An Investigation of the Effects of the COVID-19 Pandemic on Student Engagement

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Student engagement has been at the forefront of education in all levels. From Pre-Kindergarten to Higher learning, the ways in which students attend during instruction and with tasks can be seen as an indicator of varying levels of student achievement and growth. The Corona Virus of 2019 opened up new questions when examining student engagement. When schools shut down to help curb the spread of the virus, teachers, students, parents and community members had to pivot to modernistic and distinct ways to continue the education of children and adult students around the world. The following study investigates the perceptions of teachers, students and parents as they attempted to navigate the COVID-19 pandemic shutdowns of 2020 through 2021. The study used interviews from volunteers in a public magnet school in order to obtain information regarding student engagement during remote instruction and distance learning. The time period was divided into two specific "phases" as a means to clarify the onset of the shutdowns versus the ongoing remote learning period of the 2020-2021 school year. Using a framework of multiple engagement constructs as a guide, the responses were examined and summarized within the two phases. Findings showed that students were saddened by the time spent away from their classmates and teachers. Responses showed that they were anxious about schoolwork and others' well-being. Parents were overwhelmed with the act of obtaining reliable wifi in order to support their children and, in some cases, themselves as they worked from home. Contrarily, many of the participants thrived in their new learning environment within the comfort of their home. Some found the remote learning schedule more flexible for families. Conclusively, participant responses showed

an unexpected resilience of the teachers, students and parents as time went on during distance learning.

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1.0 Chapter 1

1.1 Introduction

When the Novel Corona Virus of 2019 began to affect citizens of the United States, Many American schools had to quickly and efficiently metamorphose into a new way of delivering effective education to all students, sustaining a great deal of change that is unprecedented in recent history. The daunting task schools have been charged with is ongoing, creating shockwaves as ripple effects continue. The COVID-19 pandemic hit hard worldwide creating a chaotic stronghold over education. Not since the 1918 outbreak of the Spanish Flu has the United States faced such an unprecedented global crisis. Persisting through 1920, the Spanish Flu eventually killed approximately 40 million people worldwide. "The Great Influenza Pandemic of 1918-1920 might have been the next most important negative macroeconomic shock for the world." (Barro, Ursúa, Weng, Ursúa Dodge, & Weng EverLife, 2020, p. 8)

More than one hundred years later, the world faced another such crisis with COVID-19. On December 31, 2019, the China Country Office of the World Health Organization was informed of a small group of individuals in the Chinese province of Wuhan who presented with an unknown strain of pneumonia. (Centers for Disease Control and Prevention [CDC], 2020). Throughout January 2020, updates on the identification and progression of the novel virus were announced. The first case in the United States was reported in the state of Washington on January 20, 2020. By February 11, the World Health Organization announced the official name for the disease as COVID-19, an abbreviation of Corona Virus Disease 2019 (CDC, 2020). As other countries, such as Italy, reported rising cases of the novel virus, the WHO declared COVID-19 a global pandemic

on March 11, 2020. Locally, Pittsburgh residents were informed of the status of the virus on an ongoing basis. The first local case of the virus struck Washington County on March 13th, 2021, the same day that Pennsylvania's Governor, Tom Wolfe, shut down all schools in the state. The very next day, Allegheny County officially announced its first case (Sostek, 2020).

On March 13, 2020, [School District A] announced that all K-12 schools were to be closed beginning on Monday, March 16th. On March 15th the state mandated the closing of all non-life sustaining businesses starting March 21st (Tanzer-Gruener, Li, Eilenberg, Robinson, & Presto, 2020).

The announcements were abrupt and blunt in nature. Adedoyin and Soykan (2020) shared that "the global acceptance of social distancing policy, as announced by WHO as a measure to curb the spread of Covid-19, has forced schools to close their doors, and this has caused unexpected disruption of traditional teaching and learning methods." (Babatunde Adedoyin & Soykan, 2020, p.3)

The unprecedented shutdowns generated question from teachers worldwide. A pressing initial question was whether teachers possessed the technological knowledge to teach remotely. Also, there were questions as to the availability of computers and applications to engage in remote teaching. The situation not only influenced teachers; families too were affected.

Suddenly, one computer in a home might not suffice. Adequate Wi-Fi services became critical. Affordable internet services that might not serve an entire household of individuals as they worked from home and attended school remotely. Teachers faced the same challenges.

Online learning in its entirety is dependent on technological devices and internet, instructors and students that struggle with poor internet connections are liable to be denied access to online leaning. The widespread dependency of online learning on technological equipment and

the actual provision of the equipment was a big challenge for institutions, faculty and learners (Babatunde Adedoyin & Soykan, 2020).

1.2 School Position and Culture

The school district in which I practice is a large, urban district within the state of Pennsylvania. It is comprised of several schools varying in size, population, and grade level. The building in which I work is a magnet school which draws its students from beyond the usual feeder patterns of the individual schools in each neighborhood. Historically, magnet schools are typically established in urban school districts with large student enrollments (i.e., more than 10,000). According to the United States Department of Education, 53% of large, urban school districts include magnet school programs as part of their desegregation plans as compared with 10% of suburban school districts (Goldring & Smrekar, 2002).

Due to the fact that magnet schools are typically focused on a specific subject area, such as mathematics or science, or an innovative teaching practice such as project-based learning, the draw toward enrollment is high. Institutions that implement magnet programs are hugely popular, this is evidenced by the fact that more than 75% of all districts with magnet schools have a greater demand for student slots than they can fill (Blank, Levine and Steel, 1996 as cited by Goldring & Smrekar, 2002).

That is the case with my school, which I will refer to as the Mitchell Lindy Magnet School in School District A. Mitchell Lindy has a waiting list each year. It has a specific enrollment period in which families must apply in order for their child to attend. At Mitchell Lindy, I teach students at the third-grade level in the subject of English and Language Arts (ELA). Within this

context, I see my students for four graded subject areas including Reading, Spelling, English (inclusive of Writing and Grammar), and Handwriting (cursive). I have taught both kindergarten and third grade in this particular setting for eleven years.

The culture within the physical building of Mitchell Lindy is quite distinct when compared to others within the district. This is not solely due to its magnet status, but also to the school's educational and social expectations. The instructors are seen as experts in their practice and carry advanced degrees and certifications. There are multiple teachers that hold National Board Certification in addition to other programs and certificates. The families of the children who attend the school are mostly stable. Most students arrive in pre-kindergarten and remain until fifth-grade promotion. This creates an overall family environment in which teachers know the students and their families on an intimate level. Current teachers can communicate with a child's previous teacher for a deeper knowledge of their educational progress. This culture allows teachers to design lessons and differentiate instruction for students. Families trust the instructors in this building as well as the administration. They are largely supportive and have created one of the largest and most active Parent Teacher Associations in the district. Many of the families have had multiple children attend the school. Several students return to visit, mentor, and take part in school traditions.

The Mitchell Lindy Magnet School has several community partnerships and opportunities that are provided for its students. Partnerships with local organizations address areas focused on the ecology, the environment and history, as well as mental health and well-being. With its attention to educational quality, the school strives for excellence, attention to detail, and communal integrity. Statistically, Mitchell Lindy continues as one of the most successful schools in its district, even receiving recognition as the top magnet school in the state in 2021.

1.3 Response to the Pandemic

When Mitchell Lindy faculty and staff were informed that in-school teaching and learning would be halted due to COVID-19 cases spreading locally, we were told that the in-person return date would be in two weeks, on March 31, 2020. Until that date, students would be able to work on paper packets derived from the curriculum, that were to be distributed throughout the district. Since the district has a high free and reduced lunch (FRL) population, families could also pick up "Grab and Go" lunches at varying locations during this time. Prior to the shutdowns, however, the administration at Mitchell Lindy suggested sending home student materials and assignments as a precaution. Teachers gathered materials and planned appropriate assignments in order to engage the students academically in case of emergency.

On March 25, staff received an update from the SD-A superintendent, Dr. Anthony Hamlet, providing information on dates of return, grading guidelines and an "At Home Remote Learning Plan." Staff and students/families were provided a survey that would allow individuals to share their status on device, internet needs and coverage. Since this was not a "one-to-one" district, the administration had begun to address technology needs for all families by taking inventory and reaching out to community partners.

As it turned out, the school closings that began on March 16, lasted beyond two weeks and the staff were notified that we would be putting emergency efforts such as the continuance of paper packets and online learning using the Microsoft Teams platform.

Teachers responded to this news by communicating with the families of students and colleagues. The families were seeking guidance and direction as to how to properly submit assignments from the district's packets as well as keeping their children engaged during this time. Instructors' conversations with colleagues generated comfort, support and a new level of interconnection on a professional scale. Teachers within my building were in constant communication with one another, regarding the usage of MS Teams, as well as additional programs that might offer student engagement and enrichment within their subject area. Some teachers began sharing websites and groups for building Bitmoji classrooms and using Google platforms for activities and communication. Teachers reviewed online math and reading programs and created personal websites to assist with learning and social engagement.

1.4 Challenges

For the purposes of this inquiry, I have called the period of March 16th through June 12, 2020, Phase 1. All teaching during Phase 1 took place online. The brief use of paper packets was initially implemented directly following the announcement of the school shutdowns until all students received devices from the district. Phase 2 began on the first day of the 2020-2021 school year, starting September 8, 2020 and ran until the last day, June 11, 2021. During this time, the students and faculty remained fully remote, with live classes being held on Microsoft Teams. Phase 2 brought the use of Schoology, a learning management system accessible to the teachers as well as the students and their parents. Students were able to complete assignments, access lessons/materials and hold group discussions through this platform. Parents and families could track their children's progress and message instructors at any time. The addition of Schoology

paired with the MS Teams platform, allowed for a smooth transition into the school year, with class schedules and set meeting times. Students and families were able to adhere to an established routine while having the ability to openly communicate.

Challenges during Phase 1 emerged early after the initial announcement of the shutdown on March 13, 2021. It was clear that the district's number one issue was the fact that we were not one-to-one; that is there was not one computer for each student. In my district, there is wide range of socioeconomic status amongst the families and a large percentage of low-income students. Thus, it was critical that staff and students across the district complete the technology surveys in a timely fashion in order to assess the technological needs. What's more, moving into Phase 2, the timespan of the remote learning period outlasted others in the area who had started the return to school fully by fall 2020 or had begun hybrid systems of teaching and learning. Due to ongoing safety concerns, multiple date changes occurred for the return to school to resume in-person classes. However, when Pennsylvania governor Tom Wolfe announced that Pre-K to 12 public school teachers, administrators, bus drivers and other school staff had been prioritized to receive the Johnson and Johnson vaccine, the district put firm plans into place. In an approach to keep students, teachers and families safe, the district paired with multiple partners to initiate an organized effort to vaccinate all who wanted to receive it.

After the initial offering of the Johnson and Johnson vaccine, community partners supplied the additional Pfizer and Moderna vaccines to faculty, staff and administrators. Only after this effort was a phased in approach able to occur. However, each student was placed into a group based upon a board approved set of parameters which categorized them and set a specific date to return. This meant that some students would not return until May, 2021.

On April 6, 2021, the students returned to school using a phased-in hybrid approach. Teachers and students would carry out the established teaching and learning schedule inside the buildings on varying days. Some students would attend on Monday and Tuesday, while others were scheduled for Thursday and Friday. Wednesday was a designated cleaning day, in which everyone was fully remote. This hybrid format remained in place until the last day of the school year, on June 11, 2020.

1.5 Policy

In examining policies and guidance from state and federal administration, laws such as Individuals with Disabilities Education Act (IDEA) and the Free and Appropriate Public Education (FAPE) requires states to ensure that all students receive equal education opportunities. It was essential to maintain fair and appropriate education at this time to the more than 20,000 students in the district. Assistance in doing so came with the introduction of the Coronavirus Aid Relief and Economic Security (CARES) Act. As reported by the United States Department of Education (2020), on March 27, 2020, the Coronavirus Aid, Relief and Economic Security Act was signed into law. The act established the Education Stabilization Fund (ESF) and allocated $30.75 billion to the United States Department of Education. In the state of Pennsylvania, $523.8 million dollars was received as emergency, one-time ESSR funds. A total of $471.4 million was directly allocated to school districts and charter schools based on the same formula used for Title I-A allocations in 2019, according to the Pennsylvania Department of Education (2020).

1.6 Problem of Practice

In examining the timeline of events that led to the historical school closings of 2020, along with the unprecedented, unforeseen, and abrupt nature in which they unfolded, I became very interested in investigating the effects of these events. When considering education and any potential effects on educational processes, it is essential to consider the major stakeholders. In my analysis, the primary stakeholders include the students, their parents and the teachers, including myself. The stakeholders became the focus in my inquiry into the potential effects of COVID-19 on student engagement.

1.6.1 Student Engagement

Student engagement is a critical aspect of education. In today's terms to hold the attention of an individual or remain fully and wholly present is to be engaged (Axelson & Flick, 2011). Chapman (2002) shares one definition of engagement as students' their cognitive investment, active participation, and emotional commitment to their learning. Moreover, student engagement has been used to depict students' willingness to participate in routine school activities, such as attending classes, submitting required work, and following teachers' directions in class (Chapman, 2002).

Due to the fact that the unparalleled circumstances of the COVID-19 pandemic have impacted families, in addition to health, education and commercial business systems, I will conduct a case study of individuals, in an effort to collect valuable information from the people who lived the experience and continue to sort through any of its effects.

In this study, I focused on student engagement and how it affected third graders at Mitchell Lindy during the remote learning period of March through June 2020 (Phase 1) and how it affected student engagement from September 2020 through June 2021(Phase 2).

I identified student engagement as the general area of my problem of practice. I wanted to know how the pandemic and the turn to remote learning affected students' investment, participation, commitment, and willingness to complete required assignments. In order to frame this problem in principled and rigorous ways, I reviewed the scholarly literature to answer these questions.

•How is the construct of engagement represented in the literature?

•What research has been conducted to provide information about the effects of the pandemic on student engagement?

2.0 Chapter 2

2.1 Review of Scholarly Literature

2.1.1 Introduction

This review was designed to describe how the educational construct of student engagement is represented in the literature and to discuss research conducted to examine the effects of the pandemic and remote learning on student engagement. Historically, the study of the way students engage when learning as well as how it affects outcomes and achievement has been an integral part of teacher preparation and practice. Engagement includes the ways students are involved in school as well as the psychological investment they put forth. Student behavior and the value students place on their learning experience factor in as well. The ability of instructors to manage and tap into their students' engagement is one that is not easily achieved; however, its bearing on every individual is vital. "Engagement is an important fact of students' school experience because of its logical relationship to achievement and to optimal human development." (Marks, 2000, p.155)

In the 1980s, many historians acknowledged Astin's student development research, which would eventually become the foundation of modern engagement research. "Astin suggested that a students' involvement ("the quantity and quality of physical and psychological energy that students invest in the college experience") produces learning in direct proportion to that involvement" (Axelson & Frick, 2011, p.39). In the next section, I describe how engagement is addressed in School District A.

2.1.2 School District A and Engagement

Over a span of 22 years as an educator in one district, I have been introduced to a plethora of methods and options for best practices. For decades, School District A (SD-A) used a system of evaluation that lacked a multi-dimensional and student-centered approach to the evaluation of teachers. Previously, evaluation of SD-A teachers was based on classroom observation and student artifacts or portfolio work, followed by a "satisfactory" or "unsatisfactory" rating. Later, SD-A adopted the Danielson Framework for Teachers (Danielson, 2013; Danielson, 2008; Ferguson & Danielson, 2015). The purpose of the framework is to assess the overall effectiveness of teachers along with their ability and likelihood of helping students succeed. Student engagement is a key feature of the framework.

The framework consists of four domains:

•Domain 1: Planning and Preparation – Focuses on instructors' ability to use data, content knowledge and other student information to plan and prepare quality lessons for the success of students.

•Domain 2: The Classroom Environment – Focuses mostly on creating a safe, organized environment and culture of learning.

•Domain 3: Instruction – Focuses on student engagement as lessons are implemented.

•Domain 4: Professional Responsibilities – Focuses on interactions and responsibilities outside of the classroom. These help to scaffold community and family relationships that nurture student success.

This Danielson framework has been refined over time in response to feedback from elementary and secondary school educators and researchers (Ferguson & Danielson, 2015).

Districts use the FfT as a foundation for teacher evaluation and may add items for a cultivated approach to their goals for students, teachers, and families. Due to federal and state urging, many districts have worked to implement teacher evaluations systems that are more rigorous in nature to improve the overall evaluation of educators. Along with differentiating and improving teacher effectiveness, the hope is to increase student achievement (Chaplin & Gill, 2014). In SD-A, the RISE system of evaluation is used with the Danielson framework as its criterion. The Rise (Research-Based, Inclusive System of Evaluation) Rubric is constructed using the four domains of the Danielson framework. Furthermore, the RISE rubric includes twelve "power components" that focus on the best practices the district would like to see in all teaching. The addition of the 3g component to Domain 3, focuses on implementing lesson equitably (SD-A, 2021). Figure 2 provides an overview of the Danielson version of the FfT. Figure 2 provides a view of the 3rd domain of the SD-A RISE version with the addition of the 3c component.

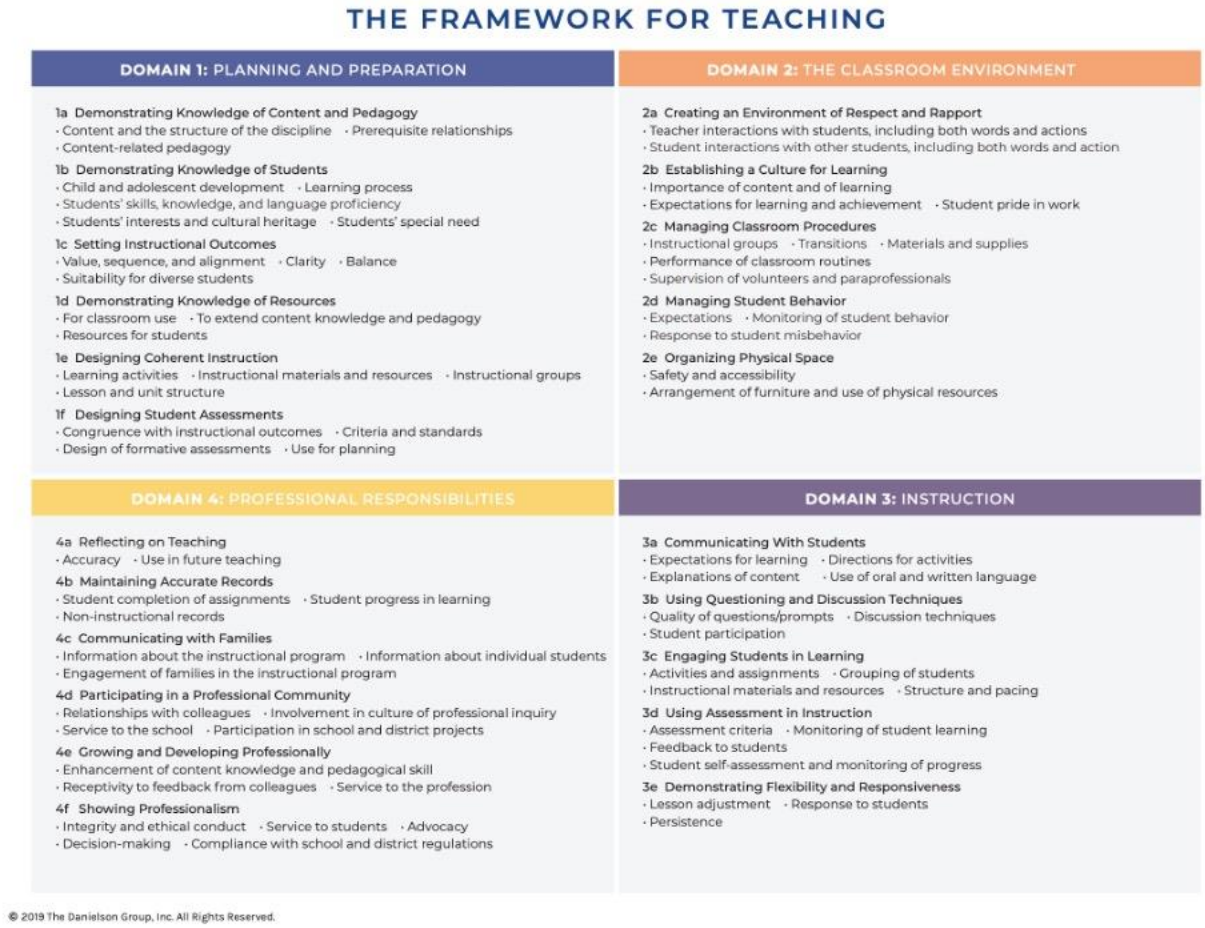

Figure 1 The Danielson Framework for Teaching

Of particular interest is Domain 3, item 3c which focuses on engaging students in learning. Varying aspects of the engagement constructs appear in the planning process as well as implementation of lessons around this item. The instructor is responsible for using student data and pedagogical knowledge to plan a lesson that is well suited for the needs of all students in that each activity and assignment must comprehensively engage the children through thinking, communicating, and producing outcomes in addition to drawing interest and a sense of value in its completion. Administrators use observation data (including the use of the instructor's lesson plans) as well as the artifacts produced by students to evaluate the instructor's ability to engage students

and lead them to success. An additional instrument is used within SD-A in order to complete the evaluation process-- 7Cs (TriPod) survey of students. The survey created by Dr. Ronald Ferguson of Harvard University provides another evaluative glance into teachers' abilities to engage student of all achievement levels. Figure 2 shows the SD-A version of the FfT in the 3c portion of Domain 3.

Domain 3: Instruction

The components in Domain 3 address how a teacher actually engages students with the content – the implementation of the plans designed in Domain 1 (Planning and Preparation). At high levels of performance in this domain, a teacher encourages students to participate in a community of learners, engage in rigorous learning, and develop a deep understanding of complex concepts. They recognize their responsibility for student learning in all circumstances and demonstrate significant impact on student growth over time.

Component	Unsatisfactory	Basic	Proficient	Distinguished
***3a: Communicating with Students** *Elements:* • Expectations for learning • Directions for activities • Explanations of content • Use of oral and written language	The instructional purpose of the lesson is unclear to students, and the directions and procedures are confusing. The teacher's explanation of the content contains major errors, and does not include any explanation of strategies students might use. The teacher provides little response to or recognition of student misconceptions The teacher's spoken or written language contains errors of grammar or syntax. Academic vocabulary is inappropriate, vague, or used incorrectly, leaving students confused.	The teacher's attempt to explain the instructional purpose has only limited success, and/or directions and procedures must be clarified after initial student confusion. Teacher's explanation of the content may contain minor errors; some portions are clear, while other portions are difficult to follow. The teacher recognizes student misconceptions but is less than successful in ameliorating them. The teacher's explanation does not invite students to engage intellectually nor to understand strategies they might use when working independently. The teacher's spoken language is correct; however, vocabulary is limited, or not fully appropriate to the students' ages or backgrounds. The teacher does not take opportunities to explain academic vocabulary.	The instructional purpose of the lesson is clearly communicated to students, including where it is situated within broader learning; directions and procedures are explained clearly and may be modeled. The teacher's explanation of content is well scaffolded, clear and accurate, and connects with students' background knowledge and experience. Potential misconceptions are addressed upfront and when necessary, processed and clarified. During the explanation of content, the teacher focuses, as appropriate, on strategies students can use when working independently, and invites student intellectual engagement. The teacher's spoken and written language is clear, correct, and suitable to the students' ages, culture, and interests. The teacher's use of academic vocabulary is precise, and serves to extend student understanding.	The teacher links the instructional purpose of the lesson to the larger curriculum; the directions and procedures are clear and anticipate possible student misunderstanding. The teacher's explanation of content is thorough and clear, developing conceptual understanding through artful scaffolding and connecting with students' interests. Students respond to classmates' misconceptions and the teacher steps in when appropriate. Students contribute to extending the content, in explaining concepts to their classmates, and suggesting strategies that might be used. The teacher's spoken and written language is expressive, and the teacher finds opportunities to extend students' vocabularies, through both discipline and for more general use. Students contribute to the correct use of academic vocabulary.
***3b: Using Questioning and Discussion Techniques** *Elements:* • Quality of questions/prompts • Discussion techniques and talk structures • Student participation	The teacher's questions are of low cognitive challenge, with single correct responses, and are asked in rapid succession. Interaction between the teacher and students is predominantly recitation style, with the teacher mediating all questions and answers. The lesson does not provide opportunities for students to talk to each other. The teacher accepts all contributions without asking students to justify their reasoning.	The teacher's questions lead students through a single path of inquiry, with answers seemingly determined in advance. The teacher sometimes attempts to ask some questions designed to engage students in thinking, but only a few students (in every subgroup) are involved. The lesson provides minimal opportunities for student to talk to one another. The teacher attempts to engage all students in the discussion, to encourage them to respond to one another, and to explain their thinking, with uneven results.	While the teacher may use some low-level questions, he or she poses questions designed to promote student thinking and understanding. The teacher creates a genuine discussion among students, providing adequate time for students to respond, stepping aside when appropriate, and holding students accountable to listen to and comment on what others say. The lesson provides opportunities for student-to-student talk resulting in active intellectual engagement. The teacher challenges students to justify their thinking, and successfully engages most students (in every subgroup) in the discussion, employing a range of strategies to ensure that most students (in every subgroup) are heard.	The teacher uses a variety or series of questions or prompts to challenge students cognitively, advance high-level thinking and discourse, and promote meta-cognition. Students formulate many content-related questions, initiate topics, challenge one another's thinking, and make unsolicited contributions. Students are highly engaged in student-to-student talk. Students themselves ensure that all voices are heard in the discussion.

Figure 2 School District-A RISE Rubric-Domain 3, Item 3c

For teachers in the SD-A system, multiple measures are in place when finalizing evaluations. Through the use of the Danielson/RISE frameworks as well as the 7Cs Survey and assessment data, administrators are able to gather a more informed examination of the instructor and their proficiency in moving students toward achievement.

2.1.3 Students' Socioemotional Well-Being and Engagement

One of the themes most noted in the engagement research is related to the social and emotional well-being of students during the pandemic. From children in kindergarten to students at colleges and universities, there is an impact on students' well-being and the influence of that impact on student engagement. As the pandemic continues, we need information about how it is affecting the overall well-being of students. Ye (2020) suggests that the effects of being socially isolated from friends and family as well as losing the sense of normalcy that school provides may affect children's mental health. Issues of mental health and engagement have profound influences on student academic achievement.

When delving into the literature surrounding the well-being of students during this unprecedented time, I found that there was a debate around the idea of safety inside schools or outside of the physical classroom. Although recent modeling studies predict that school closures alone would prevent only 2% to 4% of deaths, school closures may be associated with mental health problems among students owing to a prolonged state of physical isolation from peers, teachers, extended family and community networks (Zhang et al., 2020).

The debate in the research continued with opposing views from a case study of a rural school district in Alaska (Kaden, 2020). The instructor speculated that his students were doing well because "they enjoy the freedom to work at their own pace and decide how they. Want their day to look." (Kaden, 2020, p.10). Socialization at school or bullying are well-known distractors. The online environment may allow for voices to be heard without the added social anxiety (Kaden, 2020).

Moreover, Kaden (2020) revealed that's some social situations and the inflexible bell schedule simply do not work well for all. The instructor's experiences emphasize that in an era of

social distancing, humanizing digital instruction is more important than ever. Using online class time to connect with students and creating a safe environment is one of the most important functions of schooling.

Both arguments make strong statements for and against the idea of students remaining in quarantine at home during this time. For years, some researchers have determined that virtual environments allow students to create a world that encompasses anything they can imagine. Interaction, simulation, and collaboration enable learning in the interactive environment (Mnyanyietal, 2009; Thamarana, 2016).

However, there are also many researchers who suggest that there is a deeper negative effect of dampened social interaction for varying reasons. Some studies state that prolonged school closures and home confinement might have the negative effects on children's physical and mental health (Brazendale, et al., 2017). The "psychological impact of quarantine is wide-ranging, substantial and can be long-lasting." (Brooks et al., 2020)

Because of heightened attention in the pandemic, engagement is an important area of research in educational scholarship.

2.1.4 Student Engagement

With links to dropout rates and standardized test scores, engagement stands as a critical variant in understanding the inner workings of student success. A myriad of researchers has devised specific engagement constructs that have been streamlined into educational pedagogy and the best practices of teachers from primary education to higher levels of learning.

When it comes to engagement in educational practices, there are usually two or three constructs that are referred to. These include behavioral and emotional, sometimes referred to as

affective (Appleton, Christenson et al., 2008). In addition to behavioral and emotional (affective), the cognitive engagement construct also plays an important role in learning. Each type of engagement touches deeply on the intricate scope and progression of the abilities of individuals to learn as well as the differences students reveal when engaging in learning. Many studies have discussed engagement in terms of observable measures such as time on task or willingness to participate in school routines and activities including the completion of assignments, but researchers have described multiple areas of engagement (Chapman, 2002).

Skinner and Belmont (1993) share the following definition.

> Engagement versus disaffection in school refers to the intensity and emotional quality of children's involvement in initiating and carrying out learning activities…Children who are engaged show sustained behavioral involvement in learning activities accompanied by a positive emotional tone. They select tasks at the border of their competencies, initiate action when given the opportunity, and exert intense effort and concentration in the implementation of learning tasks; they show generally positive emotions during ongoing action, including enthusiasm, optimism, curiosity, ad passive, do not try hard, and give up easily in the face of challenges…[they can] be bored, depressed, anxious or even angry about their presence in the classroom; they can be withdrawn from learning opportunities or even rebellious toward teachers and classmates. (p. 572)

Multiple researchers have conducted studies around engagement constructs such as cognitive, behavioral and affective, however, less has been studied on how the constructs are interrelated or which one may be in a primary position when students are learning. It is thought that student engagement could be better understood as a "multidimensional" or "metaconstruct" (Axelson & Flick, 2011).

In their article surrounding self-efficacy, classroom engagement and academic achievement, Olivier, Archambault, Clercq, and Galand (2018) discussed self-efficacy, behavioral engagement, and emotional engagement as key factors for academic achievement. They went on to share that

> Different theoretical frameworks such as Self-Efficacy Theory, the Self-System Model of Motivational Development, and Expectancy-Value Theory, argue toward a complex set of interrelations between self-efficacy, classroom engagement, and academic achievement. Yet, the nexus between these constructs varies from one theoretical perspective to another. The question of [Which one of these theories best represents student early experience in school] is not yet answered because empirical studies rarely contrast these theories. As a result, properly understanding the multi-faceted and developmental interplay between self-efficacy, classroom engagement, and academic achievement requires further investigations particularly among elementary school students. (p. 326)

When analyzed, engagement constructs can be honed even farther. Lawson and Lawson (2013) provide a useful representation of attentional engagement and agentic engagement. Attentional engagement refers to researchers and heir examination of students and their connection to activities as well as their surrounding social contexts. This is inclusive of engagement within the ecology of social relations (Hipkins, 2021; Reschly & Christenson, 2012). Paired with the constructs of affective, cognitive and behavioral engagement, it is suggested that student attachment may often predict their "in time" or "in the moment" engagement experiences. (Finn & Zimmer, 2012; Skinner & Pitzer, 2012). Attentional engagement also takes into consideration students' engagement with various tool/objects/technologies (e.g., computers), tasks (e.g., labs/assignments), activities or disciplines (e.g., dance or math), people (e.g., peers, teachers, coaches), and places/social settings (e.g., school or community agency) (Lawson & Lawson, 2013).

Agentic engagement refers to the proactive, purposive, and educationally constructive action students initiate to catalyze their own learning (Bandura, 2006; Reeve, 2013). Agentically engaged learners are those who take the initiative, express their preferences, and ask questions to help them learn. In other words, when agentically engaged, students contribute proactively into their own learning and into the flow of the instruction they receive (Reeve, Cheon & Yu, 2020).

Agentic engagement includes specific involvement from students and is connected to varying levels of achievement. Agentic engagement is manifest when students actively express their thoughts, opinions, and interests during activity (Ainley, 2021: Assor, 2021; Brooks et al., 2012; Hipkins, 2002); when they direct their own learning (Cleary & Zimmerman, 2012; Reeve, 2012); when thy engage communally, collectively, and critically with others (Davis & McPartland, 2012; Mahatmya, Lohman, Matjasko, & Farb, 2012; O'Conner, Hanny &Lewis, 2011; Polman &

Miller, 2010); and when they are culturally relevant tools and technologies (Dockter et al., 2010; Mitra & Serriere, 2012).

Within these two large constructs, there are more traditional features associated with engagement, including affective, cognitive and behavioral. Affective engagement involves attention to students' attachment to their school, such as, "social, emotional and psychological." (Lawson & Lawson, 2013, p. 435). This type of engagement can be divided into two areas of focus. One of those examines affective engagement in relation to the academic pursuits. This includes the assessment of levels of students' interest, enjoyment, happiness, boredom and anxiety during their academic activity, whereas the other area of focus examines "students' feelings of belonging, identification, and relatedness to their school peers, teachers and the school overall." (Daly, Shin, Thakral, Selders & Vera, 2009; Finn & Rock, 1997; Finn & Voekl, 1993; Finn & Zimmer, 2012; Goodenow, 1993; Goodenow & Grady, 1993; Osterman, 2000; Van Ryzin, Gravely & Roseth, 2009; Voekl, 2012 as cited in Lawson & Lawson, 2019. P. 436). Cognitive engagement involves attention to psychological investments in academic tasks. Sometimes focusing on the "dispositions toward schoolwork" (Lawson & Lawson, 2013, p. 436).

Behavioral engagement involves attention to a much broader area of examination that mostly focuses on student conduct in relation to educational outcomes. For instance, researchers have looked at the amount of time students spend on homework and/or the extent to which students comply with school rules" (Birch & Ladd, 1997; Finn, Folger & Cox, 1991, as cited in Lawson & Lawson, 2013, p. 437).

2.1.5 Conclusion

Research about the effects of the COVID-19 school closures on student engagement is emerging and therefore is not robust. There is very little discussion in the literature that was focused on elementary students in particular, and their perceptions of virtual or hybrid teaching and learning. I decided to build on the existing literature by investigating teacher, student and parent perceptions and insights related to how the pandemic affected the engagement of students in my school. I decided to use Lawson and Lawson's (2013) representations of agentic and attentional engagement and relate those to behavioral, cognitive, and affective constructs to guide my inquiry.

The questions that guided my inquiry are:

•What do teachers say about the effects of the pandemic on student engagement during remote learning?

•What do students say about the effects of the pandemic on their engagement in learning?

•What do parents say about the effects of the pandemic on their children's engagement in learning?

3.0 Chapter 3

3.1 Methods

The applied inquiry plan for my investigation was designed to address these research questions:

•What do teachers say about the effects of the pandemic on student engagement during remote learning?

•What do students say about the effects of the pandemic on their engagement in learning?

•What do parents say about the effects of the pandemic on their children's engagement in learning?

To answer these questions, I employed a case study methodology (Yin, 2018) using interview data to describe a specific case of one group of parents, teachers, and students in one school. In the sections that follow, I describe the context for my inquiry including my positionality as well as the data sources I secured and analyzed.

My inquiry is not a typical improvement science project. Rather I am seeking to provide information about the effects of COVID-19 on students in my place of practice. This information may be used by administrators in my school to help them make decisions about the return to school process, scheduling and resources in the future.

3.1.1 Context

For the past twenty years, I have worked in several of the elementary schools of the School District A System. I began teaching fifth grade reading and continued with second, fourth, kindergarten and now third grade English and Language Arts (ELA). My current place of practice is Mitchell Lindy, a magnet school with a focus on the arts and humanities. With a magnet designation, a school receives students from all areas within the SD-A city limits. There are a total of 410 students currently enrolled in the school. The current demographics are approximately 58% African American, 31% Caucasian, 9% Multi-Racial and less thank 1% Hispanic and Asian. Almost 50 percent are in the category of economically disadvantaged." Additionally, there are 76 percent that qualify for Title I services.

Before the pandemic, student attendance and participation of families was rated as one of the highest in the SD-A System. A+ Schools reports that the "students chronically absent" rate is about 9 percent. Out of the 23 elementary schools in the district, there are only two with a rate that is lower. The report also shares a parent recommendation rate of 100 percent and student stability rate of 96%. Most of the children begin attending in pre-school and continue through to fifth grade, at which time they are promoted to middle schools or one of the 6-12 facilities across the district.

The School District A System closed all of its buildings and transitioned to distance learning in mid-March of the 2019-2020 school year. Originally, the plan was to remain closed for a two-week period, however, as federal, state and county guidelines changed, all of the schools within the district remained closed until June with remote teaching and learning occurring throughout.

In summary, the unprecedented and ever-changing timeline of the shutdown, students were out of school for a total of 13 months. Though some students participated in the phased-in reopening in April of 2021, most families remained remote for several reasons. The uncertainty of vaccination availability for adults and children as well as the later dates of return for some of the children (many were not slated to return until May) deterred them from participating.

With the amount of time away from the physical classrooms and the abrupt introduction of a style of learning that was, for some students, new and different, concerns grew around the effect that such a time period would have on each individual student's achievement. Depending on the grade level of the student, attention turned to the level of developmental appropriateness distance learning provided as well as the aspects of well-being and emotional stability considering the changes occurring in and outside of the school setting. Moreover, the availability of the proper technology and other materials needed to thrive while the remote learning period commenced was addressed.

3.1.2 Positionality

In my place of practice, my position is third grade English and Language Arts instructor. I teach four subjects under the ELA heading, to two sections of students, totaling approximately 50 students each school year. The subjects I teach are Reading, English/Writing/Grammar, Spelling and Handwriting. At this grade level, I am a part of a team of three teachers. One Math instructor who teaches general math, and an additional ELA instructor who teaches the same content as I to an additional section of students totaling approximately 26 students each school year. This instructor also serves as the intermediate (grades 3-5) ITL (instructional team leader) as well as the school assessment coordinator (SAC) for state assessments (PSSA). Each member

on the third-grade team holds a position of leadership in our place of practice. I serve on the instructional cabinet committee, and the math instructor serves as head of the discipline committee.

As a part of the third-grade team, my inquiry, is influenced by the drive to understand how students at this grade level are affected in a situation such as the COVID-19 pandemic and school closures with distance learning. Teaching ELA focusing on Reading and Writing specifically, is highly dependent on proximity and the ability for students to work closely with not only their teacher, but classmates as well. The interaction and partnering of pupils are key components in these subject areas. Speaking, sharing and questioning helps students grapple with concepts that may be confusing otherwise. Sharing work builds students' comprehension and confidence and is integral to the academic achievement of each student. What happens to the students' progress when these activities change drastically over a prolonged period is largely unknown and is a cause of great concern.

3.1.3 Participants

Because of delays in securing IRB approval from SD-A and then the University of Pittsburgh, I was not able to recruit students and secure parental permission before the end of the school year. Therefore, I secured parent participants by using the district communication system (Talking Points) as well as follow-up emails and phone calls to interested parties. Each family was notified of the study and given an opportunity to respond should they wish to participate. (See Appendix A.1) My recruitment efforts resulted in a total of eleven parents. Each of these was the parent of a third-grade student at my place of practice and was willing to volunteer themselves along with their child. Therefore, each parent interviewed, had one child enrolled in third grade

who also participated in the student interview process. Out of the eleven parent participants, 5 are Black females, 4 are Caucasian females and 2 are Caucasian males.

I secured student participants by obtaining permission from parent volunteers after the initial recruitment email and Talking Points communication message. Parent participants volunteered to be interviewed and provided permission for their child to participate as well. Out of the 10 students that volunteered to participate along with their parents, there were 4 Black females, 1 Black male, 3 Caucasian males and 2 Caucasian females.

I secured the participation of my two teaching colleagues. Out of the two team members, one is a Caucasian male, and the other is a Caucasian female. Both are veteran teachers, with at least fifteen years of service. Table 1 summarizes the participants.

Table 1 Participants

Parents	***Students***	***Teachers***
Five black women	**Five black children**	**Two Third Grade Teachers**
•Barbara Zimmerman	Ainsley (daughter of Barbara)	**One white woman**
•Diedra Williams	Joey (son of Diedra)	Gloria Sustern
•Yolanda James	Tracey (daughter of Yolanda)	**1 white male**
•Kendra Lane	Layla (daughter of Kendra)	Jason Theophanis
•Tara Yarbrough	Emily (daughter of Tara)	
Four white women	**Four white Children**	
•Sharon Smith	Joanie (daughter of Sharon)	
•Lisa Ritter	Charla (daughter of Lisa)	
•Sandra Baker	Blaine (son of Sandra)	
•Gabrielle Carson	Jonathan (son of Gabrielle)	

Two white men •Thomas Ritter •Joseph Harkin	Charla (daughter of Thomas) Donte' (son of Joseph)	

3.1.4 Conceptual Framework for Interviews

I designed interview protocols for each set of participants by creating questions that related to a conceptual framework focusing on attentional and agentic engagement as well as affective, cognitive, and behavioral features.

Table 2 presents the interview protocol for teachers with its corresponding engagement construct.

Table 2 Teacher Interview Protocol and Related Engagement Construct

Interview Question	***Engagement Construct***	
1.How did your students adapt to the sudden change to remote learning last spring?	**Attentional/Agentic** *Attentional:* Social attachment and engagement (change due to school closures). Interaction with tools, objects and technology. *Agentic:* Students can actively express thoughts,	**Cognitive, Affective and Behavioral** *Cognitive:* Value of learning feelings regarding relevance of school. School is important for achieving future goals; mental effort and

	opinions and interests during activity. Direct their own learning. Engaging communally, collectively and critically with others.	thinking strategies. Feelings of relevance of school. *Affective:* students' social emotional and psychological attachments to school. Internal state/interested. *Behavioral:* Student conduct, class conduct, absenteeism. Actions that individuals take during learning. Can support or hinder outcomes.
2.Do you see any differences in your students' learning remotely as compared to face-to-face/in-person teaching and learning?	**Attentional/Agentic** *Attentional:* Engaging with tools and technology as well as tasks. *Agentic:* Students actively express their thoughts opinions and interests during activity. At times, direct their own learning.	**Behavioral** Students' active engagement. Paying attention, participating, listening, involved in class activities. Can support or hinder outcomes.
3.How engaged are the students during the remote learning school day?	**Attentional/Agentic**	**Cognitive and Behavioral**

	Attentional: Using technology and tools for tasks. Social attachments and engagement. *Agentic:* Active contribution to teaching and learning practices. Directing their own learning.	*Cognitive:* Relevance of school Mental effort and goal thinking strategies. *Behavioral:* Students' active engagement. Paying attention, participating, listening, involved in class activities.
4.Do you need to help your students with their assignments and/or activities? a.How would you describe the students' ability to engage using the chosen technology platform?	**Attentional/Agentic** *Attentional:* Using tools, and technology for the completion of tasks. *Agentic:* Active contribution to teaching and learning practices. Directing their own learning. Engaging communally, collectively and critically with others.	**Cognitive and Affective** *Cognitive:* Attitudes and emotions toward learning. Mental effort *Affective:* Emotionally involved; internal state. The student is interested, having fun and enjoying class activities.
5.What observations have you made regarding students that are participating within learning centers/hubs?	**Attentional** Engaging with and around people places and settings. Interaction with tools, technology and objects.	**Cognitive, Affective and Behavioral** *Cognitive:* Attitudes and emotions toward learning. Mental effort.

	Engaging in tasks, activities and disciplines.	*Affective:* Interested; enjoying work and activities. *Behavioral:* Active engagement; participation/absenteeism.

Table 3 Student Interview Protocol and Related Engagement Construct

Interview Question	Engagement Construct	
1.How did you feel when school was closed last spring?	**Attentional** Social attachments, engagement and attention. Using tools, technology and objects to complete tasks. Places and settings.	**Affective and Cognitive** *Affective:* Social, emotional and psychological attachments to school. *Cognitive:* Dispositions toward schoolwork. The effort that students generally exert toward homework or work that is difficult.
2.How did you feel about attending classes completely online? a.Do you feel any differently now?	**Attentional/Agentic** *Attentional:* Using technology and tools to complete tasks. *Agentic:* Students expressing their thoughts, opinions and interests during activity. Engaging communally, collectively and critically with others.	**Affective and Cognitive** *Affective:* Social, emotional and psychological attachments to school. Enjoyment, happiness, boredom and anxiety during academic activity. *Cognitive:* Dispositions toward schoolwork. The effort that students generally exert toward homework or work that is difficult.

3.Please explain any differences you see between learning in the school building and learning from home (or a learning hub)?	**Attentional/Agentic** *Attentional:* Engaging with and around people places and settings. Interaction with tools, technology and objects. Engaging in tasks, activities and disciplines. *Agentic:* Active contribution to teaching and learning practices. Directing their own learning. Engaging communally, collectively and critically with others.	**Affective, Cognitive and Behavioral** *Affective:* Social, emotional and psychological attachments to school. Enjoyment, happiness, boredom and anxiety during academic activity. *Cognitive:* Dispositions toward schoolwork. The effort that students generally exert toward homework or work that is difficult. *Behavioral:* Active engagement and participation in class activities. Absenteeism.
4.How do you feel the online tasks assigned by your teachers? a.Describe how you feel about the technology	**Attentional/Agentic** *Attentional:* Interaction with tools, technology and objects. Engaging in tasks, activities and disciplines.	**Affective, Cognitive and Behavioral** *Affective:* Social, emotional and psychological attachments to school. Enjoyment, happiness,

programs used during this time.	*Agentic:* Directing their own learning.	boredom and anxiety during academic activity. *Cognitive:* Dispositions toward schoolwork. The effort that students generally exert toward homework or work that is difficult. *Behavioral:* Active engagement and participation in class activities. Absenteeism.
5.What do you think about the overall learning you experienced outside of the school building during the past year?	**Attentional/Agentic** *Attentional:* Engaging with and around people places and settings. Interaction with tools, technology and objects. Engaging in tasks, activities and disciplines. *Agentic:* Active contribution to teaching and learning practices. Directing their own learning. Engaging	**Affective and Cognitive** *Affective:* Social, emotional and psychological attachments to school. Enjoyment, happiness, boredom and anxiety during academic activity. *Cognitive:* Dispositions toward schoolwork. The effort that students generally exert toward homework or work that is difficult.

	communally, collectively and critically with others.	

Table 4 Parent Interview Protocol and Related Engagement Constructs

Interview Question	Engagement Construct	
1. When Mitchell Lindy went to remote learning in spring of 2020, did you have the technology/devices and internet access to handle one or more students participating in remote learning? a. Do you currently have the technology/devices and internet access to handle one or more students?	**Attentional** Interacting with tools, objects and technology.	**Cognitive** Students think deeply about ideas and concepts, how they make meaning of the material presented to them and how they use self-regulating and metacognitive strategies to master academic content and tasks.
2.How did your child/children adapt to the sudden change to remote learning last spring?	**Attentional & Agentic** *Attentional:* Social attachment and engagement (change due to school closures). Interaction with tools, objects and technology.	**Affective and Cognitive** *Affective:* students' social, emotional and psychological attachments to school; academic pursuits. Also, students' feelings of

	Agentic: Students can actively express thoughts, opinions and interests during activity. Direct their own learning.	belonging, identification and relatedness to their school peers, teachers and the school overall. *Cognitive:* Psychological investments in academic tasks.
3.If employed at this time, are you working from home? a.How would you describe working from home with a child/children participating in remote learning?	**Attentional** The aspect of social engagement, place and settings.	**Cognitive** Dispositions toward schoolwork and the extent to which they persist when academic work is difficult.
4.Is your child staying at home or attending a learning hub? a.If your child is attending a learning hub, what services does it provide? b.How is your child responding to the learning hub environment?	**Attentional** Social engagement, attention and attachments. People places and settings. Additionally, engagement in extracurricular activities and disciplines.	**Affective and Cognitive** *Affective:* Feelings of belonging and school connectedness. *Cognitive:* Psychological investments in academic tasks.

5.Do you see any differences in your child's learning remotely as compared to face-to-face/in-person learning?	**Agentic** Students actively express their thoughts opinions and interests during activity. At times, direct their own learning.	**Cognitive** Mental effort and thinking strategies; Psychological investments in academic tasks.
6.If your child is at home, how engaged are they during the remote learning school day?	**Agentic** Engaging communally, collectively and critically with others.	**Cognitive and Behavioral** *Cognitive:* Psychological investments in academic tasks; Dispositions toward schoolwork such as effort exerted toward schoolwork and the extent to which they persist when academic work is difficult. *Behavioral:* Actions and behaviors taken during learning. Active engagement. Paying attention/participating.

7.Do you need to help your child/children with their class assignments and/or activities?	**Attentional/Agentic** *Attentional:* Interaction with tools, objects and technology. Also, tasks or disciplines. *Agentic:* Expression during activities. Self-directed learning. Engaging communally, collectively and critically with others (students used developmentally appropriate discussion boards through Schoology as assignments).	**Cognitive and Behavioral** *Cognitive:* Mental effort and thinking strategies; dispositions toward schoolwork; how they make meaning of the material presented to them. *Behavioral:* Actions and behaviors people take during learning.
8.Do you think your child is learning what he or she needs to learn to move on to the next grade level in the coming school year?	**Attentional/Agentic** *Attentional:* Using technology as tools and responding/developing their social attachments and engagement. *Agentic:* Directing their own learning. Engaging communally, collectively and critically with others. Using	**Affective and Cognitive** *Affective:* Emotional engagement and task values; future utility value and attainment value. *Cognitive:* Mental effort and thinking strategies.

	culturally relevant tools and technologies.	
9.If there were school-based summer school, would you send your child? Why or why not?	**Attentional** Interaction with people places and settings (school or community agency). Attention/approach to tasks.	**Affective and Cognitive** *Affective:* Intrinsic value (intellectual stimulation, interactive teaching styles that get students excited about what they're learning), and future utility value. *Cognitive:* Feelings of relevance of school; value of learning.
10.Would you change anything about the remote teaching and learning process during the past year? Please explain.	**Attentional/Agentic** *Attentional:* Social attachments, engagement and attention. Interaction with tools, objects and technology. *Agentic:* Directing their own learning. Actively expressing thoughts, opinions and interests during activity.	**Cognitive** School is important for achieving future goals; mental effort and thinking strategies. Feelings of relevance of school.

3.1.5 Data Analysis

To analyze the interview data from parents, teachers, and students, I summarized responses and recorded noteworthy individual feedback as well as common responses and outliers.

4.0 Chapter 4

4.1 Findings

Table 5 provides an overview of the sequence of events related to the shift to remote learning and includes the dates when I conducted the interviews with teachers, students, and parents.

Table 5 Sequence of Events Related to the Inquiry

Event	Date	Event
School District A Shutdown due to COVID-19 pandemic	March 13, 2020	School District A Shutdown due to COVID-19 pandemic
Phase One: Transition from in person to remote learning		Phase One: Transition from in person to remote learning
	March 13-April 2, 2020	
Close of the 2019-2020 school year	June 12-15, 2020	Close of the 2019-2020 school year

What is important to note is that all participants were responding to questions during the interviews about events that had taken place across more than a year. March 2020 through June 2021. Thus, it makes sense that the comments of participants in this study can be categorized into two phases. Phase one began March 13, 2020 and ended on June 8, 2020. During phase one, the SD-A System distributed paper packets containing lessons built using the approved district

curriculum. These packets included content within the subjects of Math and ELA and the activities that students were to complete and submit while the transition to online began. Full remote learning began on April 2, 2020 and continued through the end of that school year (June 2020). The technology used for communication and class meetings was Microsoft Teams. Various assignments were created using this same technology.

Phase two began in August 2020 and continued through June 2021. It included a phased-in approach to hybrid learning, in which students began to return to school in person beginning on April 6, 2021. The students were to return on a needs-based approach (academic and emotional). During this phase, the technology program used primarily for communication and class meetings was again Microsoft Teams, however, the district added the use of the Schoology learning platform for assignments and other tasks and activities. Families were provided with district issued laptops that were updateable with any information and items needed to participate in assessments such as NWEA Map etc. No paper packets were distributed during this phase. All tasks and assignments were submitted through Schoology.

In the sections that follow, I summarize the findings from the interviews by noting how participants responded to each interview question. Then, I provide my own personal observations.

Table 6 Teacher Interviews

Questions	***Summary of Teacher Responses***
1.How did your students adapt to the sudden change to remote learning last spring?	Both teachers felt that the students had a significantly more difficult time at the onset of the remote learning sessions (phase one) than in phase 2. Ms. Sustern stated, "that the situation was just monstrous. They enter at a third-grade level. To be able to complete

	assignments on Teams, that just didn't work for us, didn't work for the students, they weren't able to figure out the procedure for submitting assignments. That was just awful." Mr. Theophanis shared, "I felt that the students were lost due to the lack of routine and access to materials that they normally have in the school buildings." Each instructor stated that technology was difficult at first as well. Finding technology to use as well as "getting on" was problematic." Additionally, each teacher noted the difference that was made according to the level of parental involvement.
2.Do you see any difference in your students' learning remotely, compared to face-to--face teaching and learning?	Ms. Sustern stated that they felt students got away with doing very little work. It was difficult to mediate that situation. She felt that some students opted out. Ms. Sustern was frustrated and felt that they couldn't do anything about that. Mr. Theophanis stated that in phase 2 "the additional technology, apps, etc. were helpful and I will be using more of those when in-person learning resumes." Mr. Theophanis felt that this was a chance for the students to experience more "hands-on" activities such as videos, apps and more. Both teachers said that there were some students who just thrived in the remote learning setting of phase 2. They noted that some students felt that in the online

	environment their voices wouldn't be drowned out by others who may have been more talkative in the building setting. Mr. Theophanis felt that "this is attributed to not being as afraid of what people might say regarding appearance (you could talk with your camera off) or judging them."
3.How engaged are the students during the remote leaning school day?	Mr. Theophanis stated, "I didn't think that they (the student's) were as engaged as when they were with me. There were students who were watching YouTube or playing video games, etc. instead of watching class. In my opinion, I felt like, realistically I lost approximately 40% of each class (section) in terms of who was listening." Both teachers shared that there was a group of students that remained consistent (in terms of engagement and participation) throughout the year, and that they would have liked to have more engagement.
4.Do you need to help your students with their assignments and/or activities? **a.How would you describe the students' ability to engage using the chosen technology platforms?**	Both Ms. Sustern and Mr. Theophanis stated that they did need to help students with assignments. Ms. Sustern and Mr. Theophanis stated that they felt their students were able to adapt once they were introduced to the main technology platforms that the district was using (MS Teams and Schoology, as well as additional apps for practice and enrichment).

	Ms. Sustern shared that her students became "really competent" with them and "liked using them."
5.What observations have you made during the regarding students that are participating within learning hubs/centers?	Ms. Sustern noted that they "observed both ends of the spectrum." One student who was considered "very bright," became distracted and the parent had to get involved with the provider in order to get the child back on track. Ms. Sustern also stated that another provider had people that would try to help, but "basically did the work for the child because they were struggling." She shared that this wasn't good because MAP scores came out "super high" but were "super low" in the spring when that child took the test on their own. Mr. Theophanis stated that it seemed like it depended on "where they were." "Some centers attempted to create a school-like environment while the other, had people that were having conversations amongst themselves, at a table by themselves, isolated from the kids. They weren't over the kids' shoulders."

Some notable comments from the teacher interviews included gratitude toward team members and other colleagues. When reflecting on the past year and a half, Gloria Sustern stated "As a teacher, I really didn't think I was going to survive this year at some points." She continued "I cried, I was frustrated, I worried about our students, I worried about my own mental health and I feel like we didn't get the kind of support we needed from our district."

Jason Theophanis stated that although he thought "it was cool that there was more family time and less pressure for testing, I was put on this earth to teach and I cannot do it this way (remotely) to my best ability. In order to really make a difference in these kids' lives, I have to have 100% of them with me at all times."

Table 7 Student Interviews

Questions	***Summary of Student Responses***
1.How did you feel when the school was closed last spring?	Comments related to phase 1 4 out of 9 students reported that they were "sad" (Joey, Charla, Emily and Layla), while 2 students (Joanie and Blaine) shared that they thought it would be "hard." 4 of the 9 students (Ainsley, Layla, Emily and Charla) stated that they "didn't know when they would see their friends or teachers again" and 3 out of 9 (Joey, Tracey and Layla) said that they were afraid of missing out on specific school experiences such as noted field trips, etc. Additionally, 2 out of 9 (Ainsley and Emily) shared they were happy, while another 2 (Ainsley and Donte') reported that they felt overwhelmed with the change. One child (Joey) responded that he wanted to go back, another (Joanie) shared that they were concerned about not seeing faces in

	person, and a final comment from a student (Charla) noted that she was "mad."
2.How did you feel about attending classes completely online?	3 out of the 9 (Joanie, Charla and Emily) students stated that they felt "weird" about attending classes completely online. Another 3 out of 9 (Ainsley, Layla and Emily) shared that there were "technology issues" during phase 1. There were 2 out of the 9 students interviewed (Charla and Blaine), who responded that they felt "ok," while another 2 out 9 (Tracey and Layla) stated that they were "confused." Also, 2 out of 9 students (Joanie and Ainsley) shared that it was stressful to find out that they would be attending classes completely online. Additional individual student responses included that they felt, sad, angry, different, terrible, and normal/had no problem with it. Other individual responses included the notion that it could be "fun," they would "miss teachers and friends," they thought it would be "boring" or that they "didn't know how it was going to work."

a.Do you feel any differently now?	Three out of nine students (Ainsley, Tracey and Emily) stated that they are "used to it," since phase 2 began, while two more (Charla and Layla) said that they want to "stay online." Also, two students (Joey and Donte') shared that they have "no change" from phase 1 to phase 2, regarding the way they feel. Other individual students mentioned that they now feel good or that it's easier in phase 2, while another mentioned that they currently felt that it's better that the packets (Used during phase 1 of the remote learning period) and that it's "different" now, in phase 2. Some individuals mentioned the aspect of time, missing family and friends and technology issues.
3.Please explain any differences you see between learning in the school building and learning from home (or a learning hub)?	There was a myriad of responses for this particular item. Two students (Ainsley and Charla) discussed how different lunch is during the remote learning time period, while Charla and Tracey discussed more technology issues. Charla and Emily also mentioned the differences of interactions with friends. Some students (Joey and Emily) said that it was

	"more fun in school." Other individual statements for this item included that it's easier to "fall asleep," "there was less help online," "more difficult online," "moving from class to class," and that it was "easier at home." Some students shared that there was "no rushing," during the remote learning period and that there was "flexibility in schedules." Still another comment was that "travel" during the remote learning period was possible due to the fact that you could attend class from anywhere that had connectivity. Layla shared that things were "rough and different" online, and that "homework" was different from being in school. Finally, Ainsley shared that "recess" was different.
4.How do you feel about online tasks assigned by your teachers?	Four students (Joanie, Ainsley, Charla and Donte') talked about the paper/"packets" tasks (phase 1). Three students (Joanie, Layla and Donte') stated that they "didn't like it." Three others (Joanie, Tracey and Emily) shared that the tasks were "hard." Two students responded

	that the tasks were "boring/monotonous" in the beginning (phase 1). Two students also shared that the tasks were confusing while two others thought that the tasks were easier online. Individual students stated that the tasks were reasonable and the time to complete the tasks was easier online. One student (Joey) said that he "felt good" about the tasks.
a.Describe how you feel about the technology programs used during this time?	Five students (Ainsley, Joey, Layla, Charla and Blaine) stated that they "liked" the technology programs, although two students (Charla and Donte') felt that they "didn't work right all of the time." Two additional students (Joanie and Tracey) stated that "some programs were good, and some were bad." Emily felt that they were "hard" and she had some "difficulty navigating" them. Charla shared that she had "difficulty with passwords" and that the programs were "confusing."
5.What do you think about the overall learning you experienced outside of the school building during the past year?	Joanie: "Tough but amazing;" "We were able to travel;" "The teachers made it amazing;" "2021 was one of the best years I've ever had!"

	Ainsley: “Different, different than I expected.” “You guys brightened up my day;” “you guys made it fun;” “you guys are good teachers!” Charla: “It was pretty ok most of the time. most of the time it wasn’t.” “It was really nice how the teachers could do it.” “Some kids wanted to come back but couldn’t.” (phase 2) Joey: “I think all of it is really cool. We got to learn about Paul Bunyan.” Tracey: “Okay, from the beginning (phase 1) it was so confusing. We had trouble getting in; problems like connecting. So, the things I didn’t like about it was when my wifi wasn’t working. Also, some people were trying to meet when I was trying to do the Spelling test.” Layla: I’m very sad and not so much angry, but just a little bit angry that you’re not actually in school learning and learning. I like it a little bit also because I’m at home and it’s a little bit comfier.

	Emily: "I know some great new stuff." "It was still hard to focus." "Sometimes I could hear you glitch and I was just struggling. I would scream for no reason, and then when I started getting used to it, I felt bad for screaming at my mom and I was apologizing." Blaine: At times we would just do a bunch of tests, but at other times we would do a bunch of fun activities when we finish early. There wasn't as many tests when we were in school. It's going to be hard for me to remember what we did in school before remote learning. Donte': "Overall, I wish we could be back in school and the pandemic wasn't happening, but I think it was a pretty good way to get through the pandemic and learn. I would say it was pretty good. I definitely learned a lot. I think I am a little better learner and writer.

The student participants had several additional comments and shared thoughts during the interview process. Some notable discussion stemmed from item number four which focused on online tasks assigned by teachers. Emily (a student who had been retained in the past) shared the

struggles she endured, saying “I didn’t feel like I was smart enough for the tests. I didn’t want to fail.”

Donte’ (who is an advanced student in the Gifted and Talented program) stated that during the onset of remote learning (second grade at that time) “those packets, those books were horrible! I hated them. So much Johnny Appleseed! I couldn’t have imagined a worse story to read about. This year, we moved from class to class. We had different teachers and it was not monotonous.” He went on discussing the actual technology programs stating “I wanted to throw the laptop against the wall.” Additionally, he noted “I didn’t like drawing with the mouse on Nearpod. Schoology wasn’t bad.”

Table 8 Parent Interviews

Questions	**Summary of Parent Responses**
1.When Mitchell Lindy went to remote learning in spring of 2020, did you have the technology/devices and internet access to handle one or more students participating in remote learning?	Comments related to Phase 1 Out of 11 parent participants, 6 (Mrs. Smith, Mrs. Williams, Mrs. James, Mrs. Carson, Mr. Harkin and Ms. Baker) stated that yes, they had the technology/devices or internet services to handle one or more students participating in remote learning. There were four participants that purchased their own device (Mrs. Smith, Mrs. Williams, Ms. Carson and Mr. Ritter) and Ms.

	Zimmerman stated that she was "not prepared at all."
a.Do you currently have technology/devices and internet access to handle one or more students?	Nine parent participants stated "yes," while Mrs. Zimmerman and Mr. Harkin shared "no" and that the "district devices are a necessity." Mrs. Yarbrough and Ms. Baker stated that they had to purchase a stronger internet package.
2.How did your child/children adapt to the sudden change to remote learning last spring?	Four out of the eleven parent participants (Ms. Yarbrough, Mrs. Carson, Ms. Baker and Mrs. Ritter) stated that it was "difficult." Others shared that they "struggled," or "weren't prepared." (phase 1) Some individuals stated that they had concerns about the fact that they are "not tech savvy." Mrs. James stated that it was stressful and that they acclimated quickly, while Ms. Zimmerman feels that they did very well and even preferred it. Similarly, Ms. Williams said that while Joey missed the interaction with friends and teachers, he was fine with the sudden change. On the other hand, Mrs. Smith

	said that by the end of the first few months (phase 1) her children "gave up/were done."
3.If employed at this time, are you working from home?	Five participants were working from home and four were not (Ms. Zimmerman stated that one parent stayed home, and one worked). Two participants shared that they were still working, but outside of the home. Three stated that both parents were working from home and Ms. Baker said that she started out working, but later did not.
a.How would you describe working from home with a child/children participating in remote learning?	Responses varied for this item in that some individuals stated that it was not bad, while others said that it was very difficult. Mrs. Carson and Mrs. Ritter said that they were "exhausted." Mrs. James states that it was challenging to balance, but they got to spend more time with family. Ms. Yarbrough shared that she had to juggle work and managing the kids during school.

	Mr. Harkin stated that it was good after a while and routines were established (phase 2).
4.Is your child at home or attending a learning hub?	Nine out of the eleven participants kept their children at home during the remote learning period. Two (Mr. and Mrs. Ritter) sent their child to a camp.
a.If your child is attending a learning hub, what services does it provide?	The Ritters shared that they sent their children (Charla and her younger sibling Jack) to a two-week camp to get them out of the house. The camp helped with schoolwork and also "did multiple activities with the children."
b.How is your child responding to the learning hub environment?	"They liked it because it was a change of pace and a different atmosphere to get involved in because of the crazy times we were in." "I think they did pretty good. They enjoyed themselves. It was fun and tricked them into learning."
5.Do you see any differences in your child's learning remotely compared to face-to-face, in-person teaching and learning?	Six parent participants said "yes," while two said "no." Mrs. Smith shared that she was ab le to see teachers teaching and it

	was more collaborative. She saw the children "learn in a different way." Mrs. Carson felt that students were "more rushed to get things done." Mrs. Zimmerman felt like her daughter (Ainsley) was "stressed out," and Mrs. Lane said that her child (Layla) was sad.
6.If your child is at home, how engaged is he or she during the remote learning school day?	Mrs. Smith, Ms. Zimmerman, Ms. Williams and Mr. Harkin stated that their children were "very engaged," while Ms. Baker shared that her son (Blaine) was not engaged at all. Mrs. James said that Tracey was "highly engaged," and Mr. Ritter and Mrs. Lane said that Charla and Layla were approximately 75-80 percent engaged. Ms. Yarbrough, Mrs. Carson and Mrs. Ritter felt that their children were "ok" in terms of engagement during the school day, and Mrs. Smith elaborated that Joanie was "more engaged during the mornings" and differently in the afternoon.

7.Do you need to help your child/children with their class assignments and/or activities?	There were varying levels of affirmation with this item. Six of eleven parents stated a clear "yes," while three parents said "a bit." Mr. Ritter stated, "not really," while Mrs. Ritter shared that she helped with specific things like Math, ELA, etc. Mrs. Smith, Ms. Williams, Mr. Harkin and Ms. Baker also said that they helped with "specifics."
8.Do you think your child is learning what he or she needs to learn in order to move on to the next grade level in the coming year?	9 out of 11 parent participants said "yes." Ms. Yarbrough stated "no," and Mrs. Carson shared that she thought that they "gained some skill." Mrs. Carson and Ms. Williams elaborated that they felt the "children would have learned more, if they were in school." Mrs. James, Mrs. Lane and Ms. Yarbrough said that they would see what happens in the next grade. Ms. Yarbrough added that she feels Emily "may struggle a bit."
9.If there were school-based summer school, would you send your child? Why or why not?	9 out of 11 parent participants stated that they would not send their child to summer school of any sort. Six parents stated that the

	reason why was "well-being," "relaxation" and that they felt that "children needed a break." Ms. Yarbrough said "yes." Ms. Zimmerman and Ms. Williams opted to send their children to camp, while Mrs. Carson shared that they would "be away most of the summer." Mrs. Lane and Ms. Williams shared the fact that the wanted their children to "have fun." Ms. Yarbrough, Mrs. Carson and Mr. Harkin said that if the children "absolutely needed or were required to attend, then they would send them."
10.Would you change anything about the remote teaching and learning process during the past year? Please explain.	4 out of 11 parent participants said yes, they would change the 2020 (phase 1-initial onset) portion of the remote learning period. 4 out 11 parents stated that they would change specific items and three parents shared that they would not change anything. Ms. Yarbrough shared that she would change just that the children "were out of school." Mr. Harkin and Mr. Ritter would change things on the "district level." Ms. Baker would like to

	change rules around being on "camera." Ms. Williams wants to change "the way teachers communicate with families regarding schoolwork and grades" during remote learning, while Ms. Zimmerman and Mrs. Ritter would like to change "technology issues." Mrs. James didn't have changes regarding her child, but many for other children and the district.

The parent participants provided additional commentary during the interview. I have provided a summary of notable responses below.

In regard to phase 1, the initial onset of remote learning, Mrs. Smith shared that her children responded, "Very badly!" "It was a rough transition. Our kids' personalities are so different. It was very, very, very difficult on Billy (younger child) in the packet (given during initial onset). It was stuff that our kids had learned in the fall. The overall inappropriateness of that was really hard for Joanie."

Mrs. Lane stated that although Tracey wasn't familiar with it, she became acclimated quickly "So, I think I can recall when they first started teaching the district how to log in to the computers, with the email, the username and all of that stuff. I think it was a little murky at first…it was unclear, there wasn't a clear direction of how they should log on."

Mr. Ritter said, "Nobody had the answers." "This is what we are being told to do. We have to follow the rules. Was it the perfect thing to do? No, but no one has really been through

something like this since the Spanish Flu." Mrs. Ritter stated that, "It was pretty hard at first. They didn't understand why they weren't in school. We had to pick up supplies and the children wanted to play with their friends and could not. It was a very slow transition, but once they understood what was going on, they understood that they had to sit down and do the work. We sat down and said that this was the way it was going to have to be for a while." "They got it. They enjoyed "schooltime." We did "schooltime" every day."

In regard to describing the work-from-home experience while the children were participating in remote learning, Ms. Yarbrough shared that it was "Very, very difficult. It was kind of like them realizing that even though they're at home, they were in school. It was the same for them realizing that Mommy's home with us, but I'm at work." "so, it was very hard…like juggling." "It was just like Mommy, can you do this, Mommy, can you pick, Mommy, I need you!" "It was trying to juggle like even though I'm here with you guys, I'm still working."

4.1.1 Summary

After reviewing the data from teachers, students, and parents, several commonalities emerged within each group. In this section I summarize those findings.

Teachers, students and parents all discussed the remote learning situation in two phases. They frequently referred to "March of 2020" and compared that to the "fall" of the 2020-2021 school year. It was clear that participants saw the remote learning period as a two-part phenomenon. Many comments began with the "first portion" or "initial onset" of the school shutdowns. The participants found that there was a distinct difference between student engagement from the period of March to June of 2020 to June 2021. Comments and descriptions from teachers regarding the onset of remote learning in March of 2020 included words and phrases

such as “monstrous,” “just awful,” and “students opted out.” Additionally, there was mention of technology being “problematic.” Themes that arose in the data from March 2020 to July 2021 from teachers included: extreme stress, inability to access students, and lack of control in relation to student success. Positive themes such as gratefulness for colleagues and their helpful and supportive relationships during this time also emerged. In contrast, both teachers discussed students being “able to adapt” “a lot better,” in fall 2020. Each teacher also felt that the 2020-2021 school year worked better than the onset in March of 2020.

During the initial period of remote learning, the majority of the students expressed feeling “sad,” and uncertain about when they would see their classmates and teachers again. Many students described technological issues which was overwhelming, at times, for the children. The students were not happy with the process for submitting assignments at the initial onset in 2020, with many stating that they “did not like the paper packets” distributed by the district. There was a theme of frustration and stress due to this confusion. However, during phase two, teachers, students and parents commonly stated that classes, submission of assignments and overall flow of remote learning was drastically different. They felt more at ease. Families were becoming comfortable in routines and procedures for distance learning. With distribution of laptops for each child in the district in place, established learning environments in homes, access to learning centers and a firm schedule fixed for the school year, the distance/hybrid learning option that most schools across the country were now engaged in had become more palatable. Though the preferred method of learning, as stated by the majority of participants, was in-person learning that takes place in a physical building, the situation brought on by shutdowns due to the COVID-19 pandemic was unavoidable.

Parent themes in the data showed that while they felt mostly prepared (with computers and internet) for the onset of remote learning, they were overwhelmed with the tasks and implications of the set up with their children participating in new and different learning environments. Another theme that emerged from the parent data is that nine out of eleven parents interviewed worked (in some capacity) inside and outside of the home, forcing families to endure major shifts and accommodations in daily activities. When responding to interview item number four regarding whether or not the child stayed home or attended a learning hub, multiple parents responded, "I was school!"

Parent participants shared that their child was not as engaged and experienced several distractions as well as missing peers and teacher interaction. However, the majority of parents commented that their students' engagement was "okay." They also share that they helped their children with specific tasks.

Themes that arose around student learning (item 8) were that students learned what they needed in order to satisfy grade-level requirements and move to the next grade level, however, there was a smaller, yet significant point that parents made about waiting to see how well the child would perform in their upcoming grade-level.

Another theme related to summer school. The overwhelming feeling from parents was that children needed a break, and a chance to relax, travel or have fun instead of being in school over the summer. The majority of parents were concerned about their child's well-being. Still, another subcomponent, was that if there was a dire academic need, or if their child was required to attend summer school, they would definitely send them.

In their final responses, parents felt a need for change. The theme that developed was one in which parents again, divided the remote learning period into two categories (initial onset of

remote learning in March through June 2020 and September through June 2021) to share their opinions on changes that should be made. The beginning of the shutdown was the most confusing and challenging for them, whereas in fall 2021, they felt a bit more prepared and began to develop a routine in their households. Most parents discussed changing the way that student work was completed and submitted, with the paper packets (turned in through photographs) being the main source of contention. The theme here was that the packets were not a source of enrichment or even grade level appropriate. Additionally, technology and its inconsistency were at the forefront of the responses. Parents felt unprepared not only in whether or not they had it (devices, internet access, etc.) but also in their ability to "log in correctly" and access the programs used for class meetings and completing various assignments outside of the packets. They spoke of a better rollout with more support in this area.

A final observation of common themes in parent responses was that they were extremely appreciative of the teachers' effort. They commented on how helpful and "amazing" faculty and staff were as they traversed this challenging experience.

4.1.2 Attentional and Agentic Engagement

In garnering responses from teachers, students and parents, I designed the interview protocols to tap into aspects of attentional and agentic engagement with a focus on cognitive, affective and behavioral features. Attentional engagement refers to students' social attachments, engagement and attention (Pekrun & Linnebrink-Garcia, 2012). According to Lawson and Lawson (2013), research indicates students' attentional engagement may include several ecological features and processes. These nested features include students' engagement with various tools/objects/technologies (e.g., computers), tasks (e.g., labs/assignments), activities or

disciplines (e.g., dance or math), people (e.g., peers, teachers, coaches), and places/social settings (e.g., school or community agency).

Agentic engagement refers to students' constructive contribution to the instruction they receive. Students share their interests and provide input. "It is a purposive, proactive and reciprocal type of engagement that is integral to promoting important student outcomes (e.g., learning achievement) (Reeve, 2012)

4.1.3 Findings Related to Attentional and Agentic Engagement

The main findings related to attentional and agentic engagement have to do with technology and engagement with the curriculum. Specifically, in analyzing the initial onset of remote learning in March 2020, teachers, students and parents collectively stated how stressful and overwhelming it was to convert to learning online. Students especially noted their concern about other classmates and friends as well as missing out on traditional school events, while parents noted frustration with not only acquiring the proper technology and internet capability, but also being able to assist their children in logging in successfully. Teachers stated how upsetting it was as they entered into online learning and having a lack of control regarding student attendance and general engagement, feeling like they had lost many of their students. These themes centered around the attentional engagement tenets of social attachments, and interaction with tools, objects, technology and tasks. Additionally, each group of participants expressed an extreme dislike for the paper packets that were distributed during the in-school to online transition. They were frustrated with the process of submitting these assignments as well as their content. The theme with parents and students centered around their disappointment with academic and cultural content. They parents felt that they were not challenging and monotonous, while the students

agreed that they were tedious and boring. Teachers were frustrated and overwhelmed with the multiple ways families were submitting the work, with some being emailed and others being photographed and sent through texts, Talking Points, etc.

When examining the agentic areas, the theme gathered from teachers, and parents was that students were not as engaged during this time period. Some parents even noted that their child "checked out" by the June.

Notably, all groups agreed that things got better during fall 2020, stating that they felt a bit more prepared. Many families stated that they got into a routine a home. However, the overall collective theme was that remote learning, though much improved and palatable, did not match the notion of attending school in person.

4.1.4 Findings Related to Cognitive, Affective, and Behavioral Engagement

Transitioning to the areas of cognitive, affective, and behavioral engagement categories, there were multiple items within the parent interviews that centered around cognitive engagement. When questioned about their child's cognitive engagement during the remote learning school day, Ms. Baker responded that her son was not engaged very much due to technical difficulties and multiple distractions. Both teachers shared that their students "were able to adapt once they were introduced to technology platforms." This shows a level of mental effort as well as thinking strategies and varying levels of self-regulation.

In terms of affective engagement, attitudes and emotions are of primary interest. When analyzing the affective student engagement construct, the themes of stress, fear and emotion was notable in that teachers, students and parents all mentioned these sentiments. When asked about

how their students or children adapted to the sudden change of transitioning to remote learning, the overwhelming response was sadness, worry over whether or not they would see friends and teachers and how this whole thing was going to work. Parents' comments regarding this issue included Ms. Baker, Mrs. Carson, Mrs. Ritter and Ms. Yarbrough, stating "it was difficult." Ms. Williams discussed how her son Joey "missed his friends," while Mrs. Baker noted that "Blaine was upset that he could not meet his teachers in person."

The affective construct foregrounds feelings of belonging and school connectedness are key. It includes relationships with peers and the intrinsic value of learning. The students responded by sharing that they were "afraid of missing out on school experiences." Ainsley and Donte' said that they felt overwhelmed, while Joey responded that he "wanted to go back."

The teachers responded to items 1 and 3 (see Appendix A.1) under this construct by stating that students had a significantly more difficult time at the onset of remote learning. Mr. Theophanis stated, "I didn't think that the students were as engaged as they were when they were with me." These responses support the tenet of emotional engagement, task values and relationships with teachers and peers.

The behavioral engagement construct focuses specifically on the observed behaviors exhibited by the students. Attendance, participation, school rules, and disciplinary incidents are all relevant. These behaviors can either support or hinder student success. Under this construct, teachers especially, noted attendance and participation. Mr. Theophanis responded, "I felt, realistically, I lost 40% of each class during remote learning," while Ms. Sustern stated earlier that "students got away with doing very little work" and that "some students opted out."

Parents shared a host of comments around their child's participation. The majority of parent stated that they had to help their child during the school day. Mrs. Ritter said, "I just made sure

that they did the assignments," and Mrs. Baker noted that her husband was concerned that Blaine wasn't paying enough attention during the day." She also shared that "he wasn't into it at all. He didn't want to do it and said that he already did this, etc."

Ms. Yarbrough also noted that she had to check to make certain Emily was logged into her classes and working. She shared that during the first portion of remote learning, "I really wouldn't call them still being in school because I couldn't be home with them, so I know that they really weren't doing the work in the workbook that they were given and things like that." She continued, stating "I know it would have been a whole lot better had they been in the building in person, because again, like I was saying earlier, it was very distracting for them."

Layla, a student, shared that "I noticed that people call me a lot. They kept on calling me and the texts would pop up on the screen and stuff. That got a little bit on my nerves."

Overall, the interviews revealed that over time students and families adjusted to online learning. The majority of participants felt that although they eventually figured out a functioning routine and felt more at ease with their devices, technology platforms, and maneuvering through varying glitches, they preferred being at school and fully in person for their educational needs.

4.1.5 Personal Observations

As a teacher, I was intimately involved in the events described by teachers, students, and parents in their interviews. In this section, I offer my personal experiences and observations. Specifically, I observed several academic and behavioral changes in the students and families during remote teaching and learning

After the initial shutdown in March of 2020, teachers began planning and training for the launch of remote learning. In addition to professional development and curriculum planning,

instructors worked on educational technology that would be engaging for students as they commenced on this new path. Programs such as Storia, Epic, Edmentum, Bitmoji Classrooms, and Microsoft Teams for (live video lessons). When classes began, I realized that some of the students that may have struggled in the actual classroom, began to thrive online. They were more attentive and asked more questions. Contrarily, some students became less involved and shrank from participation or the completion of assignments. Finally, other students had issues with attendance in general. To make all students comfortable, teachers didn't push them to have cameras on at all times, as several students struggled with anxiety from the uncertainty and unfamiliarity of this environment.

During phase one of remote teaching and learning the distribution of laptops to all students was still occurring therefore, paper packets were dispersed to maintain equal opportunities for the completion of assignments and practice. Without the acquisition of a program such as Google Classroom or Canvas as a central location for posting assignments or discussions, the main teaching platform was Microsoft Teams. Students and families would submit assignments from the paper packets (provided by the district for pick-up) by means of email, Talking Points (district communication platform for families) or the texting of photographs which showed completed work. As important as communication had been previously, interaction with families became absolutely vital. Step by step directions for accessing MS Teams, submission of assignments, and scheduling were provided to families on a regular basis. This helped to lessen the pressures of all of the uneasiness and uncertainty of this time. Parent apprehension and angst seemed to run high during phase one, however their complimentary attitude when given an abundance of information, especially that which eased their minds as well as their children's was noticeable.

As the pandemic continued and education remained in the forefront, district administration carefully monitored federal, state and county guidance as well as the fluctuating numbers locally surrounding COVID spread. When the end of the summer drew near, decisions regarding reopening were being contemplated by multiple school districts. The question of the continuation of full remote, hybrid or full return was on the table. Eventually the decision was made to remain full remote going into the 2020-2021 schoolyear. As a teacher to the participants of this study, I observed widespread disappointment when students discovered that they would not return to Mitchell Lindy. A handful of students noted that they enjoyed learning remotely, with their parents agreeing that they seemed to perform well from home. Their reasoning was that they were very nervous about returning without fully understanding how their health and safety would be monitored with the virus still affecting society in large numbers. For others, the flexibility that learning from home provided was key. Those students were present for online classes on a regular basis with very little absences. They put forth the most effort during class vis MS Teams and their attitudes were uplifting and positive. The contributions of these particular students were drivers for others in the classes. However, paradoxically, the same students that enjoyed learning from home were the very ones who longed to be back in the buildings learning in person. They stated that they missed their classmates, teachers, and school traditions. This fact made me realize the fragile, yet harried nature of the aspect of social and emotional well-being for students, teachers, and families. My observation of the students as a whole was that they were sensitive and in touch with their own feelings, though confusing, as well as those of their classmates and family members. Their concern for others was significant and they discussed it often. Many times, we would spend additional time talking about something a student was feeling, whether happy or not. Students

commented on each other's accomplishments and trials, with many instances being driven by each other as I guided their conversation.

Academically, student effort in their participation and classwork and assessment was polarized throughout the school year. On two occasions, I stopped class and reviewed expectations and reminded the children that things were as close as possible to being inside the classroom during a regular school year. This was a message that was meant for all students. The lines between high achieving students and those that needed additional scaffolding were sometimes blurred. The surprises never ceased in terms of what students might bring to the table each day.

In the end, I observed a strong bond between my colleagues, students and families in the remote teaching and learning time period. The level of support for and from each other was mostly high. Families were grateful and admiring of phase two. They often noted a "huge difference" between the two phases.

5.0 Chapter 5

5.1 Discussion

In this section, I situate my inquiry as a case study within a specific framework and connect my findings to the current literature related to student engagement during the COVID-19 pandemic. I also provide personal observations related to the situation in my school at the present time. Then, I discuss the implications from my inquiry.

5.1.1 Case Study and Framework

This inquiry was a case study informed by a specific framework centered on agentic and attentional engagement and behavioral, cognitive, and affective constructs. I was both an observer and an active participant in the inquiry context. According to Yin (2018, p. 15), a case study investigates a "distinctive situation" whose "design, data collection, and analysis [is guided by] theoretical propositions." In addition, a case study "relies on multiple sources of evidence" that can be triangulated to determine converging themes.

In the present inquiry, the distinctive situation was the impact of the COVID 19 pandemic on Mitchell Lindy School's third grade teachers and students and the parents of those students who participated in interviews that I conducted from June 23 to July 7, 2021. The theoretical propositions guiding the design, data collection, and analysis of the interview data was a framework centered on attentional and agentic engagement with a focus on behavioral, cognitive and affective constructs. Engagement is a complex concept and a framework with specific features

allowed me to develop the interview questions and analyze the interview transcripts. The multiple sources of evidence included interviews with 2 teachers, 17 students, and 11 parents. A significant factor in the case study was my positionality as a third-grade teacher in Mitchell Lindy. Across the interviews and informed by my personal observations and experiences, these important themes emerged:

Teachers

•Sudden transition to remote was trying: Both teachers felt that teaching remotely in Phase One was challenging in many ways.

•Felt that students' ability to attend waned: Some students struggled with participation (for multiple reasons) or attendance.

•Agreed that Phase Two was more successful: Teachers felt more at ease during this phase and reported that some students thrived in the online environment.

Students

•Sudden transition to remote was trying: Students felt afraid, nervous, uncertain and concern for family, friends and teachers. They were apprehensive about accessing assignments, live classes, etc.

•Missed classmates, teachers and school traditions

•Larger percentage of students were able to feel a sense of togetherness online: Most students reported that they enjoyed coming together for the Morning Meeting and the work that they shared online during live classes.

•Excited to return

Parents

•Satisfied with the overall remote teaching and learning process

•Phase Two provided a much more cohesive process

•Learning occurred: Each parent felt strongly that learning did occur.

•Parents felt supported in this endeavor

•Parents commended teachers, school administrators and staff: Parents agreed that the Mitchell Lindy faculty, staff and administration were some of the best in the district in providing the best possible learning environment during remote teaching and learning. They were highly complementary of the efforts put forth.

•The children missed friends and school traditions: Parents reported that their children's concern for their friends and teachers was notable during the time they were out of the physical school environment.

•Felt more learning would have occurred in person: Many parents stated that although they felt that their children did well during remote teaching and learning, they would have learned more if they had been face-to-face.

5.1.2 Current Commentary Related to the COVID-19 Pandemic.

According to a survey of teachers reported in Santibanez and Guarino (2021), in May 2020, 23% of students were considered 'truant' (i.e., not logged into any online work, not making contact with teacher, etc.) and close to 45 % of teachers reported that students had 'much lower' levels of engagement with schoolwork than before the pandemic" (EdWeek Research Center, May 2020).

In the present study, multiple parent participants stated that their children "checked out" or were significantly less engaged toward the end of phase one (March-June 2020). They described

their children as detached, frustrated, and sad because of the adjustment to the new learning arrangement.

These researchers investigated the potential impacts of the pandemic by using longitudinal data in order to forecast outcomes in several areas, specifically how specific subgroups could be affected. They also addressed these questions: (a) are students in the earlier grades losing more ground than students in middle and high school? And (b), is the social-emotional development of students affected by their absence from school?" (Santibañez & Guarino, 2021, p. 392). The focus on social-emotional development is most connected to my inquiry.

According to Santibanez and Guarino, social-emotional effects were measured within four constructs: (a) self-management, one's ability to regulate emotions, thoughts, and behaviors; (b) Growth mind-set, the belief that one's intelligence can grow with effort; (c) self-efficacy, the belief in one's ability to achieve an outcome/goal; and (d) social awareness, the ability to empathize with others from diverse backgrounds and cultures and to understand social and ethical norms.

According to Santibanez and Guarino, "Being away from school for 10 days results in a 5% of a standard deviation loss in ELA and an 8% SD loss in mathematics." (p.395). Additionally, they found that the negative effects of absenteeism were substantial for all students, but were the most pronounced for students classified as Free and Reduced Priced Lunch, students with disabilities, and homeless/foster children. Moreover, the findings for social emotional learning (SEL)were detrimental for all subgroups examined. "Absences harm social awareness and self-efficacy more or less equally across groups. Absences harm non-vulnerable students more than others in self-management, and they harm non-vulnerable students and students with disabilities slightly more than others in growth mind-set." (p. 398).

Santibanez and Guarino (2021) documented the negative effects of the pandemic on student achievement as well as social-emotional learning, sharing that significant numbers of students were absent for longer than usual during the pandemic as well as absenteeism being highest among students of color and disadvantaged groups (Edweek Research Center; Hamilton et al. 2020; Besecker et al., 2020). This idea was supported by the results of a survey reported by Bailey, Duncan, Murnane, and Yeung (2020) which documented that low-income families are more likely to be "frontline workers" (Berube & Bateman, 2020; Cole 2020). Additionally, low-income families are less likely than affluent families to have high-quality internet service and computers in their homes (Stelitano et al., 2020), and that they are less able to provide private tutoring and other forms of enrichment (Lee et al., 2021).

My findings suggest a close connection with these findings. Families stated that they definitely were not as involved with their children's education during phase one of the pandemic. The level of involvement relates to student engagement as well as technology usage. Several participants spoke of having to obtain stronger levels of internet service and personal computers. Many students dealt with bothersome glitches as well due to multiple people in their households working and participating in online learning. Furthermore, tracking the completion of student work proved daunting as a large number of students were not completing and submitting assignments on a regular basis during. Even as remote learning resumed in fall 2020, teachers spoke of the difficulty in getting students to attend classes on a consistent basis.

In regard to connections with social-emotional learning, participants stated that they felt sad, overwhelmed, and stressed during phase one. They were unsure of how remote learning would work and worried about friends and family on a constant basis. Students fretted about the

submission of assignments as well as their general daily interactions with one student stating that he wanted to "throw his laptop against the wall!"

Local concerns about the effect of the shift to remote learning on student achievement were expressed in a September article in the Pittsburgh Post-Gazette. Reporter, Goldstein stated that "Brian Gill (a senior fellow at Mathematica and dir. for the Mid-Atlantic Regional Education Laboratory foe the U.S. Dept. of Ed.) said much of what was found in Pittsburgh was consistent with data from schools across the country. Learning did occur during the pandemic, he said, but not at the pace it would have during normal times." This is in line with what parent participants felt. Parents stated that they definitely felt that their children "learned what they needed to learn" in order to progress to fourth grade, however, they agreed that it would have been more had the children been in school.

In the article from the Post-Gazette, Gill stressed the term "lag" instead of loss, saying, "We don't use the term learning loss because in general we don't see a loss in absolute terms-students did learn something." Goldstein's report continued, sharing that the researchers said, "the growth lag was largest for students in elementary grades, and that the percentage of students failing at least one course increased more for economically disadvantaged students than those who were not"(Lavallee, n.d.).

The article is in accord with those of Santibanez and Guarino (2021) and Bailey et al. (2020) in that one of the "top predictors of course failure was chronic absenteeism and that there is an identifiable group of students who were most negatively affected by the pandemic and remote instruction and who are probably in most need of additional support as students are returning to school this fall." (p. 397)

On a positive note, Goldstein shared that Nina Sacco, an assistant superintendent, stated, "While the analysis revealed that relative to how other districts did across the country, Pittsburgh Public Schools students had similar or slightly larger gains in reading and mathematics."

5.1.3 Personal Observations

While my inquiry did not address student learning, I can draw upon my experiences with students in the current semester to comment on what I am observing.

In fall 2021, students returned to school elated to see friends, teachers and staff. Family participation in "Back to School Night," (a yearly event in which SD-A students meet their new teachers and are informed of which classes they will be attending) as well as attendance at parent teacher conferences was extremely high. However, I noted that there was a tangible difference among students with some students showing advanced ability and a need for continued enrichment and others showing a lack of skills required at their current level. These latter students are in dire need of additional assistance that is personalized with attention given to individual time with teachers or very small groups focused on specific instructional targets. These particular students are not only lacking in grade-level skills, they are also demonstrating difficulty in staying focused all day. This is particularly problematic given that the school day has been extended twenty minutes. There is also an alarming trend for early dismissal requests. This can be linked to what student schedules were like during the remote learning period. During that time, in order to reduce time spent on screen, students only needed to "check in" during the afternoon hours. They could get extra assistance from their teachers or use the time working asynchronously on assignments and practice.

I have observed that students' emotional needs are also high, with multiple parents requesting information on therapy, counseling or groups for their child. Students are extremely anxious with any change in routine during the school day, even changing the location for a bathroom break from time to time due to distancing procedures. They ask, "Where are we going?" "Why" and "Will this happen regularly?" Even though students are regularly scheduled by grade-level for bathroom breaks, they consistently ask "Are we going to have a bathroom break?"

Comments from my teacher colleagues reveal that they are overwhelmed. They are happy to see their students and work with them face-to-face but find themselves in frequent discussions and conferences with parents and families regarding their questions and concerns around the academic and behavioral progress of their children as well as schedules, attendance, and technology questions. With state testing having been postponed until fall, the school year opened up with assessments. However, pacing for the regular curriculum cannot be ignored. Teachers are realizing the workload it takes to get many of their students to a minimum of "grade-level," let alone move them forward at a regular pace. This is a perplexing and daunting task for teachers as they trying to stay healthy and address student, classroom and family needs all at the same time.

5.1.4 Conclusion

On Friday, March 13, 2020 school let out for the weekend. Neither teachers nor students realized that it would be the last time they saw one another for what would be more than a year and a half. Perhaps it was a sign that when teachers were allowed to return into the building to organize their rooms for students' return, the calendar as well as everything in the classroom remained frozen in time. The calendar was still fixed on Friday, March 13.

As the primary investigator in this study, I listened as student participants shared their story regarding stress levels, sadness, anger and worry over what was to come. The students were concerned about their own academic success as well as the well-being of one another. They wanted, greatly, to see each other and know that everyone was safe. Moreover, I observed students showing anxiety at more frequent levels than previously noted. By their own admission, there was yelling, screaming, shutting down, giving up and disengagement until families worked together to build a routine. After a routine was established, students, families and teachers were able to be productive.

As a scholar and practitioner, I learned to use my years of experience combined with observation to monitor and adjust to the unfamiliar and unique challenges this pandemic presented and make adjustments based on the needs and perceptions of students and families. Additionally, I worked collaboratively with colleagues and administrators in order to maneuver these challenges in a safe and effective manner.

As a leader in this environment, it was important to simply listen, watch, and grow. The teachers who participated in this inquiry spoke of surviving only because of the help of their colleagues. Similar to the way siblings function together in times of trauma or need, the exclusivity of our situation as educators on the front lines provided an opportunity to step forward with innovative pedagogy to generate solutions. I kept my students and families calm and reassured when they were in need of assistance or information. The relationships built proved to be practical and functional as well as supportive.

5.1.5 Future Implications

As educators, the ability to adapt is crucial. The COVID-19 pandemic has changed the world of education, for the foreseeable future. There will be no returning to "normal" learning environments. This is the revolution and change that has been looming. The shift is the current learning climate. Student and family needs are in the forefront and will need to be addressed immediately. It is my intention to use the traumatic events of the unforeseen school shutdown and subsequent rush to sustain teaching and learning, to initiate an educational environment that focuses on tackling the disparities among my students. It is absolutely clear to me that the disparities exist. When reflecting on the engagement constructs of this study, as well as the findings, there are indications that student engagement acts as a mediator between a lesson presented and a lesson learned. There is a fundamental connection among the contexts of schooling, including home life, peers, community, and the classroom. All of them have an impact on a student's learning success (Christenson, et al., 2012; Rosenblatt, 1982; 1985; Kawi, 2014).

Three areas stood out as I completed this inquiry. They are:

•Racial and economic disparities

•Socioemotional health and its correlation with student success

•The need for advance planning to address potential educational emergencies

It is my intention to communicate the findings of this particular study with school and district colleagues. As a member of the Instructional Cabinet Team, which focuses on school leadership, professional development and best practices, I am in a position to share what I have learned and I intend to take advantage of that opportunity.

Appendix A.1 Teacher Interview

1.How did your students adapt to the sudden change to remote learning last spring?

2.Do you see any differences in your students' learning, remotely, compared to face-to-face, teaching and learning?

3.How engaged are the students during the remote learning school day?

4.Do you need to help your students with their assignments and/or activities?

a. How would you describe the students' ability to engage using the chosen technology platforms?

5.What observations have you made regarding students that are participating within learning centers and hubs?

Please add any additional comments regarding your remote teaching and learning experience over the past year.

Appendix A.2 Student Interview

1. How did you feel when the school was closed last spring?

2. How did you feel about attending classes completely online?

a.Do you feel any different now?

3.Please explain any differences you see between learning in the school building and learning from home (or a learning hub)?

4.How do you feel about online tasks assigned by your teachers?

a.Describe how you feel about the technology programs used during this time?

5.What do you think about the overall learning you experienced outside of the school building during the past year?

Please add anything that you would like about your experience with remote learning for the past year.

Appendix A.3 Parent Interview

1.When Dilworth went to remote learning in spring of 2020, did you have the technology/devices and internet access to handle one or more students participating in remote learning?

a.Do you currently have the technology/devices and internet access to handle one or more students?

2.How did your child/children adapt to the sudden change to remote learning last spring?

3.If employed at this time, are you working from home?

a. How would you describe working from home with a child/children participating in remote learning?

4.Is your child staying at home or attending a learning hub?

a.If your child is attending a learning hub, what services does it provide?

b.How is your child responding to the learning hub environment?

5.Do you see any differences in your child's learning remotely compared to face-to-face, in-person teaching and learning?

6.If your child is at home, how engaged is he or she during the remote learning school day?

7. Do you need to help your child/children with their class assignments and/or activities?

8.Do you think your child is learning what he or she needs to learn to move on to the next grade level in the coming school year?

9.If there were school-based summer school, would you send your child? Why or why not?

10.Would you change anything about the remote teaching and learning process during the past year? Please explain.

Please add any additional comments, opinions or noticings related to remote learning during the COVID-19 pandemic.

References

Archambault, I., & Dupéré, V. (2017). Joint trajectories of behavioral, affective, and cognitive engagement in elementary school. The Journal of Educational Research, 110(2), 188–198. https://doi.org/10.1080/00220671.2015.1060931

Axelson, R. D., & Flick, A. (2011). Change: The Magazine of Higher Learning Defining Student Engagement. https://doi.org/10.1080/00091383.2011.533096

Babatunde Adedoyin, O., & Soykan, E. (2020). Covid-19 pandemic and online learning: the challenges and opportunities. https://doi.org/10.1080/10494820.2020.1813180

Barro, R. J., Ursúa, J. F., Weng, J., Ursúa Dodge, J. F., & Weng EverLife, J. (2020). The Coronavirus and the Great Influenza Pandemic: Lessons from the "Spanish Flu" for the Coronavirus's Potential Effects on Mortality and Economic Activity. SSRN. https://doi.org/10.3386/W26866

Ben-Eliyahu, A., Moore, D., Dorph, R., & Schunn, C. D. (2018). Investigating the multidimensionality of engagement: Affective, behavioral, and cognitive engagement across science activities and contexts ARTICLEINFO. https://doi.org/10.1016/j.cedpsych.2018.01.002

Centers for Disease Control and Prevention (2021) CDC Museum COVID-9 Timeline https://www.cdc.gov/museum/timeline/covid19.html#Late-2019

Chapman, E. (2002). Alternative Approaches to Assessing Student Engagement Rates. Research, and Evaluation, 8, 13. https://doi.org/10.7275/3e6e-8353

Christenson, S. L., Wylie, C., & Reschly, A. L. (2012). Handbook of Research on Student Engagement. Handbook of Research on Student Engagement, 1–840. https://doi.org/10.1007/978-1-4614-2018-7

Goldring, E., & Smrekar, C. (2002). Magnet Schools: Reform and Race in Urban Education. The Clearing House, 76(1), 13–15. https://doi.org/10.1080/00098650209604939

Domina, T., Renzulli, L., Murray, B., Garza, A. N., & Perez, L. (2021). Remote or Removed: Predicting Successful Engagement with Online Learning during COVID-19. Socius: Sociological Research for a Dynamic World, 7, 237802312098820. https://doi.org/10.1177/2378023120988200

Finn, J. D., & Zimmer, K. S. (2012). Student Engagement: What Is It? Why Does It Matter? Handbook of Research on Student Engagement, 97–131. https://doi.org/10.1007/978-1-4614-2018-7_5

Kaden, U. (2020). COVID-19 School Closure-Related Changes to the Professional Life of a K–12 Teacher. Education Sciences, 10(6), 165. https://doi.org/10.3390/educsci10060165

Lavallee, P. (n.d.). Changes in academic achievement in Pittsburgh Public Schools during remote instruction in the COVID-19 pandemic.

Lawson, M. A., & Lawson, H. A. (2013). New Conceptual Frameworks for Student Engagement Research, Policy, and Practice. Review of Educational Research, 83(3). https://doi.org/10.3102/0034654313480891

Mckellar, S. E., Cortina, K. S., & Ryan, A. M. (2019). Teaching practices and student engagement in early adolescence: A longitudinal study using the Classroom Assessment Scoring System. https://doi.org/10.1016/j.tate.2019.102936

Reeve, J., Cheon, S. H., & Yu, T. H. (2020). An autonomy-supportive intervention to develop students' resilience by boosting agentic engagement. International Journal of Behavioral Development, 44(4), 325–338. https://doi.org/10.1177/0165025420911103

Santibañez, L., & Guarino, C. M. (2021). The Effects of Absenteeism on Academic and Social-Emotional Outcomes: Lessons for COVID-19: Https://Doi.Org/10.3102/0013189X21994488, 50(6), 392–400. https://doi.org/10.3102/0013189X21994488

Sostek, A. (2020, September 13). COVID-19 in Pittsburgh: A timeline of the first six months. The Pittsburgh Post Gazette. https://www.postgazette.com/news/health/2020/09/13/COVID-19-Allegheny-County-Pittsburgh-six-months-data/stories/202009130156

Tanzer-Gruener, R., Li, J., Eilenberg, S. R., Robinson, A. L., & Presto, A. A. (2020). Impacts of Modifiable Factors on Ambient Air Pollution: A Case Study of COVID-19 Shutdowns. Environmental Science and Technology Letters, 7(8), 554–559. https://doi.org/10.1021/ACS.ESTLETT.0C00365/SUPPL_FILE/EZ0C00365_SI_001.PDF

Yazzie-Mintz, E., & McCormick, K. (2012). Finding the Humanity in the Data: Understanding, Measuring, and Strengthening Student Engagement. Handbook of Research on Student Engagement, 743–761. https://doi.org/10.1007/978-1-4614-2018-7_36

Yin, R. K. (2018). Case study research and applications. Sage.

Zhang, L., Zhang, D., Fang, J., Wan, Y., Tao, F., & Sun, Y. (2020). Assessment of Mental Health of Chinese Primary School Students Before and After School Closing and Opening During the COVID-19 Pandemic. JAMA Network Open, 3(9), e2021482. https://doi.org/10.1001/jamanetworkopen.2020.21482