.77
8.9	1129.5	1011.5	-118
Class of 2026			

Pre-March 2020 Regression Line		$\hat{y}$ = 32.50 + 117.24x Sample size: 8 R (correlation coefficient) = 0.97	
Post-March 2020 Grade	Expected Mean	Observed Mean	Residual
7.0	853.15	788.9	-64.25
7.3	888.32	774.55	-113.78
7.9	958.67	853.72	-104.95
8.0	970.39	854.45	-115.94
8.4	1017.3	904	-113.3
8.9	1075.9	816.52	-259.38
Class of 2027			
Pre-March 2020 Regression Line		$\hat{y}$ = -11.03 + 146.35x *Sample size: 8* *R (correlation coefficient) = 0.98*	
Post-March 2020 Grade	Expected Mean	Observed Mean	Residual
6.0	867.1	774.38	-92.72
6.3	911.01	801.57	-109.44
6.9	998.82	933.46	-65.37
7.0	1013.5	949.72	-63.78
7.4	1072	943.16	-128.84
7.9	1145.2	935.4	-209.8
8.0	1159.8	961.74	-198.06
8.4	1218.4	1049.52	-168.88
Class of 2028			
Pre-March 2020 Regression Line		$\hat{y}$ = 106.50 + 107.32x *Sample size: 8* *R (correlation coefficient) = 0.93*	
Post-March 2020 Grade	Expected Mean	Observed Mean	Residual
5.0	643.09	663.48	20.39
5.3	675.28	657.16	-18.12
5.9	739.67	726.61	-13.06
6.0	750.4	800.17	49.77
6.4	793.33	850.04	56.71
6.9	846.99	845.44	-1.55
7.0	857.72	889.04	31.32
7.4	900.65	905.89	5.24

Class of 2029			
Pre-March 2020 Regression Line		$\hat{y}$ *= -127.10+ 203.24x* *Sample size: 7* *R (correlation coefficient) = 0.97*	
Post-March 2020 Grade	Expected Mean	Observed Mean	Residual
4.0	685.86	562	-123.86
4.3	746.83	617.25	-129.58
4.9	868.77	664.25	-204.52
5.0	889.1	653	-236.1
5.4	970.39	718.77	-251.63
5.9	1072	826.38	-245.63
6.0	1092.3	776.58	-315.72
6.4	1173.6	779.57	-394.03
Class of 2030			
Pre-March 2020 Regression Line		$\hat{y}$ *= -5.45 + 129.91x* *Sample size: 4* *R (correlation coefficient) = 0.80*	
Post-March 2020 Grade	Expected Mean	Observed Mean	Residual
3.0	384.29	347	-37.29
3.3	423.26	425.08	1.82
3.9	501.21	460.64	-43.57
4.0	514.2	447.53	-36.67
4.4	566.17	536.08	-30.16
4.9	631.12	634.22	3.10
5.0	644.11	591.61	-52.50
5.4	696.08	696.62	0.54

As presented with the Star Math assessment results, data sets based upon the same grade levels, the classes of 2028 and 2029, prior to March 2020 were compared in Table 10. These cohorts were the only ones that overlapped grade levels pre-March 2020 and post-March 2020 with early elementary, 2nd and 3rd grade results, lines of regression. While the scope shown in Table 10 is a single measure, this is a better comparison than residual values that cross grade

levels, as expected growth rates decrease as students enter higher grade levels. Specifically, Table 10 compares 4th grade growth pre-March 2020 to 4th grade growth post-March 2020 using early elementary regression lines. However, as in Table 9, the class of 2029 expected means are extrapolated based upon the high rate of growth from early elementary that continues to be far above predicted linear growth. Pre- and post-March variables are accounted for in Table 10. Those unaccounted for are the student cohorts and the pre-March 2020 and post-March of 2020 time period.

Table 10

Early Elementary Star Reading Residual for Class 2029 vs 2030 Residual Calculation

Class of 2029 Grade 6 and Class of 2028 Grade 7 Reading								
	Class of 2029 Grade 6				**Class of 2028 Grade 7**			
	Pre-March 2020 Regression Line Grade 2 through Winter Grade 3 only $\hat{y} = -137.90 + 206.22x$				Pre-March 2020 Regression Line Grade 2 through Winter Grade 3 only $\hat{y} = 56.00 + 125.01x$			
Grade Level	x	Expected Mean	Observed Mean	Residual	x	Expected Mean	Observed Mean	Residual
Grade 3 Spring	n/a	n/a	n/a	n/a	3.9	543.54	553.20	9.66
Grade 4 Fall	4.0	686.98	562.00	-124.98	4.0	556.04	476.14	-79.9
Grade 4 Winter	4.3	748.85	617.25	-131.60	4.4	606.04	586.35	-19.69
Grade 4 Spring	4.9	872.58	664.25	-208.33	n/a	n/a	n/a	n/a
Pre March 2020 Spring 2020 Post March 2020								

Analysis of Academic Subgroups of Students

Table 11 illustrates the Star Reading scaled scores for each high school graduation class that has attended Giant City School from 2017-2018 through 2022-2023 by low, middle, and

high subgroups. The researcher established subgroups by each student's percentile rank on their initial Star Reading score. Once separated, the subgroups were tracked over time. Specific phenomena of interest occur within the high group. For instance, the high group of the class of 2030 experienced significant increases and decreases in scores throughout the fall, winter, and spring screenings in the 2020-2021 through 2022-2023 school years. While this occurrence is not isolated to this particular subgroup, its variation is most noticeable.

Table 11

Star Reading Scores from 2017-2018 to 2022-2023 School Years by Cohort - Academic Subgroups

		2017-2018			2018-2019			2019-2020			2020-2021			2021-2022			2022-2023		
		Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring
LOW	2022	n/a	n/a	n/a															
	2023	n/a	n/a	n/a	n/a	n/a	n/a												
	2024	397.00	401.00	505.33	628.00	592.33	617.33	708.67	737.00	n/a									
	2025	433.00	637.00	638.00	625.00	557.00	630.00	600.00	768.00	n/a	679.00	697.00	948.00						
	2026	146.00	278.33	206.33	234.33	305.67	342.67	339.67	697.67	n/a	380.33	399.33	536.67	520.00	654.33	468.67			
	2027	146.00	156.50	193.50	244.50	444.50	474.50	369.50	398.50	n/a	356.50	525.00	641.00	599.50	666.00	678.00	714.5	859.00	n/a
	2028	84.40	240.00	313.60	282.80	349.20	367.83	323.80	455.00	n/a	451.50	476.50	478.00	513.86	633.67	632.60	682.00	690.20	n/a
	2029				92.50	91.00	298.00	231.00	568.50	n/a	277.00	432.00	557.00	478.00	711.00	649.00	783.00	749.00	n/a
	2030							89.67	210.00	n/a	297.67	380.33	491.67	454.33	521.33	551.67	646.33	633.67	n/a
	2031										64.75	119.25	166.50	185.67	279.33	322.29	364.00	390.50	n/a
	2032													77.50	116.80	230.75	224.00	276.50	n/a
	2033																86.67	173.45	n/a
MIDDLE	2022	n/a	n/a	n/a															
	2023	871.67	884.42	905.83	990.00	921.36	1036.83												
	2024	714.91	772.82	863.64	955.64	948.64	1002.45	962.42	1020.64	n/a									
	2025	598.67	707.00	733.44	740.11	779.89	833.44	831.89	853.22	n/a	863.78	851.91	956.89						
	2026	480.25	570.25	608.00	600.00	725.08	779.33	761.54	833.09	n/a	865.25	794.57	972.17	973.30	955.91	911.40			
	2027	389.60	453.60	468.20	514.40	571.80	659.00	659.20	715.80	n/a	832.00	889.00	872.25	937.20	842.86	810.40	880.40	981.20	n/a
	2028	256.25	414.00	470.00	469.75	494.50	660.33	591.25	679.00	n/a	676.50	715.25	812.75	791.20	866.50	884.67	963.50	992.25	n/a
	2029				185.20	334.25	454.50	330.50	493.60	n/a	539.25	607.50	617.67	652.60	728.00	827.60	793.40	829.80	n/a
	2030							184.14	354.00	n/a	396.71	416.83	474.29	484.71	514.88	625.38	579.57	702.14	n/a
	2031										242.75	297.75	367.00	385.75	405.20	439.60	546.25	540.50	n/a
	2032													228.88	311.78	383.38	403.25	413.63	n/a
	2033																231.89	354.78	n/a
HIGH	2022	n/a	n/a	n/a															
	2023	1249.22	1269.00	1309.44	1279.00	1322.78	1327.67												
	2024	1043.71	948.29	1125.57	1143.00	1140.71	1209.00	1068.86	1151.57	n/a									
	2025	893.00	911.00	987.29	1017.00	1088.00	1109.14	1113.86	1168.43	n/a	1222.14	1081.14	1164.62						
	2026	728.60	828.80	942.60	847.80	957.00	1038.40	1035.40	1075.20	n/a	1157.00	1125.20	1099.50	1116.33	1240.00	1207.00			
	2027	647.40	783.40	770.75	750.20	934.60	968.25	1047.40	1125.00	n/a	985.60	1001.40	1239.60	1179.80	1235.80	1251.00	1298.60	1299.40	n/a
	2028	414.38	533.63	576.50	557.25	617.25	698.00	603.00	629.13	n/a	857.14	811.20	901.89	994.88	975.50	1007.25	1134.13	1097.75	n/a
	2029				380.17	469.17	587.00	550.50	643.50	n/a	689.50	698.67	759.83	854.83	882.33	978.83	938.83	964.33	n/a
	2030							539.67	670.00	n/a	804.50	509.00	734.50	1009.00	902.50	721.50	699.33	878.67	n/a
	2031										405.17	462.40	512.67	536.17	625.17	753.83	730.83	764.00	n/a
	2032													357.00	435.67	473.00	425.33	523.67	n/a
	2033																398.60	444.20	n/a

For the low subgroup, all but one of the classes demonstrated lower scale scores during their fall of 2020-2021 screening when compared to their winter of 2019-2020. The lowest calculated mean score from Star Math or Star Reading is found with the low group of the class of 2031 during the fall of 2020-2021. The initial Star Reading scores of the classes of 2028 through 2033 in the low group are approximately 300 points below that of their high peers. For the middle and high subgroups, the middle group of the class of 2028 and the high group of the class of 2027 did not exceed its winter 2019-2020 scale score on its fall 2020-2021 assessment. The fall-to-previous-winter screening decrease in score occurrence is not isolated to the comparison of winter of 2019-2020 to fall of 2020-2021. It occurs seven additional times within the middle and high cohorts.

Star Reading Grade Level Performance

Analysis of All Students

In Figure 7, a representation of all student scale scores before and after March 2020 is shown. In blue, the scale scores represent those students who tested before March 2020. The red dots represent the student scores after March 2020. Visually, the pre- and post-March 2020 scores display a similar rate of change and behavior until grade 5. However, the rate of change decreases at grades 6, 7, and 8 for the grade levels after March 2020. Pre-March 2020 scale scores maintain linear growth while those after slow in a similar fashion to the behavior observed with Star Math overall grade level data. Further, scale scores before March 2020 are noticeably higher than their post-March 2020 counterparts.

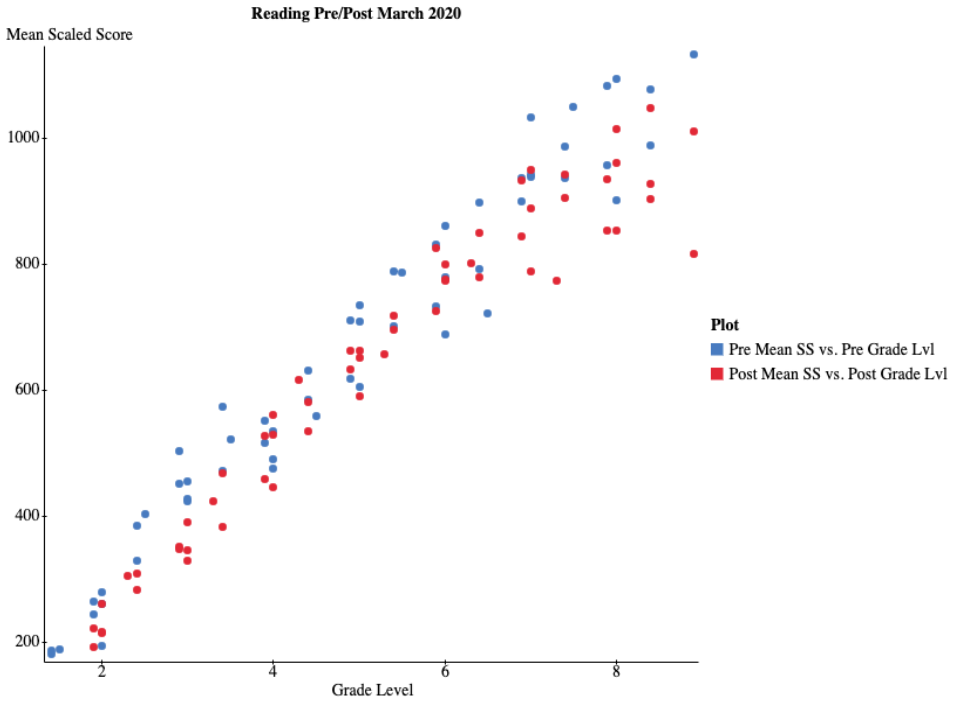


Figure 7

Star Reading Scale Scores Pre-March of 2020 and Post-March of 2020

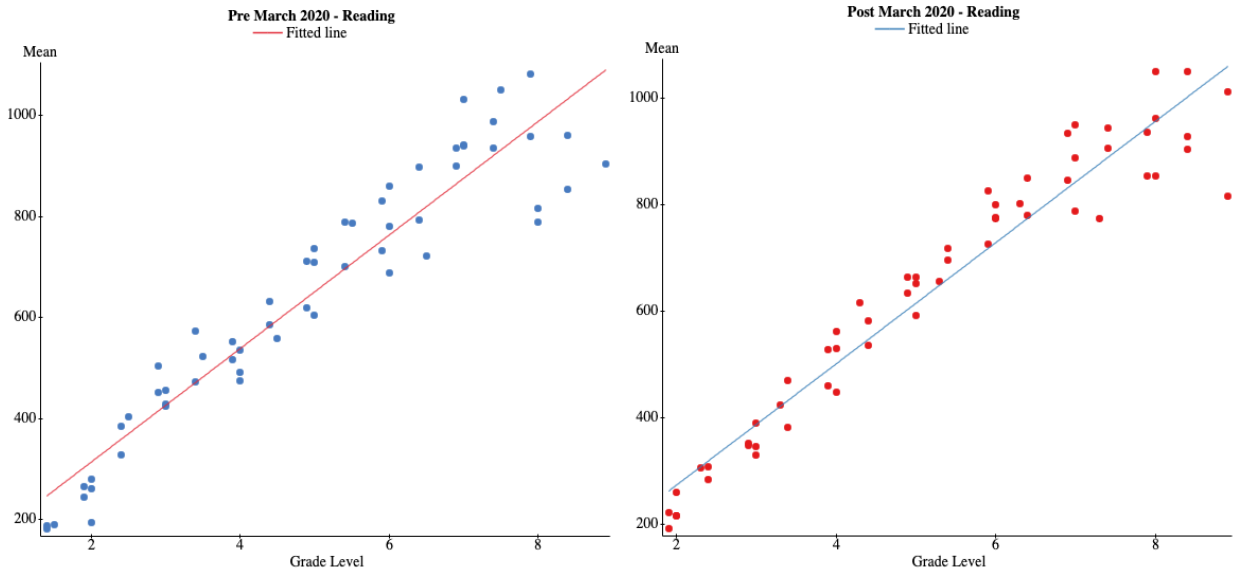


Figure 8

Star Reading Scale Scores Pre-March of 2020 vs Post-March of 2020 Lines of Best Fit

Disaggregating the Figure 7 scatter plot into separate pre- and post-March 2020 plots results in the two graphs above in Figure 8. The lines of best fit have been added for a visual comparison. Available Star Reading data show 58 test samples before and after March 2020. Pre- and post-March 2020 linear equations display similar initial scale scores of 47.92 and 48.52, respectively. The rates of change are 124.05 and 113.36. The researcher provided Table 12 as a side by side comparison for each grade level's predicted initial test score (b) and the time in which the grade is tested (m). A linear representation is cautioned. For the 8th grade post-March 2020, the initial value 1201.38 with a rate of change at -30.90. This data presents the case that the students' scale scores declined over time.

Table 12

Predicted Star Reading Mean $(\hat{y})$ for a Given Grade Level (x)

Grade	$\hat{y} = b + mx$ *where $\hat{y}$ represents the predicted mean for a given grade level, x*	
	Pre- March of 2020	**Post- March of 2020**
All	$\hat{y}$ = 47.92 + 124.05x Sample size: 58	$\hat{y}$ = 48.52 + 113.36x Sample size: 58
2	$\hat{y}$ = -275.62 + 262.70x Sample size: 8	$\hat{y}$ = -24.47 + 131.83x Sample size: 8
3	$\hat{y}$ = 105.33 + 114.65x Sample size: 8	$\hat{y}$ = -98.23 + 153.18x Sample size: 8
4	$\hat{y}$ = -210.28 + 179.36x Sample size: 8	$\hat{y}$ = -64.98 + 145.98x Sample size: 8
5	$\hat{y}$ = 115.45 + 115.38x Sample size: 8	$\hat{y}$ = -157.82 + 158.42x Sample size: 8
6	$\hat{y}$ = -83.24 + 141.86x Sample size: 8	$\hat{y}$ = 73.33 + 117.38x Sample size: 8
7	$\hat{y}$ = 552.68 + 59.43x Sample size: 8	$\hat{y}$ = 653.95 + 30.71x Sample size: 8
8	$\hat{y}$ = -172.38 + 145.36x Sample size: 5	$\hat{y}$ = 1201.38 - 30.90x Sample size: 8

In Table 13, the researcher presented the Star Reading mean scale scores for each grade level from the fall testing window of the 2017-2018 school year to the winter screening of 2022-2023. In addition to the yearly benchmark scores, an "all" set is shown, which is the mean of all scores, including outliers, for a specific testing window and grade level. For the 2020-2021 school year, all benchmark scores except the 7th and 8th grades were initially above their equivalent all compilation scale scores. However, over the winter and spring screenings of that year, the other grade levels began following those examples. The 2nd, 3rd, and 4th grade groups dropped below their all comparatives in 2021-2022 and 2022-2023, with the exception of the 4th grade's fall 2022-2023 mean score.

Table 13

Grade Level Star Reading Scale Scores from 2017-2018 to 2022-2023 School Year - All

		2017-2018			2018-2019			2019-2020			2020-2021			2021-2022			2022-2023			All		
		Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring
ALL	2nd	280.12	419.12	474.12	260.92	385.73	505.10	244.38	372.18	n/a	261.50	306.15	372.54	214.13	276.29	360.60	211.30	292.88	n/a	242.78	334.69	424.78
	3rd	456.42	541.50	528.27	455.94	509.53	574.82	424.38	574.31	n/a	439.92	429.45	522.00	367.13	438.41	498.72	359.87	399.07	n/a	415.25	479.87	531.45
	4th	492.20	591.10	634.00	567.67	701.75	737.91	518.12	598.06	n/a	570.67	641.27	696.90	524.09	576.00	634.36	573.29	593.43	n/a	536.08	612.35	667.53
	5th	710.12	786.88	832.35	607.10	720.15	778.60	772.67	833.42	n/a	700.80	678.69	781.18	739.17	803.75	888.33	622.62	727.08	n/a	684.97	755.18	813.06
	6th	779.10	778.19	899.76	847.35	893.65	935.00	766.48	875.42	n/a	815.36	873.91	997.18	775.60	837.33	867.19	858.92	879.46	n/a	801.06	851.36	917.45
	7th	1033.48	1049.24	1078.81	971.29	961.76	1016.29	934.35	978.00	n/a	865.45	815.82	930.21	982.00	957.93	971.92	961.00	953.06	n/a	957.54	950.16	1004.58
	8th	n/a	n/a	n/a	1108.23	1102.00	1161.48	961.68	1023.76	n/a	1000.47	928.21	1048.72	946.89	983.05	919.71	1027.00	1093.42	n/a	1009.36	1021.69	1049.53

In the analysis of all students and in parallel to the analysis of Star Math data, the distribution of Star Reading scores as measured by standard deviation was considered. Within the two scatter plots below in Figure 9, the standard deviation of students pre-March of 2020 and post-March 2020 with their corresponding lines of best fit were added.

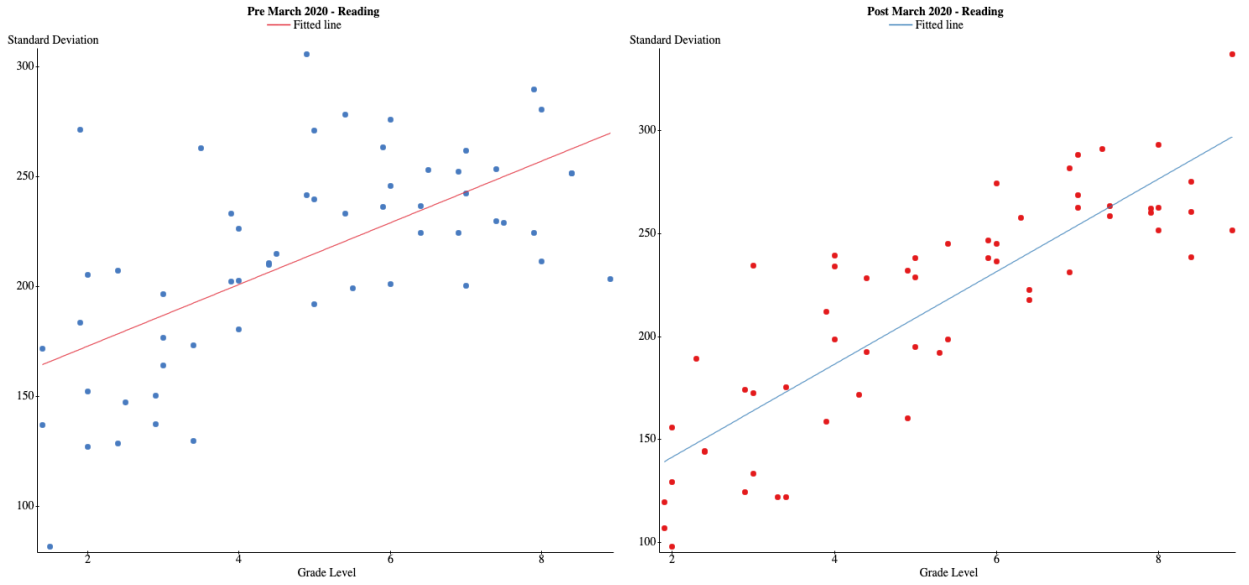


Figure 9

Star Reading Standard Deviation Pre-March 2020 vs Post-March 2020 Lines of Best Fit

As demonstrated by the lines of best fit, the distribution of student scores before and after March of 2020 widened from their initial test date to the end of 8th grade. The standard deviation of the reading scores shows an initial value higher than those in mathematics as well as shows a positive rate of change. Student scale scores began farther apart than those in mathematics and continued widening over time to almost 100 to 150 points at the conclusion of the observed time period.

Analysis of Academic Subgroups of Students

Table 14 is a representation of Table 13 by academic subgroup. The disaggregation of scores into ability groups presents nuanced information on how grade levels performed over time. The 7th grade group of 2017-2018 and 8th grade group of 2018-2019 show no scores in the low subgroup because no student scored below the 25th percentile on the initial screening utilized to separate subgroups.

Table 14

Grade Level Star Reading Scale Scores from 2017-2018 to 2022-2023 School Year - By Subgroup

		2017-2018			2018-2019			2019-2020			2020-2021			2021-2022			2022-2023			All		
		Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring
LOW	2nd	84.40	240.00	313.60	92.50	91.00	298.00	89.67	210.00	n/a	64.75	119.25	166.50	77.50	116.80	230.75	86.67	173.45	n/a	82.41	168.62	246.79
	3rd	146.00	156.50	193.50	282.80	349.20	367.83	231.00	568.50	n/a	297.67	380.33	491.67	185.67	279.33	322.29	224.00	276.50	n/a	230.48	323.59	351.39
	4th	146.00	278.33	206.33	244.50	444.50	474.50	323.80	455.00	n/a	277.00	432.00	557.00	454.33	521.33	551.67	364.00	390.50	n/a	311.53	417.76	420.00
	5th	433.00	637.00	638.00	234.33	305.67	342.67	369.50	398.50	n/a	451.50	476.50	478.00	478.00	711.00	649.00	646.33	633.67	n/a	435.57	479.38	469.67
	6th	397.00	401.00	505.33	625.00	557.00	630.00	339.67	697.67	n/a	356.50	525.00	641.00	513.86	633.67	632.60	783.00	749.00	n/a	483.94	600.18	599.18
	7th	n/a	n/a	n/a	628.00	592.33	617.33	600.00	768.00	n/a	380.33	399.33	536.67	599.50	666.00	678.00	682.00	690.20	n/a	588.14	609.00	602.25
	8th	n/a	n/a	n/a	n/a	n/a	n/a	708.67	737.00	n/a	679.00	697.00	948.00	520.00	654.33	468.67	714.5	859.00	n/a	643.78	732.11	588.50
MIDDLE	2nd	256.25	414.00	470.00	185.20	334.25	454.50	184.14	354.00	n/a	242.75	297.75	367.00	228.88	311.78	383.38	231.89	354.78	n/a	219.70	341.86	414.00
	3rd	389.60	453.60	468.20	469.75	494.50	660.33	330.50	493.60	n/a	396.71	416.83	474.29	385.75	405.20	439.60	403.25	413.63	n/a	392.82	444.79	492.00
	4th	480.25	570.25	608.00	514.40	571.80	659.00	591.25	679.00	n/a	539.25	607.50	617.67	484.71	514.88	625.38	546.25	540.50	n/a	512.08	571.05	624.27
	5th	598.67	707.00	733.44	600.00	725.08	779.33	659.20	715.80	n/a	676.50	715.25	812.75	652.60	728.00	827.60	579.57	702.14	n/a	616.90	715.69	778.07
	6th	714.91	772.82	863.64	740.11	779.89	833.44	761.54	833.09	n/a	832.00	889.00	872.25	791.20	866.50	884.67	793.40	829.80	n/a	759.06	814.89	857.19
	7th	871.67	884.42	905.83	955.64	948.64	1002.45	831.89	853.22	n/a	865.25	794.57	972.17	937.20	842.86	810.40	963.50	992.25	n/a	894.00	872.28	940.38
	8th	n/a	n/a	n/a	990.00	921.36	1036.83	962.42	1020.64	n/a	863.78	851.91	956.89	973.30	955.91	911.40	880.40	981.20	n/a	945.47	941.92	973.16
HIGH	2nd	414.38	533.63	576.50	380.17	469.17	587.00	539.67	670.00	n/a	405.17	462.40	512.67	357.00	435.67	473.00	398.60	444.20	n/a	410.00	491.86	547.36
	3rd	647.40	783.40	770.75	557.25	617.25	698.00	550.50	643.50	n/a	804.50	509.00	734.50	536.17	625.17	753.83	425.33	523.67	n/a	578.84	639.55	732.95
	4th	728.60	828.80	942.60	750.20	934.60	968.25	603.00	629.13	n/a	689.50	698.67	759.83	1009.00	902.50	721.50	730.83	764.00	n/a	701.58	763.47	853.78
	5th	893.00	911.00	987.29	847.80	957.00	1038.40	1047.40	1125.00	n/a	857.14	811.20	901.89	854.83	882.33	978.83	699.33	878.67	n/a	877.39	928.16	966.41
	6th	1043.71	948.29	1125.57	1017.00	1088.00	1109.14	1035.40	1075.20	n/a	985.60	1001.40	1239.60	994.88	975.50	1007.25	938.83	964.33	n/a	1003.21	1005.97	1107.37
	7th	1249.22	1269.00	1309.44	1143.00	1140.71	1209.00	1113.86	1168.43	n/a	1157.00	1125.20	1099.50	1179.80	1235.80	1251.00	1134.13	1097.75	n/a	1165.80	1174.93	1236.04
	8th	n/a	n/a	n/a	1279.00	1322.78	1327.67	1068.86	1151.57	n/a	1222.14	1081.14	1164.62	1116.33	1240.00	1207.00	1298.60	1299.40	n/a	1169.12	1180.25	1180.92

Compiling the information from Table 14, Figure 10 was created to display visually how the low, middle, and high all categories progressed over time versus the group all. The high group (green) remains significantly higher throughout second through eighth grades. The middle (red) and low (blue) subgroups remained below the all (yellow) group throughout second through eighth grades. Unlike the Star Math data, the all mean (yellow) tracks very closely to the middle mean (red). This track is correlated to strength and number of scores found within the middle subgroup.

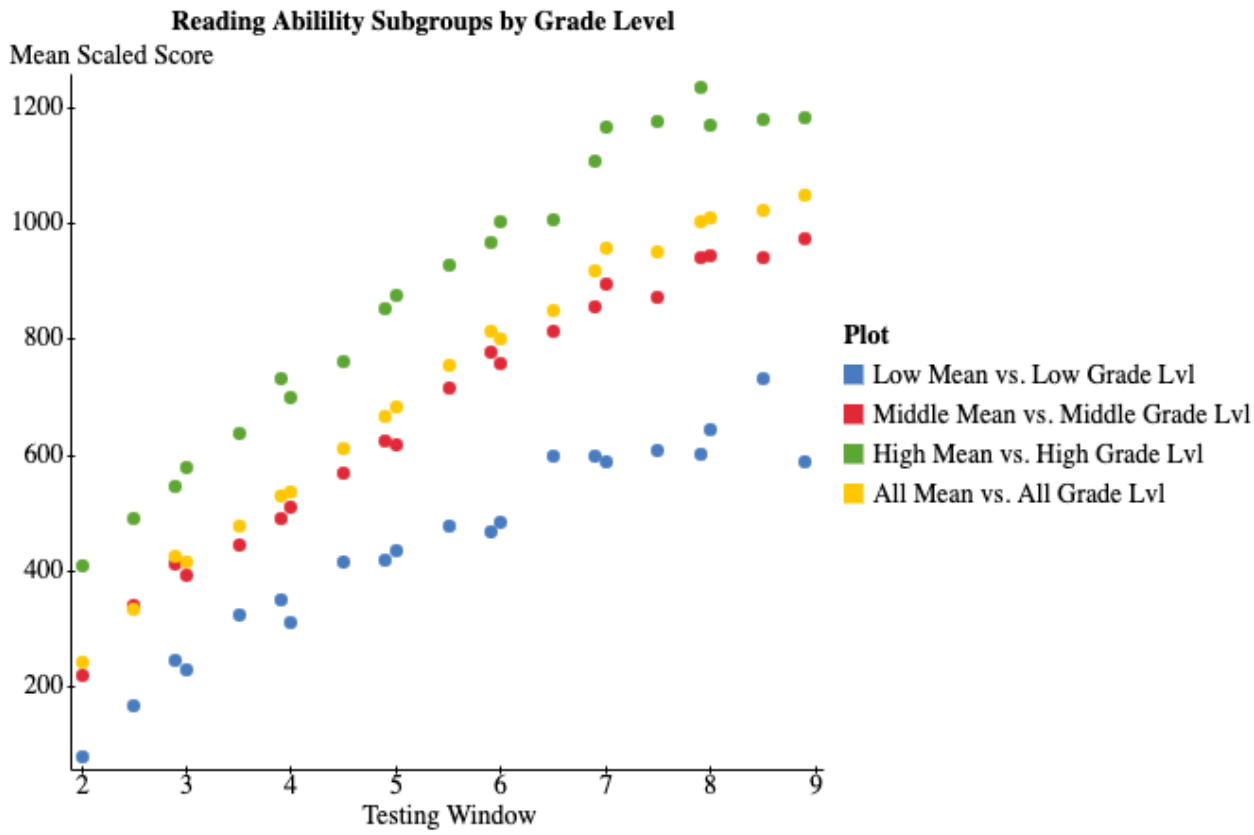
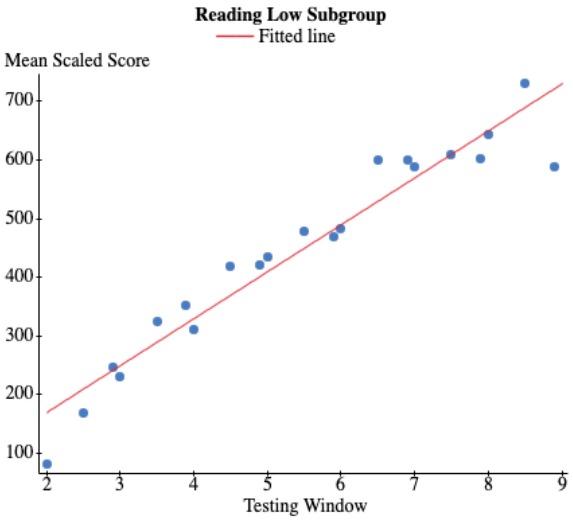


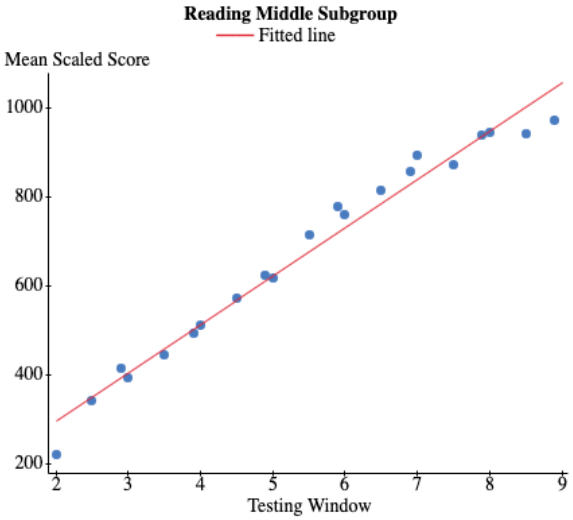
Figure 10

Grade Level Star Reading Scores from 2017-2018 to 2022-2023 School Year - By Subgroup

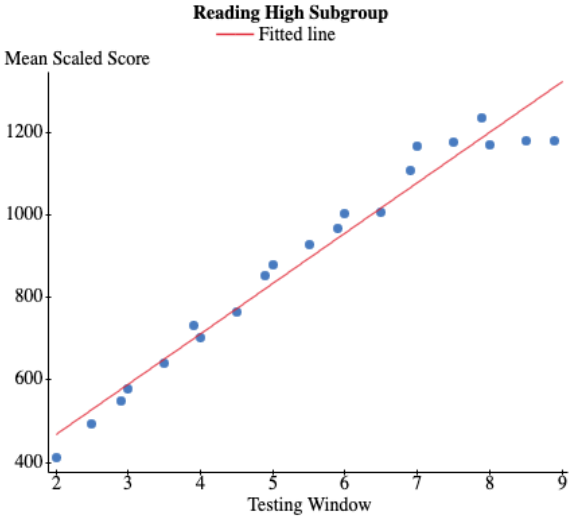
The information in Figure 10 is disaggregated into individual plots with lines of best fit in Figure 11. The equations of the regression lines are included to provide initial values and rates of change. For the low, middle, high, and all groups the expected initial scale score for each group is 8.92, 76.66, 223.17, and 68.69, respectively. Growth as measured by the expected rate of increase in test score is 80.11, 108.99, 122.20, and 118.62 for the same groupings. The growth varies based upon the subgroup. At those rates, the high subgroup and low subgroups diverge over time to a difference in scale score of almost 500 points.



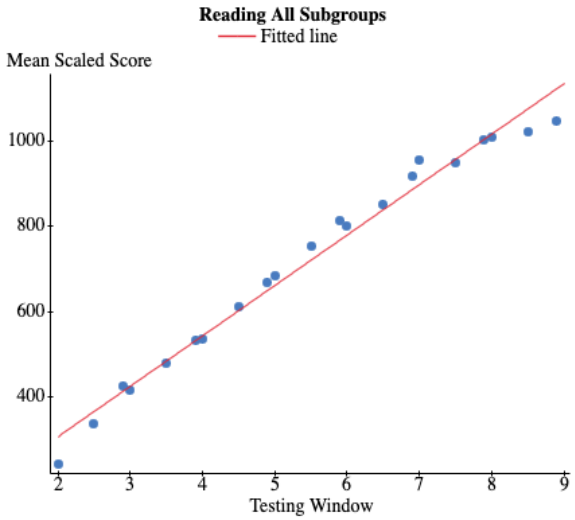
$y=8.92+80.11x$



$y=76.66+108.99x$



$y=223.17+122.20x$



$y=68.69+118.62x$

Figure 11

Lines of Best Fit with Regression Line Equations for Reading Subgroups and All Group

CHAPTER 5

SUMMARY

March of 2020 marked the moment in time that schools across the United States halted in-person instruction for the conclusion of the 2019-2020. As schools resumed instruction in the fall of the 2020-2021, the instructional delivery models varied from an in-person format to a multi-faceted method consisting of combinations of remote, hybrid, and in-person models, depending on individual state. In addition, local health departments followed the Centers for Disease Control's or their state health department's guidance on specific procedures related to individual COVID-19 cases and exposure at the individual school level. Specifically for this study, Giant City School, the single, pre-kindergarten through 8th grade school of Giant City Community Consolidated School District No. 130 in rural Carbondale, Illinois was considered. The researcher explored the effect(s) that changes in instructional delivery after March 2020 had on Giant City School's students' universal screening scores as measured by Renaissance Learning's Star Reading and Star Math assessments.

Response to Research Question 1

The researcher posed the following question and subquestions for research question 1: How did the Renaissance Learning Star Assessment Reading and Math mean scores of Giant City School students evolve from the 2017-2018 to the 2022-2023 school year?

a. What impact did the various instructional delivery models used by the District after March 2020 have on the mean students' universal screening scores?
b. What impact did the various instructional delivery models used by the district after March 2020 have on academically similar students' universal screening scores?

In the investigation of these questions, the researcher approached the analysis separately for Star Math and Star Reading in Chapter 4. First, in answering 1a for mathematics, student cohorts at Giant City School started with lower projected initial Star Math scale scores than their comparable peers. However, their gains as measured by rates of change on assessments were higher than pre-March 2020 cohorts. Overall, trends in grades 2 through 5 and 6 through 8 followed similar paths with cohorts before and after March 2020. The post-March 2020 rate of change for grades 6 through 8 was lower than that in grades 2 through 5. In response to question 1b, low subgroup students displayed a higher growth than middle and high subgroups. The high subgroup grew at the smallest rate of the 3 observed subgroups post-March 2020.

For Star Reading, the results varied from those in Star Math. In determining an answer to question 1a, the researcher found no discernible difference in cohorts pre- and post-March 2020. The results varied greatly between testing windows as well as between years. In response to question 1b, cohorts post-March 2020 displayed lower initial scores. The high subgroup maintained their pre- and post-March 2020 rate of growth. The middle subgroup's growth slowed post-March 2020. The low subgroup grew at a higher rate post-March 2020. However, the middle and high subgroups universally grow much faster pre- and post-March 2020.

Response to Research Question 2

The researcher considered the following question and subquestion for research question 2: How did the Renaissance Learning Star Assessment scores of Giant City School students in the same grade level compare from the 2017-2018 to the 2022-2023 school year?

a. How do academically similar students' universal screening scores compare at the same grade level over the measured time?

As detailed in the response to question 1, math and reading were approached separately

in the analysis of Star Assessment scores. For Star Math, the analysis of mean score amongst the all as well as the low, middle, and high subgroups at the grade level displayed no discernable difference pre- and post-March 2020. Scale scores at the same grade level across years remained consistent, with some scale scores above and below across the grade levels.

For reading, the Star Reading scores displayed a different perspective. The all group shows that for the 2021-2022 and 2022-2023 second graders, their scale scores are lower than the aggregate mean. The low and high subgroups remain at or above the mean, but the middle subgroup between the 25th and 75th percentiles is weighing the all data lower.

Analysis of Research Question 3

The researcher presented the following question as research question 3: How will the trends in data support future instructional delivery methods at Giant City School under similar disruptions to in-person learning?

The researcher presented research question 3 as an avenue with which to delve into how post-March 2020 instructional methods should be implemented in the future. Upon the findings, Star Math and Star Reading data followed historical trends. Initial scale scores for groups post-March 2020 dipped compared to those pre-March 2020; however, over time, those discrepancies presented similar scale score data sets.

Conclusions

In the introduction of this project, the researcher quoted noted researcher Dr. Margaret Raymond, director of the Center for Research on Education Outcomes at Stanford University: “we found the learning loss experience was quite pervasive, that almost all students were negatively impacted by the pandemic and pivot to remote learning” (Dwyer, et al., 2021). Using Giant City School’s universal screening data through Renaissance Learning’s Star Math and Star

Reading assessments, the researcher challenged Dr. Raymond's assertion. Was the learning loss at Giant City School pervasive and negatively impacted? The shocking answer to that question was a resounding "No."

Specifically, one of the most striking findings of the study was the difference in students' academic growth on the Star Math assessment in Grades 2-5 versus Grades 6-8. Students' gains experienced a sharp reduction between those grade bands throughout the data presented from school years 2017-2018 through 2022-2023 school year. Consequently, pre- and post-March 2020 events had minimal impact on the behavior of the data. (NOTE: Select scores did show variation from pre-March 2020 levels, but since each grade level contained approximately 25 students, a natural fluctuation in performance between cohorts could be expected due to variations in student academic ability levels).

Since the students of Giant City School did not experience the projected and pervasive learning loss, the obvious question from education leaders becomes "why not?" Even though such inquiry goes beyond the scope of the present study, based upon a limited comparison, it superficially appears that Giant City School employees did not utilize drastically different strategies from other area schools.

Reflections of the Researcher

In a post-research analysis why Giant City School did not experience pervasive learning loss, the researcher offers speculations as well as anecdotes regarding the Star Math and Star Reading historical trends. First, the researcher maintains that the socio-economic status of the students draws a correlation to family support of academic success. Specifically, Giant City School is in a unique position for its size and location near Carbondale, Illinois. The school consists of an enrollment of approximately 200 students, which is a subset of three additional

public schools that feed into Carbondale Community High School. The district's boundaries consist of no low-income housing and several affluent neighborhoods where its total free and reduced student population hovers near 40%, which is low for southern Illinois along the Route 13 corridor. Essentially, the parents and/or guardians of the students had the means to maintain their children's education.

The other part of the equation is the role of the school during the post-March 2020 education of students. Overall, documents show that Giant City School did not employ any extraordinary measures during this time. Like most schools, Giant City School used various forms of in-person, remote, and hybrid instruction; although the utilization of aides and teachers provided an additional level of support. Students were expected to complete assignments and virtually interact with their teachers. If a student did not maintain contact, the school staff would make contact and require the parents to bring their child to school for support. Perhaps, the inability of students to avoid learning responsibilities as well as the school's demographic composition allowed their performance as measured by the Star Assessments to maintain their relative performance pre- and post-March 2020.

Pervasive learning loss aside, Giant City School's Star Math and Star Reading data created additional opportunities for reflection and alternative explanations. Throughout this time period, the teacher as well as the textbook and curriculum have remained consistent in grades 6 through 8, while grades 2 through 5 experienced variation in teachers as well as a difference in curriculum. Could the teacher and/or curriculum serve as the underlying cause? Star Math is not a curriculum-based program. The copyright of the textbook used in grades 6, 7, and 8 is from 2011, while the copyright of the text used in grades 2 through 5 is 2015. Conceivably, the content of what is taught in the classroom could differ from what is assessed. Additionally, the

interventions and support offered to students in grades 2 through 5 may differ enough that without them in grade 6, performance as measured by the Star Math assessment begins to slow its growth.

Aside from Star Math, the Star Reading assessment results present a worthwhile area of discussion. Within the Star Reading scale scores, the standard deviation is much greater than that ever demonstrated by the math data. Student scale scores in reading show wide variation between those identified within the low, middle, high, and all subgroups. As early as kindergarten, reading is taught within small groups at Giant City School as well as many other schools locally and beyond. It is possible that the differentiation within reading instruction possibly creates an early model of academic tracking, the systematic practice of grouping students of similar ability over the course of a partial school year or longer. As teachers work with students in these subgroups of their class or even in alternative specialized classes, do they fail to accelerate the pace of instruction of the lower group to eventually meet the academic reading level of their peers?

Within the findings of this study and as an aside to the Star Assessment scale score and percentile rank discussions is the fundamental difficulty the researcher found within the examination of the historical data extract. First, grade equivalency was originally proposed to serve as the benchmark score to examine academic standing. It was quickly discovered that within the Star Assessments, grade equivalency was listed in various ways. 5.4 signified fifth grade, fourth month, and 10.1 denoted tenth grade, first month. However, some grade equivalencies were presented as >10, >8, or >12. The researcher found no pattern to interpret and separate the scores for us within this project. Additionally, as noted in Chapter 3, students were found to have multiple test scores within a testing window. For instance, for the fall testing

window, a student could have a score September 1, 10, and 15. The researcher and statistician accounted for this by utilizing the highest score within the approximate testing window. However, the researcher uncovered an issue with the school's testing practices. As the teacher or interventionist screened his or her students, they would retest a student for the benchmark score if they felt the student did not perform their best. The inherent fault with this practice is the subjective nature of Giant City School's retesting; retesting of any student should be systematic and consistent. Arbitrary and capricious factors such as he rushed or she was hungry should not be used. The lack of consistency inherently taints the data and makes it less valid.

Recommendations for Further Study

As explored in Chapter 2, recent research suggested that Giant City School's administration, faculty, and staff should have expected problematic areas in meeting the needs of their students beginning with Illinois Governor Pritzker's emergency order for schools to end in-person instruction on Tuesday, March 17, 2020. Within this capstone, the researcher explored trends at Giant City School consisting of how remote learning has specifically impacted student performance on Star benchmark assessments before and after March of 2020. Areas that should be explored in the future concerning this period of time include the following:

- An exploration of the emotional experiences of students from March to May of 2020 when schools were unable to provide in-person instruction;
- A comparison of Giant City School's Star Assessment screening data to that of the other Carbondale High School feeder schools as well as on a state or national level;
- A case study on Giant City School's practices during the time when schools were unable to provide in-person instruction and how they could serve as a model for others;
- A review of the social and emotional impact of remote, in-person, and hybrid instruction

on students over the time period of March 2020 through May 2021; and

- An examination of pre-kindergarten skills of students who are entering school after March 2020 versus those who entered before March 2020.

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APPENDICES

APPENDIX A

COVID-19 LETTER 03.13.20

GIANT CITY COMMUNITY CONSOLIDATED SCHOOL DISTRICT 130

Giant City CCSD#130
1062 Boskydell Rd.
Carbondale, IL 62902

Phone:618-457-5391
FAX: 618-549-5060
Email: bhill@gcs130.org

March 13, 2020

Dear Giant City Students, Staff and Families,

In response to the COVID-19, earlier this afternoon the Governor announced a state-wide shut down of all schools in Illinois to begin on Tuesday, March 17, with students returning to classes on Monday, March 30, 2020. Although the shut-down is to begin on Tuesday, students will NOT be in attendance on Monday, March 16.

Instead, on Monday faculty and staff will address an extended learning platform for all students, as well as a food outreach for our neediest students. We realize the difficulty that a school closure places on daily life but are hopeful this measure will assist in decreasing further spread of the Coronavirus. The health and safety of our students, families, and community must remain a top priority.

Due to the small size of our on-site daycare, it will remain open for families. However, there will not be any charges, should a family decide to keep their children at home during this time. We also request that any family, or staff member, who has traveled outside of a 50-mile radius of the district during Spring Break to stay home.

During the extended school closure, administration and staff will work toward further development of a list of resources and activities to keep students engaged in the curriculum and prevent learning loss. For families that are interested in drop-off meals, please contact the front office, so we can adequately plan meal preparation and delivery routes.

After further consultation with state and local health agencies, guidance will be provided as to expectations moving forward. This is a rapidly evolving situation and when new information or any changes become available, notifications will be provided.

If you have any other questions or concerns, please feel free to contact me.

Sincerely,

Belinda Hill

Belinda Hill
Giant City CCSD#130

APPENDIX B

REMOTE LEARNING PLAN

GIANT CITY COMMUNITY CONSOLIDATED SCHOOL DISTRICT 130

Giant City CCSD#130
1062 Boskydell Rd.
Carbondale, IL 62902

Phone:618-457-5391
FAX: 618-549-5060
Email: bhill@gcs130.org

April 3, 2020

Dear Parents,

Last week, Illinois State Board of Education gave schools detailed guidance for a Remote Learning Plan. We have met with our teachers and compiled a plan that meets the needs of our students, while keeping in mind the extraordinary needs of our families.

As stated earlier, GCS began the Remote Learning Plan on Tuesday, March 31st. Attached to the email from your homeroom teacher is a copy of the District's official Remote Learning Plan. This will also be posted on our website at www.gcs130.org.

Also, attached is a copy of Giant City's Learning Calendar for April. **Please note the Professional Development (PD) days for teachers . On PD days, THERE WILL NOT BE ANY ASSIGNMENTS FOR STUDENTS.** We want to give our families a long Easter break. Each Monday will provide a time for our teachers to review and assign lessons, plus organize paper packets as needed to create equity to ALL of our students. On the calendar, the days for meal delivery are noted. Due to Good Friday, meals will be served on Thursday, April 9th at the regular time. If a family needs to sign up for meals, please call the front office at (618)457-5391 and leave a message.

Sincerely,

Belinda Hill

Belinda Hill

Giant City CCSD#130

Remote Learning Plan: Giant City CCSD#130

The goals of remote learning are:

● All students and families should have access to quality educational materials and supports needed to successfully access those materials, with either digital or non-digital access to the content.

● It is still possible and imperative that students access meaningful/high-quality educational materials that align to state standards

● It is imperative that students and schools/teachers maintain a personal connection that supports necessary, rigorous academic work in a manner that is respectful of students' contexts (their mindset, feelings, responsibilities, etc.

● Support the whole child -- their mental health, nutritional needs, and safety needs

1. **Assignments**- Teachers will post assignments up to week at a time, with the teacher touching base/reminding* families each morning what the assignments are for the day (by 9 am). Paper Packets of assignments will be provided weekly for students and may be delivered through meal service, pick-up or via snail mail/email for printing per family's request. Special education teachers and related services provided by the District shall document best efforts to reach students with an individualized education plan. **See Communication Plan*

2. **Communication with parents**: The District will utilize a variety of formats to communicate with parents/students, including but not limited to: Blackboard Connect (text, phone calls, email), staff emails, District website for transparency, Communication apps (Remind, Bloomz, etc), Video tutorials constructed by the teacher, Facebook live/Zoom meetings help as scheduled by the teacher, snail mail as needed…etc
    a. The District will make every effort to provide staff with needed electronics such as Chromebooks, laptops etc.
3. **Subjects: K-5:** Reading, Math, LA/Spelling, Science & Social Studies, with junior high teachers posting assignments in their specialty assignment reflecting applicable state standards. Special education teachers will provide equitable assignments with modifications to meet the unique needs of their students. Fine arts, physical education and media center teachers will create choice boards for families.

4. **Grading:** Student work be collected for a completion grade only. Instead of grade book, each teacher will keep a checklist or printout of completed online assignments. For paper packets, students can send a photo of completed work, via email or texting app.

5. **Attendance-**Each remote learning day will count towards mandatory calendar attendance days for the District.

6. **Office Hours-** Each teacher will post **two** office hours each day. Flexibility is the teacher's choice of times. (Ex. Monday-8-10 am, Tuesday 5-7 pm, etc) This is a time that teachers will check email, call parents or text through an app about lesson challenges, parent concerns etc.) **Office hours will be included each morning when teachers touch base with families about assignments for the day.**

7. **Planning Days-** Thursday, April 9 and Monday, April 13 will be teacher preparation/modification of Remote Learning days after initial trial period, without office hours. Three other PD days will include April 20 & 27th, with the possibility of including May 4th, should the remote learning be extended past April 30, 2020. Each planning day shall include time for teacher preparation/professional development as needed, while families enjoy a day FREE of assignments.

8. **Substitute Plan-**Following notification of illness, the superintendent may re-assign staff to cover an ill certified teacher, with a qualified employee. If the district reaches a threshold of 4 certified teachers declaring severe illness, the Superintendent may suspend remote learning for all students due to a lack of equity.

9. **Transition Plan-**Upon notification from local health officials, or state entity that the District will return to in-person instruction, the transition plan shall be as follows:
    a. **Notification** to board of education members, staff members and students/families as to expected date of return.
    b. **Professional Development-**Certified and non-certified staff will be provided professional development and classroom work time (as allotted by ISBE) to prepare for student return.
    c. **Learning Parameters-** The District shall develop a ramp plan to return to formal assignments which shall not exceed 10 school calendar days. During the ramp period, any student that has NOT completed remote learning assignments (From March 31-April 30, 2020) will make up essential assignments.

In Witness Thereof:

FOR THE GIANT CITY EDUCATION ASSOCIATION

_____ _____

Co-President, Giant City Education Association Date

_____ _____

Co-President, Giant City Education Association Date

FOR THE GIANT CITY BOARD OF EDUCATION

_____ _____

President, Giant City Board of Education Date

_____ _____

Secretary, Giant City Board of Education Date

APPENDIX C

BACK TO SCHOOL INFO 08.12.20

Back to School Info: (email compilation)

Good afternoon!

I'm glad we're all back in the building, even if it's a little chaotic. Teachers can access your Renaissance for STAR and Student testing.

user name is first letter of first name and then everyone's password is Giants

only changes to this are Carsrud, Noto, Robison, Walker, Weber - your password is Giants2021 so you can access all students as an admin at the school level.

I will print your student STAR access for you most are
user name first letter of first name, first four letters of last name
all passwords are abc

only exceptions are siblings or student with same names in the building - see print outs in your mail boxes or ask me!

Rebecca Apgar

Hello Everyone,

My name is Ms. Hutchison and I will be your child's kindergarten teacher. I am very excited even though things are not at all "normal." I know we will make the most of the situation and have a great year! I know we all have questions and concerns. I do not have all the answers, however, I would like to answer what I can for you as we embark on this adventure. I'd like to set up a Zoom "Meet and Greet" for this Thursday evening at 6:00 pm. I would like to tell you what I'm thinking and what I believe our "days" will look like. I would also like to give you an opportunity to ask any questions you may have. I will not promise to have all of the answers, however, I'll do my very best. The following is the information and link to the Zoom meeting. If you have any questions, please don't hesitate to contact me. I look forward to seeing you soon.

Teresa Hutchison

Teresa Hutchison is inviting you to a scheduled Zoom meeting.

Topic: Kindergarten Giants

Time: Aug 13, 2020 06:00 PM Central Time (US and Canada)

Join Zoom Meeting
https://us04web.zoom.us/j/77908367859?pwd=YVlJaDMyVGFwekFEZHVRWjBGVDJUUT09

Meeting ID: 779 0836 7859
Passcode: giants_

Hello Everyone,

My name is Ms. Futrell and I will be your child's 1st grade teacher. I am very excited even though things are not at all "normal." I know we will make the most of the situation and have a great year! I know we all have questions and concerns. I do not have all the answers, however, I would like to answer what I can for you as we embark on this adventure. I'd like to set up a Zoom "Meet and Greet" for this Thursday evening at 5:30pm. I would like to tell you what I'm thinking and what I believe our "days" will look like. I would also like to give you an opportunity to ask any questions you may have. I will not promise to have all of the answers, however, I'll do my very best. The following is the information and link to the Zoom meeting. If you have any questions, please don't hesitate to contact me. I look forward to seeing you soon.

Kelly Futrell

Kelly Futrell is inviting you to a scheduled Zoom meeting.

Topic: 1st Grade Meet & Greet
Time: Aug 13, 2020 05:30 PM Central Time (US and Canada)

Join Zoom Meeting
https://us04web.zoom.us/j/6336113131?pwd=d0JIVmhWVWRlVDNsaXZtdUYyUUZaZz09

Meeting ID: 633 611 3131
Passcode: First

My name is Jacob McCaughan. I will be your child's 2nd grade teacher here at Giant City School. I am so excited to begin our new school year, even though things are not at all back to normal. I know that we will all make the most of the situation and have a great year! I know we all have questions and concerns going into the new year. I will not promise to have all of the answers, however I'll do my very best.

The following is the information and link to the Zoom meeting this Thursday at 6:30 PM. If you have any questions please don't hesitate to contact me.

Jacob McCaughan is inviting you to a scheduled Zoom meeting.

Join Zoom Meeting
https://us02web.zoom.us/j/89216218032?pwd=YytKSWpIYVl0ZkxLOTFtUGwyeFdRQT09

Meeting ID: 892 1621 8032
Passcode: 7KNu3G

5th grade

Time	5Dillow (5D)	5Carsrud (5C)
8:15-8:55	5C Reading--Live M, T, Th, F!	5D Science--Live on Fridays!
8:55-9:35	Music on Monday--Live on Mondays at 8:55! PREP	Music on Friday--Live on Fridays at 8:55! PREP
9:35-10:15	5D Reading--Live M, T, Th, F!	5C Science--Live on Fridays!
10:15-10:55	5C ELA	5D Social Studies--Live on Tuesdays!
10:55-11:35	5D ELA	5C Social Studies--Live on Tuesdays!
11:35-12:15	5D Math--Live! on T & F	5C Tech / Art--Live every other week on Tuesdays!
12:15-12:55	Lunch & Recess	Lunch & Recess
12:55-1:35	5C Math--Live! on T & F	5D Tech / Art--Live every other week on Tuesdays!
1:3	PE--Tuesday	PE--Thursday

5-2:15	RTI--M, Th, F Mrs. Weber's Resource--M, T, Th, F	RTI--M, T, F Mrs. Weber's Resource--M, T, Th, F

Good Morning!

Welcome to the 2020-2021 school year! We are very excited for the start of the new year and the new challenges that we will face together. Online learning will begin on Monday, August 17th. We will be using Google Classroom to communicate daily assignments, video lessons, and any other important information that is pertinent to you and your student. Students need to check into all Google classrooms for each teacher each day. *e.g. eighth grade will need to check into math and science for Mr. Murley, social studies and tech for Mr. Robison, and reading and ELA for Mrs. Mize. Also Ms. Honza will be posting in her google classroom.*

***If you are doing paper packets only this does not apply to you.**

Band Students will be contacted by Ms. Henson via email.

Students will need to join their classes in Google Classroom with the following codes:

Math: uqsve7x
Science: zv735ih
Social Studies:2ertved
Tech: cjlla76
Reading: oemeybp
ELA: ebx7b4l
PE: dgwggvw

Mrs. Mize will be doing LIVE sessions Daily. You should be in class every day during these times. If for some reason you are unable to make it you will need to message me. These will be recorded so you can go back and watch them. They will be posted into Google Classroom.

6th Grade Scheduled LIVE sessions:
ELA: Monday, Tuesday, Thursday, and Friday: 9am to 10am
READING: Tuesday and Thursday: 1pm to 2pm

7th Grade Scheduled LIVE sessions:
ELA: Monday, Tuesday, Thursday, and Friday 2:00 pm – 3:00 pm
READING: Tuesday and Thursday: 1pm to 2pm

8th Grade Scheduled LIVE sessions:
ELA: Monday, Tuesday, Thursday, and Friday 1030 am- 1130 am

READING: Tuesday and Thursday: 1pm to 2pm

In order to complete the assignments students(online or paper packet) will need a certain book for certain subjects. Books will need to be picked up on Friday at the school in the cafeteria from 1:30 - 3:30 and Monday from 8:00 - 3:15.

We will be hosting a Junior high parent and student orientation on Wednesday, August 19th at 6:00 pm via Zoom. We will send out a link closer to the date of the meeting.

Have a Great Week.

I am so excited to go on this adventure with you!
Please do not hesitate to contact me if you have any questions

Sincerely,
Andrea Mize

APPENDIX D

SAFE RETURN TO IN-PERSON INSTRUCTION AND CONTINUITY OF SERVICES PLAN

Giant City CCSD#130

Safe Return to In-Person Instruction and Continuity of Services Plan

• Overview

- Throughout the COVID-19 pandemic, Giant City Community Consolidated School District has focused on creating environments that protect the safety and well-being of students and staff. During the 2020-2021 school year, this included offering students the option to choose in-person or virtual learning.

  The focus for the 2021-2022 school year will be for all GCS students to participate in in-person learning five days a week. Throughout the school year, GCS will monitor COVID-19 exposure levels in the community and, in consultation with the Jackson/Williamson County Health Departments, make modifications to the learning plan if necessary.

Continuity of Services

- GCS has been providing in-person instruction five days a week since March 15, 2021, with a return to 2:55 p.m. dismissal for FY 22. However, if, in consultation with the Jackson/Williamson County Health Departments, modifications are determined to be necessary, modes of instruction would be adapted, as needed, based on current health conditions.
- GCS is positioned to provide quality instruction through its online learning program and to equip students with district-provided devices and internet service in the event modifications are needed.

Periodic Revision

- GCS will review this plan at least every six months and make modifications deemed necessary to ensure that it best meets the needs of our students, parents, employees and the community.
  - Development of the ongoing re-entry plan for 2020-2021 included participation and feedback from a variety of stakeholders through Google Surveys and online district-wide zoom meetings. Many teachers, paraprofessionals, parents and community representatives contributed to the plan to safely re-open schools.

- GCS works in close consultation with the Jackson County Health Department to ensure that its plan is up-to-date with current guidance by the Centers for Disease Control, state and local agencies.
- GCS follows guidance provided by the Centers for Disease Control, as communicated through the Illinois Department of Health, as well as the Illinois State Board of Education.
- Regular updates on the plan will be provided to the Board of Education and opportunities for public comment are offered at every board meeting.
- Ongoing surveys and other engagement tools offer parents, staff and other members of the public the opportunity to provide input as modifications to the plan are necessary.
- Updates may also be provided through existing communication tools such as Blackboard Connect or teacher emails.
- Giant City School takes into consideration all feedback and experiences obtained through processes deployed during the 2020-2021 school year. GCS will move forward in 2021-2022, building upon these successful strategies and lessons learned.

Ongoing Services

- GCS provides a wide variety of programs and resources to support the social, emotional and mental health of students. By collaborating with Centerstone, GCS can refer students for on-site counseling and other mental health services. Counselors/Social Workers visit school to provide other supports and are accessible to families via the online learning platform or through direct contact.
- Additional resources are available for students who may need more specific interventions like English language learners, under-represented and under-resourced students or special education students.
- The Superintendent connects staff with available supports and communicates frequently about modifications to absence and leave procedures.
- The head cook ensures students have access to meals. Grab and go meals will be available for families to pick up and take home to ensure students have nutritious food when learning from home.
- Front Office staff coordinate with parents to monitor student wellness and connect families with needed resources.

  GCS will return to after school Kids Klub to ensure that before- and after-school care is offered to support families.

Mitigation and Prevention Strategies

- The following is a summary of mitigation and prevention strategies SPS uses to ensure the safety and well-being of students and staff while at school.

Mitigation Strategy	**GCS Response**
Universal and correct wearing of masks	o Face coverings at school are optional but required while riding the school bus. o Masks are provided by school if needed.
Physical distancing	o Strategies are consistent with CDC guidance. o Appropriate PPE is provided for staff as needed. o Signage in buildings encourages compliance.
Handwashing and respiratory etiquette	o Handwashing and infection prevention instruction is taught to students. o Signage in buildings encourages compliance. o Staff frequently remind students to wash hands and use hand sanitizer.
Daily monitoring/checking for signs and symptoms of illness or contact with COVID-positive individuals	o Parents are asked to monitor children for symptoms. o Students exhibiting symptoms must stay home until symptoms resolve. o School nurses and staff regularly monitor students for symptoms during the school day.
Cleaning and maintaining healthy facilities including improving ventilation	o Schools and supplies are cleaned regularly, with special attention paid to high-touch surfaces. o The 2021-2022 budget allocates $75,000 for structural improvements to improve the learning environment. Air purifiers were placed in each classroom.
Contact tracing in combination with isolation and quarantine, in collaboration with the state, local, territorial or Tribal health departments	o Contact tracing is done by GCS staff in consultation with the local health department. o Quarantine procedures and communications have been developed for use in the event of exposure following IDPH guidelines.

Diagnostic and screening testing	o Free testing provided to symptomatic students and staff through Jackson County Health Department.
Efforts to provide vaccinations to educators, other staff and students if eligible	o Vaccination events will be hosted at school for eligible students at registration and possible other dates throughout the school year. o Information shared with staff about vaccination clinic opportunities and leave from work.
Appropriate accommodations for children with disabilities with respect to the health and safety policies	o Accommodations provided as needed or dictated by Individual Education Plan.

Communication of Plan

-
  - The Giant City School will be accessible to the public via the district's website. It will be posted at www.gcs.org . (A downloadable version will be available in the Resource Page on the website.
  - By viewing the plan on the website, stakeholders may copy the plan and translate the content via Google Translator. Individuals who need further assistance with translation may contact their child's school.

Approved by the Board of Education on _____.

VITA

Graduate School
Southern Illinois University

Kristopher J. Mason

kjmason37@gmail.com

Eastern Illinois University
Specialist in Educational Leadership, Educational Leadership, May 2016

Southern Illinois University Carbondale
Master of Science in Educational Administration, Educational Administration, May 2006

University of Illinois at Urbana-Champaign
Bachelor of Science, in Mathematics and Secondary Education, May 2002

Capstone Project Title:
A Mirage of Learning Loss?

Major Professor: William B. Colwell