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Improving Student Engagement Through Instructional Design During the COVID-19 Pandemic

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IMPROVING STUDENT ENGAGEMENT THROUGH INSTRUCTIONAL DESIGN DURING THE COVID-19 PANDEMIC

by

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"IMPROVING STUDENT ENGAGEMENT THROUGH INSTRUCTIONAL DESIGN DURING THE COVID-19 PANDEMIC," a Doctoral research project prepared by JILL KIRKSEY-DIEHL in partial fulfillment of the requirements for the Doctor of Education degree in Educational Leadership.

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ABSTRACT

This Improvement Science Dissertation in Practice (ISDiP) aimed to investigate the improvement of student engagement through instructional design of remote and hybrid learning models in the second school year of the COVID-19 Pandemic using an improvement science dissertation in practice (ISDiP) framework. The ISDiP follows a district network improvement community (NIC) at a high poverty K-8 public school district in Washington state as they planned, implemented, studied, and reflected on the educational outcomes of initiating the instructional models with upper elementary grade level students during the final term of the 2020-2021 school year. Through a 90-day cycle, the NIC developed and implemented four systemic instructional design strategies for improvement of behavioral, academic, emotional, and cognitive student engagement. These strategies included small group instruction, social and emotional learning, family engagement, and weekly Professional Learning Community (PLC) meetings for teachers. This research identified positive indicators of improved student engagement and the analysis of the data collected in this study indicated positive educational outcomes were accomplished.

Keywords: Student Engagement, Remote Learning, Hybrid Learning, Small Group Instruction, Social and Emotional Learning, Family Engagement, Professional Learning Community, Improvement Science

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Chapter 1: Plan

To determine a method to improve the educational outcomes of student engagement, a problem of practice should be identified. During the COVID-19 pandemic that began in March 2020 and continued into the design of instructional models for the 2020-2021 school year, educators and district leaders were required to reinvent student learning by developing remote and hybrid learning models that were dramatically different from traditional in-person learning models. Examining this problem as a collaborative team using professional knowledge, scholarly theory, and educational experiences identified a plan to direct a scientific approach that would contribute to and from educational leadership theory and practice to improve educational outcomes.

Definition of Terms

Asynchronous Remote Learning: Digital instruction that is delivered and completed online independently from the teacher through recorded lessons or posted assignments.

Hybrid Learning Model: A combination of remote distance learning and traditional in-person learning.

Improvement Science Dissertation in Practice (ISDiP): A research methodology for scholar-practitioners that focuses on a problem of practice that is addressed to generate impact on the practice of educational leadership aim of educational improvement.

Networked Improvement Community (NIC): A team of practitioners with professional knowledge and experience who participate in improvement science research to address a problem of practice.

Office of the Superintendent of Public Instruction (OSPI): The governing agency for public school districts in Washington state.

Plan, Do, Study, Act (PDSA) Cycle: ISDiP tool for conducting short (90-Day) iterations to address identified problems of practice.

Professional Learning Community (PLC): A group of grade level or content level educators that meet regularly to analyze student learning data, share expertise and work collaboratively to improve teaching skills and the academic performance of students. *PLCs* were in place at the K-8 district prior to the Covid-19 pandemic, during this ISDiP, educator teams met virtually or in-person on a weekly basis.

Synchronous Remote Distance Learning: Digital instruction that is delivered and completed live in the presence of an online teacher.

Social and Emotional Learning (SEL): Is the process of developing the self-awareness, self-control, and interpersonal skills that are vital for school, work, and life success.

Background

The COVID-19 pandemic surged globally in March 2020 and the majority of the world's students experienced an immediate physical closure of their schools to promote social distancing and decrease the transmission of the virus (Viner et al., 2021). Ninety-percent (90%) of the world's students from early learners through higher education in the nearly 200 countries that closed their schools experienced disruptions to their learning, and learning environments were quickly altered for students, their families, and their teachers when more than half a billion children became remote learners (UNESCO, 2020). As school closures occurred at varying levels across the United States, the Washington state Office of the Superintendent of Public

Instruction (OSPI) instantly closed all 295 public school districts on March 13, 2020 (OSPI, 2020) and school districts had to quickly shift to emergency remote learning plans.

Students enrolled in a rural, high poverty K-8 public school district in Washington state struggled to succeed in staying engaged academically during the initial March 2020 closure where declines in attendance were observed at every grade level and student engagement survey data collected from student, families, and teachers showed the majority of the students were not engaged. At the end of the 2019-2020 school year, the district collected data from the initial emergency closure period of March 2020 – June 2020. For students who were enrolled in grades K-8 at the end of February 2020 and also enrolled through June 2020, absence rates during the remote learning period increased by sixty percent (60%). It was hypothesized that low student engagement during remote learning had contributed to the decline in attendance.

Survey data collected in June 2020 after the initial school closure from students, families, and teachers, also indicated that the majority of students experienced lowered engagement and participation at each grade level. In survey questions related to student engagement thirty percent (30%) of the 103 students who responded agreed that they were engaged in their classes. In the parent survey questions related to student engagement, eighty-two percent (82%) of the 201 parents who responded agreed that students were not engaged in their classes.

In the teacher survey questions related to student engagement, ninety-one percent (91%) of the 52 teachers who responded to the survey agreed that students were not engaged in their classes. The decline in student engagement at the K-8 district was mirrored nationally as collected data indicated only nine percent (9%) of teachers in districts throughout the United States reported that the majority of their students completed remote learning assignments and most teachers reported that only fifty percent (50%) of their students were completing

assignments (Hamilton et al., 2020). Primary reasons for the national decline in student participation in remote learning during the emergency school closures of 2020 included school district development of ineffective remote learning programs and poor implementation of programs (Dorn et al., 2020).

As the COVID-19 cases continued to surge across Washington state into Fall 2020, safety requirements for social distancing and reduction of disease transmission forced county health departments to require the majority of Washington school districts to remain in remote learning in the new school year. Teachers, administrators, and staff at the school district were concerned that the decline in student engagement would continue into the new school year and result in a continued decline in student performance and achievement as remote learning continued. This shift in providing instruction differently provided the district with the opportunity to intentionally design instructional models that better met the needs of students than the emergency plans that were in place during the initial March 2020 closure when there was limited time for adequate planning. District development of successful instructional models required an intentional planning process to ensure that the structure of the instructional models would be designed to effectively improve student outcomes.

School district leaders attempted to address the challenges of reopening schools with successful remote learning models in the beginning of the 2020-2021 school year with limited experience or guidance to develop effective remote instructional models. As OSPI mandated that school districts meet the requirement of developing these instructional models, there were many factors that contributed to challenges within this process. Most educational leaders had limited or no experience with instructional delivery in a remote learning environment. Schools across the state and nation were also grappling with the lack

of experience in developing digital learning systems to support students, especially at the K-8 level (Dorn et al., 2020; Holzweiss et al., 2020) where resources for guidance did not exist. Research suggested that remote instruction had the capacity to be as effective as traditional in-person classroom instruction at the upper secondary and college level (Dorn et al., 2020; Curtis & Werth, 2015), but there is great variability in the quality and implementation of remote learning, which can affect the success of remote instruction (Martin, et al., 2018), and the availability of research or guidance resources for designing and implementing K-8 remote learning resources was extremely limited.

To determine the best method for improving student engagement and addressing student well-being, a group of district stakeholders formed a collaborative team that addressed the problems of decreased student engagement to improve educational outcomes as a Network Improvement Community (NIC). The NIC planned instructional models by carefully examining the problem using their professional knowledge, experience, educational leadership theory, and educational practice to improve educational outcomes for student engagement.

Educational Problem of Practice

The Improvement Science Dissertation in Practice (ISDiP) framework is a method of inquiry that includes scholarly definition of complex problems of practice that are applicable to current contexts, implementation of changes to address the complex problem of practice, and analysis of the implementation to determine whether the implemented changes result in improvement (Perry et al., 2020).

At the start of the school year, the K-8 school district was required to implement a remote only learning model due to the high cases of COVID-19 in the county where the district was located. As the district reviewed student data and survey data from students, families, and teachers collected in June 2020 following the initial closure period of March 13 – June 10, 2020, it was evident that there was a significant decrease in student engagement during this period. Student data collected from the district's student management system indicated a 52% increase in the percentage of continuously enrolled students with more than ten absences in June 2020 in comparison to the percentage of continuously enrolled students with more than ten absences at the end of the term in January 2020. This data is displayed in Table 1.

Table 1

Percent of Students With More Than Ten Absences in the Skyward Student Management System

	% of Students With More Than Ten Absences in the Skyward Student Management System			
	Enrolled	**January 2020**	**June 2020**	**Change**
K – 2	182	10%	17%	7%
3 - 5	233	22%	47%	25%
6 – 8	230	20%	35%	15%

Survey data collected from teachers in June 2020 on student engagement questions (participation in class and assignment completion) indicated low student participation and assignment completion in relation to the number of students enrolled during the initial closure period of March 13 – June 10, 2020. This data is displayed in Table 2.

Table 2

Percent of Students Participating in Remote Classes and Completing Assignments in the June 2020 Teacher Student Engagement Survey

% of Students Participating in Remote Classes and Completing Assignments in the June 2020 Teacher Student Engagement Survey

	Enrolled	% Participation	% Completing Assignments
K – 2	182	51%	43%
3 - 5	233	32%	18%
6 – 8	230	47%	33%

Survey data collected from students in June 2020 on student engagement (enjoyment of attending online learning classes) indicated that only 27.8% of students had some level of enjoyment in attending their remote learning classes and 66.4% of students did not enjoy attending their remote learning classes. This data is displayed in Table 3.

Table 3

Percent of Student Responses to the Question I Enjoy Attending My Online Classes on the June 2020 Student Engagement Survey

% of Student Responses to the Question I Enjoy Attending My Online Classes June 2020 Student Engagement Survey

Response	Frequency	Percent	Cumulative Percent
Strongly Agree	2	1.6	1.6
Agree	32	26.3	27.9
Neither agree or disagree	7	5.7	33.6
Disagree	77	63.1	96.7
Strongly Disagree	4	3.3	100.0

Survey data collected from families in June 2020 on student engagement (minutes per day my child is engaged in their remote learning classes) indicated that 44% of students were engaged for less than 60 minutes and 22.3% of students were engaged for 121-180 minutes which is less than 50% of the instructional schedule of traditional in-person learning. This data is displayed in Table 4.

Table 4

Percent of Student Responses to the Question My Child is Engaged in Their Remote Learning and Attending on the June 2020 Student Engagement Survey

% of Student Responses to the Question I Enjoy Attending My Online Classes on the June 2020 Student Engagement Survey

Minutes Per Day	Frequency	Percent	Cumulative Percent
Less than 60 minutes	65	44.0	44.0
61 – 120 minutes	41	27.7	71.7
121- 180 minutes	33	22.3	94.0
More than 180 minutes	8	5.4	99.4
Other	1	.6	100.00
Total	48	100.0	

Based on the noticeable decreases evident in the data, the NIC was concerned about a continued decline in the already low engagement levels of students enrolled in the K-8 school and they hypothesized that the engagement levels of this student group would continue to decline throughout the 2020-2021 school year. In January 2021, as COVID-19 cases started to decline across the state and region, OSPI required school districts to start planning for implementation of a hybrid learning model in addition to the remote learning model.

The complex educational problem faced by the K-8 district team was to develop and implement remote and hybrid learning instructional models that would have more positive outcomes for student engagement in the 2020-2021 school year than for those observed during remote learning after the March 2020 emergency closure. It was reasonably determined that the district networked improvement community (NIC) would utilize the PDSA framework for this process and investigate the impact of the instructional change on improved student engagement. In an ISDiP, improvement science is defined as "what educators and organizational leaders do inherently every day: strive to improve their contexts systematically" (Perry, et al., 2020, p.28).

In this ISDiP, the NIC focused on their context to determine the root causes of low and decreasing engagement and the implementation of uniquely designed instructional models as a strategy for improving student engagement. The NIC came together to examine a plausible solution to the challenges of student engagement faced by the students and teachers in the K-8 school district. The goal of the NIC was to support students to improve their level of engagement through implementation of uniquely designed instructional models.

This ISDiP is focused on the process the NIC followed for developing, implementing, and collecting data on the improved educational outcomes for addressing student engagement through instructional design. The specific 90-day cycle for this ISDiP focused on implementation of uniquely designed instructional models from March 2021 – June 2021 during the final term of the 2020-2021 school year as a portion of the upper grade level elementary students returned to school in a hybrid model of combined in-person learning and remote learning, while other students remained in a remote only learning model. The aim of the NIC was to see evidence of improved student engagement by the end of the June 2021 term.

Following the PDSA model to improve student engagement, the NIC would need to identify the barriers to student engagement, hypothesize about and develop the improvement strategies to include in the new instructional models (Plan), implement the practices within the new instructional models (Do), collect and analyze data on the success of the implementation of the improvement practices for the student engagement (Study) and determine whether to continue with the implemented practices or make adjustments (Act).

For the purpose of improving student engagement through instructional design the NIC gained vision and understanding for the *Plan* stage of the ISDiP by 1) analyzing the collected data, 2) completing a root cause analysis, and 3) reviewing research on student engagement. The NIC began this ISDiP with an evaluation of the district student management system data along with the student, family, and teacher survey data that was collected in June 2020. From these sources, the NIC recognized a district-wide problem related to the low attendance and assignment completion data along with the survey data from teachers, students, and families indicating students were minimally engaged during remote learning. The NIC continued their data evaluation of the June 2020 survey responses to questions related to student engagement by completing a root cause analysis.

Root cause analysis of low student engagement. In the first step of the root cause analysis process, the NIC assessed the June 2020 data in a brainstorming session to identify indicators of low student engagement based on the survey responses from the teachers, students, and families. In this step, the NIC reviewed and analyzed the survey responses and categorized them into eight identified indicators of low student engagement that the NIC hypothesized were leading to low student engagement during the emergency closure.

The NIC identified the most frequent responses to the reasons indicated for low student engagement by students, families, and teachers and summarized them within each group. Summarized reasons from teachers for low student engagement included: inability to meet individual needs of students in the remote environment, difficulty delivering remote instruction to large groups of students who were often off-task, and difficulty communicating with students and their families. Summarized reasons from students for low engagement during remote learning included: difficulty following instructions, difficulty understanding assignments, and a lack of feeling connected to their teacher or peers. Summarized reasons from families for low student engagement included: difficulty assisting their child with instruction, inability to communicate with the teacher, and difficulty understanding teacher expectations for their children's assignments.

The NIC then quantified the number of responses from the surveys in each of the eight indicators to determine the areas of greatest need for addressing the problem of low student engagement during the emergency closure. After the NIC categorized the responses, they quantified the number of responses from the surveys into the identified categories to determine areas of greatest need for addressing the problem of low student engagement. The percentage of the combined survey responses that were categorized within each of the identified eight indicators of low engagement are indicated in Figure 1.

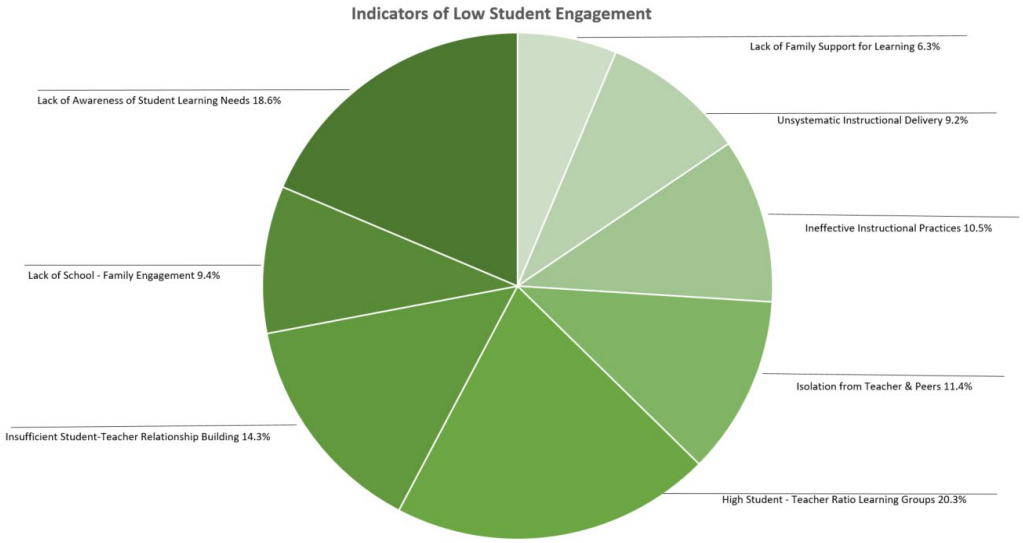

Figure 1

The categorized indicators of low student engagement identified by the NIC from survey responses

The NIC reviewed and discussed each indicator and documented relevant considerations within the indicators that may have contributed to the low engagement for students. The NIC identified problems within the indicators of low engagement for teachers, students, and families that may have contributed to low engagement. The NIC identified the specific problems within the eight indicators for teachers, students, and families. Teacher problems were identified as 1) no experience or training in effective instructional practices for a remote learning environment, 2) no experience or training in facilitating relationship building with students in a remote learning environment. Student problems were identified as 1) inexperience with learning in a remote environment, and 2) reduced opportunity to build relationships with the teacher or peers during remote learning. Family problems were identified as 1) inexperience and lack of opportunity for connecting to the school in the remote learning environment, and 2) inexperience and lack of support from the school to prepare families to support their children in the remote learning environment.

To identify the underlying causes of the identified problems, the NIC then performed a process of reframing the problems into questions and used a five level Why questioning process to reveal the root cause of each problem. The NIC root cause analysis indicated that the emergency shift to remote learning did not 1) include adequate training, preparation or support for teachers to provide effective instruction in a remote learning environment, 2) prepare or support teachers to facilitate relationship building with students or between students in a remote learning environment, 3) provide students with the appropriate level of support to successfully learn in a remote environment, and 4) prepare or provide support for families to connect with the school or assist their children with learning. The NIC identified the emergency shift from traditional to remote learning with no preparation or support for teachers, students, or families to be successful in a remote learning environment as the root cause of the problems and what contributed to the critical missing pieces in the previous remote instructional model that led to the low student engagement.

The NIC then identified plausible solutions to the root cause that could influence improved outcomes for student engagement. Based on the results of the root cause analysis, the NIC identified that the newly designed remote instructional model would need to include the following strategies 1) teacher professional development and support to deliver effective instruction, formative assessment practices, and facilitate relationship building, 2) student support for successful remote learning and opportunities for the development of teacher-to-student and student-to-student relationship building, and 3) development of supported opportunities to connect families to the school and prepare them to assist their children with remote learning.

The NIC then reviewed research to confirm their hypothesis that improving student engagement would lead to increased student achievement and to isolate the factors that would lead to improved student engagement during remote learning and to identify solutions to the teacher, student, and family root causes. Research included developing an understanding of behavioral, academic, emotional, and cognitive domains of student engagement and reviewing literature that included the relationship between student engagement and student achievement, student engagement in remote learning, student engagement in social and emotional learning, and the relationship between family engagement and student engagement to identify the strategies that would address the needs that would lead to improved student engagement.

Review of Literature

In the ISDiP framework, "literature serves as a practical tool that practitioners can add to their toolbox for improvement. It serves to increase insight about problems and contextualize those problems in what others have found about them" (Perry et al., 2020, p. 73). This ISDiP is theoretically grounded in research that concentrates on the factors that influence student engagement. Researchers have conceptualized student engagement as a multidimensional concept that includes behavioral, academic, emotional, and cognitive domains with underlying factors that motivate students to engage in and regulate their academic behaviors and functioning within a social cognitive learning theoretical framework (Christenson et al., 2008; Fredricks et al., 2016; Fredericks et al., 2004). The domains of student engagement can be understood through observable indicators such as work completion or productivity (academic engagement) and class participation (behavioral engagement) or through internal processes such as a student reflection or evaluation of learning (cognitive engagement) or the internal process of student perception of belonging to their class or school (emotional engagement) (Boekaerts et al., 2016).

The NIC planned to focus on behavioral, academic, cognitive, and emotional domains of engagement to address their problem of practice. The NIC developed hypotheses through their shared professional knowledge and a review of student engagement research focused on achievement (academic engagement), effective instructional practices in remote learning (cognitive engagement), social and emotional learning (emotional engagement) and family engagement (behavioral and emotional engagement).

The relationship of student engagement to achievement. Student engagement was focused on in this ISDiP due to the engagement of students in learning being one of the critical first steps in development of positive outcomes for academic achievement in typical learning environments, including being correlated to achieving higher grades and high school graduation rates (Wang & Fredricks, 2014). Student achievement is a common measure of academic student engagement in numerous studies. The influence of high levels of student engagement during instruction being attributed to favorable outcomes for student achievement has been identified in numerous studies (Kahu & Nelson, 2018; Zepke, 2018b; Boekaerts et al., 2016; Fredericks, 2015; Reeve, 2013;). Research indicates that the higher the level of student engagement during instruction, the more likely students are to positively contribute to their own learning and to the learning environment of the peers in their class (Matos et al., 2018).

Student engagement in traditional learning environments impacts cognitive development through increasing students' focus and participation, and higher task engagement during learning has led to increased performance in reading achievement (Doctoroff & Arnold, 2017). Student engagement impacts student achievement by increasing students' general motivation toward school (Heatly & Votruba-Drzal, 2018) and by increasing students' overall academic achievement and psychological well-being (Castro et al.,2015; Wang et al., 2015). Student

engagement has been conceptualized as being malleable for youth, dependent on their learning environment (Fredricks et al., 2016) indicating the impact of learning environment on achievement of student engagement along with the possibility of influencing development of higher engagement levels when students are in a learning environment that is focused on improving their level of engagement. Student engagement is influenced by many contextual factors including sociocultural influences, student background, student motivation, and teacher-student relationships (Quin, 2017; Martin & Bolliger, 2018).

Understanding the range of influences that may facilitate student engagement allows educators to develop instructional learning models that include strategies to address them and provide the greatest opportunity to improve both engagement and student achievement. The importance of studying student engagement is further augmented by the cumulative nature of academic skill development and student engagement, which reveals students who are demonstrating weak performance skills at the beginning of class more quickly disengage from learning and are typically less likely to become engaged during later learning (Bigatel et al., 2015). The relationship between skill development and sustained student engagement during instruction indicates the importance of developing student engagement practices early in the instructional process to have greater influence on academic achievement. The research confirmed the NIC hypothesis that improving student engagement through academic engagement would lead to increased student achievement.

Student engagement in remote learning. To design an instructional model for remote learning that improves cognitive student engagement, it is important to understand student engagement within the context of instruction during remote learning. The extent to which students engage in their learning may vary dependent on the environment of the classroom where

they are learning or the school context in which they learn (Boekaerts et al., 2016; Curtis & Werth, 2015). Remote learning requires educators to direct their focus on a learner-centered approach and apply differentiated teaching methods just as would be applied in traditional learning environments, but the needed dialogue and communication in best practices for student instruction are often challenging in online learning (Anderson, 2008; Curtis & Werth, 2015; Kentnor, 2015). In an effective online learner-centered classroom, a teacher is able to know and understand the cognitive abilities of their students and build on each student's pre-existing knowledge, cultural perspective, and comfort level with technology (Anderson, 2008). Online instructional models that incorporate student communication, peer interaction, and student interaction, improve students' perceptions and understanding and increases the likelihood of maintaining cognitive engagement during instruction (Anderson, 2008; Curtis & Werth, 2015; Martin & Bolliger, 2018; Meyers et al., 2019).

Effective instructional practices for teaching and learning are essential to the instructor's capability to engage students during remote virtual learning. Teachers who demonstrate high levels of technology knowledge and skills during online instruction have an advantage in fostering instructional effectiveness that leads to student engagement over their teaching peers who lack technical knowledge or skill (Bigatel & Williams, 2015; Holzweiss, et al., 2020). Teachers with high levels of confidence in using technology during instruction are more likely to build confidence in their students and have greater ability to build engaging relationships with their students (Jääskelä, Häkkinen & Rasku-Puttonen, 2017).

Students in remote digital learning often experience physical separation, isolation, and a lack of support and this lack of direct in-person contact can negatively affect student motivation and engagement (Stavredes, 2011). The stronger the student-teacher relationship during online

learning, the more likely student engagement will develop (Martin & Bolliger, 2018; Quin, 2017). Relationship building can be challenging in online learning environments, but if teachers provide regular, personalized and constructive feedback, student-teacher relationships and engagement are enhanced (Ma et al., 2015; Martin & Bolliger, 2018). Relationship building with peers has also been identified as being valuable to enhancing student engagement (Northey et al., 2015), giving students opportunities to participate in small group learning communities where they can develop peer-to-peer relationships increases the potential for students to engage in instruction.

Well-designed instructional models for remote learning should incorporate personalized student learning, activities that extend the knowledge and skills being developed, and the opportunity for teachers to collect data on student learning to individually address student learning needs (Curtis & Werth, 2015; Minkos & Gelbar, 2020). Developing small learning group composition for online coursework was identified as increasing student collaboration, involvement, and cognitive engagement in remote learning environments (Zheng, et al., 2015). Collaboration in groups as part of an online learning environment has been found to increase cognitive engagement, deepen understanding of concepts, increase student confidence, and increase student achievement (Curtis & Werth, 2015; Zheng, et al., 2015; Zepke, 2018; Lei, 2018). Providing students with feedback in the form of questions along with providing consistent attention to students while proactively maintaining regular follow-up with them has been found to be an effective method of increasing cognitive student engagement (Zheng et al., 2015).

The NIC hypothesized that instructional models would have higher impact on improving cognitive student engagement if they included direct instruction in small, collaborative groups that included personalized student learning along with opportunities for students to receive

timely, personalized, and constructive feedback from their teacher. The NIC further hypothesized that preparing teachers to provide effective online instructional practices and develop adequate technology skills through purposeful professional learning would contribute to improved levels of cognitive student engagement.

Student engagement in social and emotional learning. Student well-being was of high concern due to the isolation of students caused by lockdowns that were in place to reduce disease transmission during the first several months of school due to the high incidence of COVID-19 cases. The community was also deeply saddened by a local youth suicide and a statewide trend of increased youth depression and suicide that was becoming a national concern during the COVID-19 pandemic (Washington State Department of Health, 2020). Attending school provides children academic cognitive skills but also provides the social and emotional skills critical to life success. School closures during the COVID-19 Pandemic eliminated some of the non-cognitive aspects of school for children including the development of mental and emotional well-being that occurs through personal relationships with peers, relationship building between students and teachers, extra-curricular activity participation, and the experience of routines provided in traditional in-person learning.

Research indicated an increased impact of stress on students across the United States who participated in remote learning during COVID-19 and that this stress often resulted in reduced motivation, feelings of increased pressure from having to learn independently, and an increased risk of emotional disturbance due to isolation and abandonment of daily routines (Holzweiss, et al., 2020; Dorn et al., 2020). The American Academy of Pediatrics (2020) had reported that remote learning compromised the physical and mental well-being of children and adolescents

due to the students' physical absence from the traditional learning environment. Predicted consequences of the COVID-19 school closures indicated dire consequences for student achievement, educational equality, and mental health due to the disruption to student learning and the loss of the traditional learning environment (Dorn et al., 2020; Kuhfeld et al., 2020).

As the NIC planned development of instructional models for the 2020-2021 school year, student mental health was a priority to address. To improve behavioral and emotional student engagement at the K-8 school district and address student well-being concerns of families and the community, Social and Emotional Learning (SEL) was identified by the NIC as an essential component to be included in the instructional learning models. The NIC hypothesized that implementing daily social and emotional learning into the instructional model would provide students with increased opportunities for relationship building with their teachers and peers while building skills that would support their well-being and improvement of educational outcomes.

SEL is foundationally established in psychology and neuroscience and is utilized by schools to address or prevent student misbehavior, mental illness, and behavioral or emotional disorders (CASEL, 2017). In over 300 studies focused on the implementation of SEL programs in elementary schools, researchers have found that students have experienced lowered emotional distress levels and that SEL positively influences prosocial behavior, academic skill development, and academic achievement (Durlak & Mahoney, 2019). SEL lessons include modeling and teaching an interrelated set of cognitive, affective, and behavioral competencies that increase the capacity of students to learn, develop, and maintain mutually supportive relationships (Grant, 2017; Jones et al., 2015; Jones et al., 2017).

As relationship building between the teacher and student influences student engagement, the NIC hypothesized that providing isolated students with the opportunity to develop and maintain mutually supportive relationships through SEL lessons would address well-being and potentially improve behavioral and emotional student engagement.

Longitudinal studies have indicated that students with strong social and emotional skills experience positive outcomes across multiple domains, including educational achievement and attainment (Jones et al., 2015). Development of social and emotional skills enhances classroom learning and whole child development so that teachers and students have the ability to appropriately respond to emotions in school settings (Jones et al., 2015). In the traditional school environment, successful implementation of SEL typically includes: direct instruction on social and emotional skills, (2) integration of SEL with academic content, (3) development of a positive learning environment, and (4) general teaching practices that support student development and application of social and emotional skills (CASEL, 2017, 2021). The NIC hypothesized that incorporating these instructional strategies through implementation of SEL in a remote and hybrid-learning environment would have the same positive outcomes of implementation of SEL as in traditional learning environments.

Research indicates the importance of close teacher-student relationships on children's development of positive social, behavioral, and academic student outcomes and findings indicate implementation of social skills instruction positively impacts resiliency and academic achievement (McGrath & Van Bergen, 2015; Jones et al., 2015; Grant et al., 2017; Zee et al., 2017).

Positive teacher-student relationships have been indicated as having an influence on students' engagement in learning and academic achievement (Corcoran et al., 2018; Heatly & Votruba-Drzal, 2018; Lei et al., 2018) and on teacher effectiveness during instruction (McGrath & Van Bergen, 2015). Building strong student-teacher relationships and learning environments that foster relationship building and support social emotional development have been found to facilitate development of student engagement (Rice & Kipp, 2020). Researchers have noted the implementation of a systematic process for social and emotional development indicates increased student engagement, academic achievement, and improved quality of relationships between teachers and students (Durlak & Mahoney, 2019).

The NIC hypothesized that including social and emotional learning in the new instructional model would support student well-being, increase student resiliency, and facilitate relationship building that would influence improvement of student engagement.

Relationship of family engagement to student engagement in remote learning. Family relationships, level of parent education, and parental involvement and engagement with student learning plays a large role in behavioral student engagement during remote learning (Hall, 2020). Students require a wide range of material resources to effectively engage with remote instruction and accessing those resources is often more challenging for families in poverty (Hornick-Becker & Halkitis, 2020). Students in lower socioeconomic households are often challenged to engage in classroom learning in a traditional in-person learning environment and students in poverty are often associated with serious school problems such as lowered academic achievement (Lacour & Tissington, 2011).

These educational challenges often experienced by students living in poverty magnifies the importance of a broad range of material resources for success including access to caregivers who can provide guidance during remote learning sessions, so they are able to fully engage in the remote learning process (Holzweiss et al., 2020; Hornick-Becker & Halkitis, 2020).

The profound economic disruptions that have resulted from the COVID-19 Pandemic in households across the United States have implications of further impeding learning for students living in poverty than during the typical school year (McNichol & Leachman, 2020). Among the most vulnerable were racial and ethnic minority low income communities where students often faced greater challenges engaging in remote learning due to limited access to or experience with digital technology and limited access to a caregiver to provide learning assistance (Karpmen et al., 2020). Students from economically and educationally disadvantaged households were projected to disproportionately suffer negative consequences from the school closures of the COVID-19 Pandemic (Dorn et al., 2020; Holzweiss, 2020).

Survey data assessing how families have responded to the March 2020 school closures revealed that highly educated families spent more time helping their children with remote learning than less educated families (Bol, 2020; Dorn et al., 2020). Survey data on parent support by income level indicated only thirty-eight percent (38%) of lower income parents reported that their students received support with online instruction compared with approximately fifty-percent (50%) of upper income parents (Horowitz, 2020), and real-time data on student completion of online learning indicated that students in relatively affluent communities remained more academically engaged during the pandemic than students in poorer communities (Opportunity Insights, 2020).

Family involvement in student learning plays a part in the achievement the student will have throughout the school year in a remote learning environment (Doctoroff & Arnold, 2017; Hall, 2020). Family engagement with the school has an impact on student learning and achievement in traditional and remote learning environments and instructional delivery models that incorporate opportunities for family engagement play a role in the level of behavioral student engagement (Doctoroff & Arnold, 2018). When educators use a wide range of communication technologies to connect to families, they may increase the chances that caregivers have access to key information and in the process, they develop formal social capital between students' families and the schools (Minkos & Gelbar, 2020; McNichol & Leachman, 2020). School-driven initiatives such as communication through multiple technologies are examples of organizational strategies to achieve these goals and schools that build collective supports that actively focus on engaging families who are socially and economically marginalized, have shown a relationship between increased family engagement and improved student engagement (Curtis & Werth, 2015).

The NIC hypothesized that increasing the opportunity for family engagement within the instructional models that included increased communication and connection for all families, especially for families who were socially and economically marginalized, could influence improvement of student outcomes for behavioral student engagement. Levels of behavioral student engagement could vary for families with low socioeconomic status, but as a Title I district with high levels of poverty (67%), it was identified by the NIC that the planned instructional models should include family engagement support for all students to experience improved student outcomes regardless of their socioeconomic status.

It was further hypothesized by the NIC that implementing increased communication practices with families could create opportunities for mobilizing their social capital that would support students in lower socioeconomic households to have higher levels of access, participation, and improvement of behavioral student engagement.

Purpose & Significance Statement

This Improvement Science Dissertation in Practice (ISDiP) aims to examine a plausible solution to the decrease in student engagement at a K-8 school during the COVID-19 pandemic by implementing research-based engagement strategies into the design of instruction that will improve student outcomes. The NIC aims to develop unique instructional models for remote and hybrid learning that includes small group instruction, social and emotional learning, family engagement, and weekly Professional Learning Community (PLC) meetings. This ISDiP was guided by answering the following question: to what extent does implementing research-based engagement strategies within instructional design for remote and hybrid learning models improve student engagement? This ISDiP can add to existing knowledge relating to what is currently known about improving student engagement. This study can also be immediately beneficial to the K-8 school and students.

Hypothesized outcomes. There were three likely outcomes that the NIC hypothesized if the ISDiP was conducted. First, if this ISDiP was implemented but no significant results were found immediately, or by the end of the implementation timeline, there would be no harm done to the participants, context, or field. The NIC agreed to continue to revise and make modifications to the instructional design. The null-effect results would be disseminated, and the participants, while receiving no specific increase in student engagement, would have received an opportunity to have a supportive learning environment during instruction.

Second, if this ISDiP was implemented and some results were favorable while others were not, the NIC would have gained invaluable knowledge about what did and did not work. Finally, if this study saw favorable results, participants would have observed direct improvements in student engagement. Furthermore, the NIC would have localized knowledge of instructional design intervention that targets and improves student engagement within remote or traditional in-person learning environments.

Chapter 2: Do

Theory of Improvement

This ISDiP aims to examine if a newly designed instructional model that included engagement strategies to address the need for teachers to have effective instructional practices, the need for students to understand learning in a remote environment and have opportunities to build relationships with their teacher and peers, and the need to support for families to connect to the school and assist their children with remote learning then students in upper elementary grade levels would experience improved outcomes for student engagement. This ISDiP was guided by answering the following question: To what extent does implementing a new instructional model with research-based engagement strategies to address effective instruction for teachers, student understanding of remote learning and opportunities for relationship building, and support for families to connect to the school and assist their children with remote learning improve student engagement?

The Network Improvement Community. For the purposes of improving student engagement through uniquely designed instructional models during the COVID-19 pandemic, this ISDiP model of improvement utilized the plan, do, study, act (PDSA) cycle as the model of inquiry as a NIC that included a diverse group of interested team members who volunteered to participate in this ISDiP. The NIC was comprised of large group of twenty-eight collaborative stakeholders and two different subgroups. A core NIC leadership team participated as members in each of the three groups. Each group and group member had unique roles in influencing, supporting, and interacting with this study.

NIC Team A: This was the largest team within the NIC and consisted of a diverse team of twenty-eight collaborative stakeholders who served as an advisory committee and played a

primary role in the initial stages of planning. This group included district staff, community members, parents, and board members who reviewed data, conducted a root cause analysis for the decrease in student engagement and collaborated to develop a theory of improvement driver diagram. This team explored barriers and contributors to student engagement, hypothesized the instructional design strategies that would likely improve student engagement, and brainstormed solutions for improvement of student engagement through the design of the instructional models for remote and hybrid learning. They contributed to each initial stage of the planning through the perspective of their role within the community and the school district.

NIC Team B: The second team consisted of a core group of sixteen district teachers, administrators, and staff members who were a subgroup of NIC Team A. The primary role of this team was to serve as practitioners in context, utilizing their professional knowledge and experience to contribute to the PDSA process. This team served as the NIC learning improvement advisory team representing multiple grade levels and roles within the district including serving as the leader of their grade level PLC. This group participated in the PDSA cycle contributing to and building onto the work initially developed within NIC Team A. This team provided perspective on the development of instructional models that met the objective of improving student engagement through their understanding of instructional practices, district instructional systems, and district culture. This team served as the decision-making body and decided overall outcomes of the ISDiP based on data and team conversations. This group made suggestions for large-scale modifications as the schedules were implemented and as teacher feed-back on instructional practices and instructional delivery occurred within district grade level teams.

NIC Team C: The third team consisted of eight district administrative staff who were members of the other two NIC teams and served as the lead team. This NIC leadership team had a central and intentional role within the ISDiP, they served as meeting organizers, facilitators, and provided management of the implementation of the instructional model. Leadership within this team was shared and collaborative but two members provided additional levels of leadership to the team. A district level director of curriculum and instruction conducted primary leadership of the NIC meeting organization and facilitation. The lead researcher provided leadership to the NIC team to increase understanding of the improvement science process and the PDSA cycle, assisted in disaggregating the June 2020 data, and provided the team with reviews of research literature related to improvement of student engagement for the instructional design process. This team also had the responsibility of administering, analyzing, and disseminating the data, making needed decisions for small-scale changes and effectively communicating and providing leadership to other team members.

The NIC teams met ten times during the ISDiP process, three hours for each of the Plan meetings, and two hours for each of the Do, Study, and Act meetings. Meetings were held in a combination of Zoom and in-person collaborative meetings. The NIC team meeting dates and focus for each stage are indicated on the agenda in Figure 2.

ISDiP Focus	Dates	NIC Team Present
Plan: June 2020 data review, root cause analysis, research review, domains of engagement	March 3, March 10	A, B, C
Do: engagement strategies, system mapping, schedule development and implementation, review and discussion of implemented strategies	March 17, 24, 31	B, C
Study: collect, review and analyze data	April 14, May 12, June 16	B, C
Act: summarize and evaluate data determine effectiveness of implemented strategies, determine next steps	June 23, June 30	B, C

Figure 2

The NIC team meeting dates and focus for stages of the ISDiP

Theory of Improvement Driver Diagram

To guide the development of instructional designs that were in alignment with the Theory of Improvement, the NIC identified change strategies for the new models by constructing a Theory of Improvement Driver Diagram. The NIC used the structures of instructional systems and identified primary drivers associated with the root causes to improve student engagement within the instructional design of the new remote and hybrid learning models.

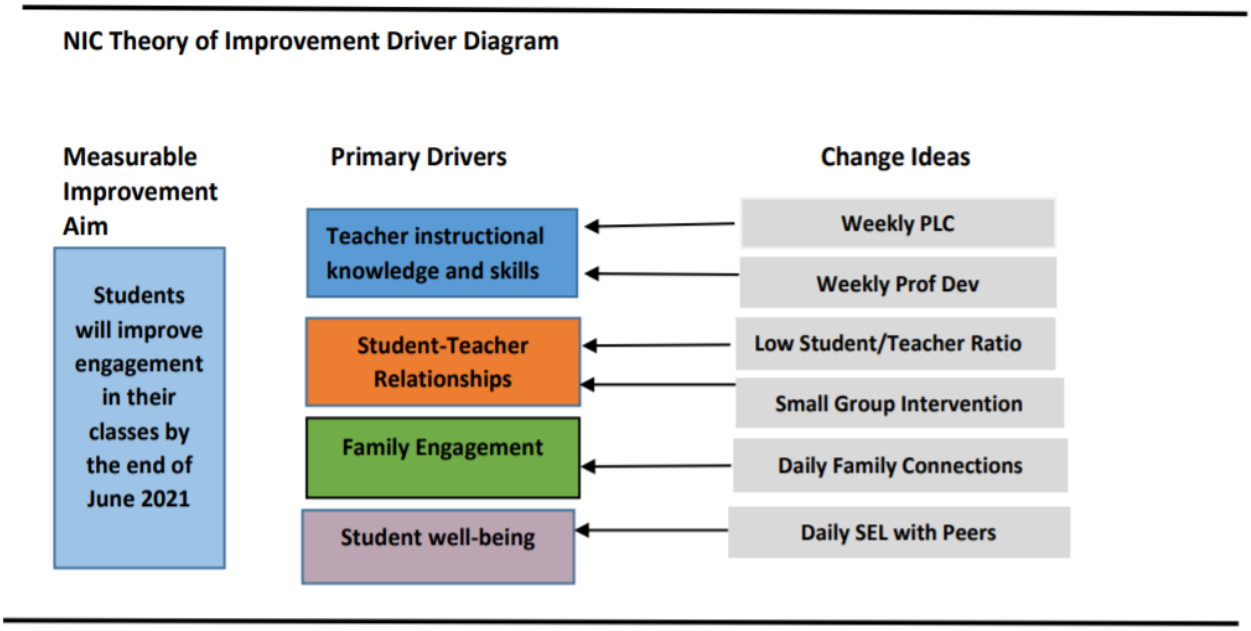

Figure 3

NIC Theory of Improvement Driver Diagram

Instructional Systems Mapping

The NIC then gained insight by mapping the instructional systems at the K-8 school district to determine the systems that would support addressing the identified problem of practice of developing and implementing remote and hybrid learning instructional models that would have more positive outcomes for student engagement. Systemic district-wide structures associated with instruction that were identified by the NIC included the remote instruction Learning Management System (LMS) and Professional Learning Community (PLC) meetings.

The LMS supported instruction by providing an organized system for teachers, students, and families to access and turn in assignments and provided students with independent access to asynchronous recorded lessons. Aspects of the LMS that were not previously used but would support addressing the identified problem of practice included a two-way communication function for teachers, students, and families to correspond along with data collection capabilities for assignment completion, grades, and attendance. PLC meetings had been a previous district practice during traditional in-person learning for teachers to assess and monitor student learning progress and to collaborate on best practices for instructional effectiveness. PLC meetings could be implemented in a virtual format with a focus on improving instructional effectiveness during the instructional model implementation.

Once the systems mapping for instructional systems were completed, the NIC constructed an aim for the PDSA cycle. By the end of the current school year, the NIC aims to improve student engagement using instruments and data connected to implemented instructional models connected to district instructional systems to measure and analyze improvement.

Student Engagement Strategies

The proposed change ideas were then identified as strategies to meet the aim of improving student engagement. The strategies were then implemented during the PDSA cycle. The NIC proposed four structure-connected strategies to address the student engagement problem of practice for this ISDiP.

Strategy 1: Teachers will deliver core instruction in small, collaborative student groups of eight or less to ensure they are able to provide effective instruction, understand each student's cognitive ability, and ensure that students are focused on learning, on task, and participating during instruction. Small group instruction will also provide teachers with the ability to provide timely, personalized, and constructive feedback. This strategy was designed to meet the domain of cognitive student engagement.

Strategy 2: Social and emotional learning (SEL) lessons will be delivered daily at the beginning of each day with all students as a whole group to provide opportunities for SEL skill development, relationship building, and peer-to-peer connection activities. This strategy was designed to meet the domain of emotional student engagement.

Strategy 3: Family engagement periods will be included in the daily schedule, teachers will initiate connection to families during this scheduled time frame that will include opportunities for increasing family understanding of the remote environment, provide resources for families to support their students with learning, and provide opportunities for teachers and families to have conversation around student learning. In addition, the LMS will be more effectively used to increase communication to families and provide increased opportunities to engage them in the school and their child's learning.

Strategy 4: Professional Learning Community (PLC) meetings will be held weekly for teachers to analyze student learning data and collaborate on best practices for student learning under the guidance of a NIC team member who will also lead facilitation of the grade level PLC. An additional hour of professional development time will be added to the weekly PLC meeting for teachers to participate in training to strengthen effective online instructional practices including formative assessment and technology skills development for online learning.

Instructional models. The NIC designed the instructional models using the identified strategies to improve student engagement in the new learning models: 1) small group instruction, 2) social and emotional learning lessons, 3) family engagement periods 4) weekly PLC and professional learning opportunities.

Time	Monday Online	Tuesday Online	Wednesday Online	Thursday Online	Friday Online
8:30 – 9:00	Breakfast at home & Prepare for SEL	Breakfast at home & Prepare for SEL	Breakfast at home & Prepare for SEL	Breakfast at home & Prepare for SEL	Breakfast at home & Prepare for SEL
9:00 – 9:30	SEL online w/my teacher & whole class	SEL online w/my teacher & whole class	SEL online w/my teacher & whole class	SEL online w/my teacher & whole class	SEL online w/my teacher & whole class
9:30 – 12:00	ELA CORE Instruction & Intervention in assigned groups + Music/PE & asynchronous Independent work	Math CORE Instruction & Intervention in assigned groups	Multi- subject Intervention, tutoring or academic support from staff or asynchronous Independent work	Science CORE Instruction & Intervention in assigned groups + Music/PE & asynchronous Independent work	SS CORE Instruction & Intervention in assigned groups + Music/PE & asynchronous Independent work
12:00	Lunch Break	Lunch Break	Lunch Break	Lunch Break	Lunch Break
12:45 – 3:00	Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff	Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff	Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff	Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff	Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff
3:00 – 3:30	Parent/Teacher connection time	Parent/Teacher connection time	Parent/Teacher connection time	Parent/Teacher connection time	Parent/Teacher connection time

Figure 4

Sample Student Schedule of Remote Learning Model

Time	Monday Onsite - AM Only	Tuesday Onsite - AM Only	Wednesday Online	Thursday Online	Friday Online
8:30 – 9:00	Arrive at school – Teacher connection time	Breakfast at home & Prepare for SEL	Breakfast at home & Prepare for SEL	Breakfast at home & Prepare for SEL	Breakfast at home & Prepare for SEL
9:00 – 9:30	SEL in Classroom	SEL online w/my teacher & whole class	SEL online w/my teacher & whole class	SEL online w/my teacher & whole class	SEL online w/my teacher & whole class
9:30 – 12:00	ELA CORE Instruction & Intervention in assigned groups + Music/PE	Math CORE Instruction & Intervention in assigned groups + Music/PE	Multi- subject Intervention, tutoring or academic support from staff or asynchronous Independent work	Science CORE Instruction & Intervention in assigned groups + Music/PE & asynchronous Independent work	SS CORE Instruction & Intervention in assigned groups + Music/PE & asynchronous Independent work
12:00	Travel/Lunch at home	Travel/Lunch at home	Lunch Break	Lunch Break	Lunch Break
12:45 – 3:00	Online Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff	Online Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff	Online Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff	Online Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff	Online Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff
3:00 – 3:30	Parent/Teacher connection time	Parent/Teacher connection time	Parent/Teacher connection time	Parent/Teacher connection time	Parent/Teacher connection time

Figure 5

Hybrid Learning Model Cohort A

Time	Monday Online	Tuesday Online	Wednesday Online	Thursday Onsite - AM Only	Friday Onsite - AM Only
8:30 – 9:00	Breakfast at home & Prepare for SEL	Breakfast at home & Prepare for SEL	Breakfast at home & Prepare for SEL	Arrive at school – Teacher connection time	Arrive at school – Teacher connection time
9:00 – 9:30	SEL online w/my teacher & whole class	SEL online w/my teacher & whole class	SEL online w/my teacher & whole class	SEL in Classroom	SEL in Classroom
9:30 – 12:00	ELA CORE Instruction & Intervention in assigned groups + Music/PE	Math CORE Instruction & Intervention in assigned groups + Music/PE	Multi- subject Intervention, tutoring or academic support from staff or asynchronous Independent work	Science CORE Instruction & Intervention in assigned groups + Music/PE & asynchronous Independent work	SS CORE Instruction & Intervention in assigned groups + Music/PE & asynchronous Independent work
12:00	Travel/Lunch at home	Travel/Lunch at home	Lunch Break	Lunch Break	Lunch Break
12:45 – 3:00	Online Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff	Online Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff	Online Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff	Online Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff	Online Core Instruction, small group or one-on-one intervention and/or tutoring with teacher or staff
3:00 – 3:30	Parent/Teacher connection time	Parent/Teacher connection time	Parent/Teacher connection time	Parent/Teacher connection time	Parent/Teacher connection time

Figure 6

Hybrid Learning Model Cohort B

Small group instruction. The average class size for the students in grades 3-5 learning was twenty-four. The weekly schedule during the ISDiP was designed to have instrucction focused on only one content area of English Language Arts (ELA), math, science, or social studies each day of the week.

Remote learning. Remote learning students completed all course work at home, synchronously at a scheduled time with a teacher or support staff, or asynchronously to complete work independently within the school schedule or whenever it was convenient for the student to access the instruction. In remote learning, classroom teachers divided their students into three groups of six-to-eight students per instructional group to keep class sizes small enough during core instruction for teachers to carefully monitor each of their students's learning, participation, and on task behavior. Core instruction was delivered synchronously to each student group for approximately one hour in each of the three groups. Teachers would teach the same content lesson three times, individually to each of the three groups while carefully monitoring progress and identifying students that would require additional support to understand concepts. Students who were understanding concepts or needed acceleration opportunities would be provided with asynchronous lessons to be completed independently after their synchronous one-hour lesson and would be provided opportunities for synchronous specialist time for music or physical education classes dependent on the day of the week. Students who were struggling with concepts would be assigned reinforcement asynchronous assignments with a teacher check-in period before the end of the day or would be assigned to a synchronous intervention group with the teacher later in the same day.

Hybrid learning. Hybrid learning students were divided into two cohorts, A and B, and each cohort attended classes onsite on two specific days in the morning only and then accessed sychronous scheduled classes with a teacher or support staff in the afternoon, or completed aschynchronous assignments. In hybrid learning, students were in onsite class sizes of eleven-to-twelve students per class on their two morning attendance days and would login to assigned remote learning sessions in assigned small groups of six-to-eight or smaller with their teacher three days per week. On full-day remote learning days, students would also have asynchronous lessons to be completed independently and synchronous specialist time for music or physical education classes dependent on the day of the week.

On Wednesday mornings following the SEL instruction, teachers participated in a one-hour PLC and a one-hour PD opportunity. During this time frame, students had the assigned options of participation in asynchronous learning, attending scheduled remote synchronous small group instruction or intervention sessions with support staff. On Wednesday afternoons, students would be assigned to scheduled remote synchronous small group intervention sessions with a teacher or support staff, additional core instruction sessions with a teacher, specialist time for music or PE, access to scheduled remote synchronous drop-in support sessions with their teacher, or they could access asynchronous learning opportunities. Teachers would provide each student with their assignment for Wednesday based on their learning progress during the week. Instructional conversations about student learning and their schedule for the day were communicated within the PLC meetings as teachers determined the best grouping to assist students in reaching the needed skill level.

Social and emotional learning. Social and emotional learning (SEL) classes were scheduled at the beginning of each day for both remote and hybrid students as large group instruction for all twenty-four students enrolled in the class. Remote students attended class synchronously online with their classmates. Hybrid students attended their SEL class in person on their two onsite days and signed in remotely to attend synchronously with their peers on their remote learning days. In addition to the SEL class being a period for check-in and a warm start to the day, teachers provided character education lessons, peer interaction opportunities, and relationship building activities.

Family engagement. Each day of the schedule from 3:00 – 3:30, teachers had a Parent-teacher connection period. This time frame was communicated to families as a time to reach out to teachers but was primarily used by teachers to connect with parents. These sessions provided families with mini-conference sessions to address their child's learning, to ask questions regarding asycnronous learning, or opportunities to hear about student progress. The majority of teachers used this time frame to initiate contact, but families also had the ability to schedule a specific meeting during this time frame. In addition to the Parent-teacher connection period, the district's LMS provided communication opportunities for families to engage with the school, for the school to communicate to families, and for families to get information about their student's assignment completion, login data, grades, and attendance in online classes.

Professional learning communities. Professional learning community (PLC) meetings were included in the weekly schedule on Wednesdays from 9:30 – 11:30 after the SEL classes end. The PLC meetings would typically last for one-hour and then the teachers would have the opportunity to spend the last hour in district or peer provided professional development on instructional strategies or technology skill development. The PLC meetings were facilitated by a

lead teacher who also partipated as a NIC lead. The meeting times were used for teachers to discuss student progress, strategize interventions, and collaborate with their colleagues regarding effective instructional practices. The professional development sessions were frequently provided by other teachers who had specific instructional or technical strategies that they were willing to share and the district would also provide training sessions on the effective use of technology hardware or the LMS, to increase teacher effectiveness during remote and hybrid learning.

Study participants. In the evaluation of the student data, the student population with the lowest student engagement was the upper elementary levels of grades 3-5. The survey data also indicated a decrease in student engagement, but specific grade levels of the respondents were not collected in the survey. Due to the prevalence of the student data indicators showing the lowest scores for the grade 3-5 student populations, the NIC identified students in the 3-5 grade bands as their target population.

The participants of this study consisted of sixty-four elementary students from the K-8 School. The target population of this ISDiP were students who were in grades 3-5, and who were enrolled in school during the emergency school closure and continuously enrolled during the 2020-2021 school year leading up to the new term. The target cohort was chosen based on data, convenience, and accessibility. Thirty-one students were enrolled in remote learning and thirty-three students were enrolled in hybrid learning. The students were randomly enrolled in the classrooms of nine different teachers, three teachers taught in remote only classrooms and six teachers taught in hybrid classrooms that were a combination of remote and in-person learning.

All students in the K-8 school experienced implementation of the learning models developed by the NIC, but data collection and analysis for the purposes of this study only included the sixty-four students in the target population. Because this population of participants was under-age, parental consent was sought before administering the student engagement survey (see Appendix C) that would be administered twice with the target population in the fourth and twelfth week of the implementation. In addition, an assent to research form was obtained from each of the study participants (see Appendix D). Of the eighty students originally identified for the ISDiP, 67 students in the population turned in consent forms from parents to participate in the study and 64 students completed the student engagement surveys at both the four-week and twelve-week cycle.

ISDiP Implementation plan reporting. The remote and hybrid learning models that included the proposed strategies were implemented in March 2021 as students started the final term of school. The NIC met three times during the initial month of the implementation of the instructional models that took place over a twelve-week instructional period. NIC leads who were also teacher leaders of grade-level PLC teams facilitated discussions with classroom teachers around the student engagement strategies of small group instruction, SEL instruction, family engagement, and PLC team meetings during each week of the instructional model implementation.

At the NIC meetings held during the implementation of the instructional models, NIC members reported on and discussed the observable and anecdotal comments from teachers and administrators regarding the implemented strategies and student engagement behaviors. In the NIC team reports, members used four guiding questions for each of the instructional strategies implemented within the design of each instructional model (1) What was the purpose of

implementing this strategy to improve student engagement? (2) Does this strategy appear to be improving student engagement? (3) What evidence do we have to demonstrate the effectiveness of implementing this strategy? (4) What adjustments are needed in the implementation of this strategy?

Measuring Improvement in Student Engagement.

The NIC analyzed qualitative data and multiple quantitative data sources to measure the academic, cognitive, behavioral, and emotional domains of student engagement. Proposed quantitative measurements to collect student engagement data during the implementation included (1) a student engagement survey to gather internal perceptual data (emotional engagement) and a reflection on individual learning (cognitive engagement), (2) assignment completion rates (academic engagement) (3) attendance rates in synchronous and in-person instruction (behavioral engagement), (4) passing grade percentages (cognitive engagement). Qualitative data from anecdotal observations collected by NIC leads was also included in the analysis.

Ethical Considerations

Formal IRB approval was granted by the lead researcher's governing university (see Appendix A) to ensure sound research practices were followed during this ISDiP. Study participants were required to have formal consent from a parent or guardian and individual assent (see Appendix C) for inclusion in the screening measures. Consent and assent were established to ensure the safety of student participants. To protect students' identities and abide by FERPA regulations, study participants were not identified in the data analysis or reporting to keep their identities known only to NIC leads. NIC leads completed mandatory training for confidentiality, FERPA, and reporting regulations.

Chapter 3: Study

Student Engagement

The results of this ISDiP data collection included behavioral, academic, cognitive, and emotional student engagement domains that were collaboratively analyzed by the NIC during the "Study" stage of the PDSA cycle. Student engagement study results were based on multiple measures to identify improvement of student engagement, a self-perception student survey (see Appendix E) and a collection of student data that included assignment completion, attendance in synchronous and in-person instruction, and passing grade percentages that were collected in the sixth and twelfth week of the implementation.

Student Engagement Survey. In the student engagement survey, the same five survey questions were provided in each of the two survey cycles and respondents used a five-part Likert Scale of strongly agree, agree, neutral, disagree, and strongly disagree to each of the five questions. Two of the survey questions were designed to gather students' internal perceptual data of their engagement in class (emotional engagement) 1) *I attend most of my classes because I enjoy being in class*, and 2) *When I am in class I feel like I belong*. One of the survey questions was designed to gather students' evaluation of their learning, *I feel like I understand and I am learning during class*, and one question was designed to determine levels of engagement and relationship with the teacher, *My teacher helps me understand and learn*. The final survey question was developed to determine the level of engagement students had in their daily SEL class, *I enjoy being in my SEL class every day*.

Results of the June 2021 data analysis of the student engagement questions related to enjoyment of class indicated a favorability rating (strongly agree, agree) of 84.4% in the sixth-week data collection and an 18.8 % reduction in the favorability rating in the twelfth week data collection.

The NIC hypothesized that the reduction in enjoyment may have been influenced by the COVID-19 restrictions being lifted and students wanting more opportunity to interact in other activities, especially during remote learning classes, rather than being in school.

The NIC discussed that the results could be indicative of the typical drop in enjoyment of being in school that students experience as the school year is coming to an end and warm summer weather is returning as a distraction. Despite the 18.8% reduction in favorability, the 65.6% favorability rating in June 2021 was 39.3% higher than the student engagement rating of 26.3% collected on an enjoyment of class student engagement question in the June 2020 student engagement survey for the 3-5 grade level students. Although the June 2020 data represented a larger population than the study group, the study group participants represented 27% of the larger population at the time the June 2020 data was collected. This data is displayed in Table 5.

Table 5

Percent of Student Responses to the Questions: I attend most of my classes because I enjoy being in class.

		% of Student Responses to the Question I attend most of my classes because I enjoy being in class.		
Cycle	**Response**	**Frequency**	**Percent**	**Cumulative Percent**
Week 6	Strongly Agree	21	32.8	32.8
	Agree	33	51.6	84.4
	Neither agree or disagree	4	6.2	90.6
	Disagree	5	7.8	98.4
	Strongly Disagree	1	1.6	100.0
Week 12	Strongly Agree	15	23.4	23.4
	Agree	27	42.2	65.6
	Neither agree or disagree	4	6.3	71.9
	Disagree	13	20.3	92.2
	Strongly Disagree	5	7.8	100.0

Results of the June 2021 data analysis of the student engagement questions related to a sense of belonging indicated a favorability rating (strongly agree, agree) of 51.6% in the sixth-week data collection and a 17.1 % increase in the favorability rating in the twelfth week data collection. There were no questions regarding a sense of belonging in the June 2021 data for comparison but an increase in sense of belonging to the class This data is displayed in Table 6.

Table 6

Percent of Student Responses to the Question: When I am in class, I feel like I belong.

% of Student Responses to the Question: When I am in class, I feel like I belong.

Cycle	Response	Frequency	Percent	Cumulative Percent
Week 6	Strongly Agree	6	9.4	9.4
	Agree	27	42.2	51.6
	Neither agree or disagree	3	4.7	56.3
	Disagree	22	34.3	90.6
	Strongly Disagree	6	9.4	100.0
Week 12	Strongly Agree	3	4.7	4.7
	Agree	41	64.0	68.7
	Neither agree or disagree	5	7.8	76.5
	Disagree	11	17.2	93.7
	Strongly Disagree	4	6.3	100.0

Results of the June 2021 data analysis of the student engagement question related to students' evaluation of their learning (cognitive student engagement) indicated a favorability rating (strongly agree, agree) of 81.2% in the sixth-week data collection and a 4.7% decrease in the favorability rating in the twelfth week data collection.

This slight decrease was identified by the NIC as a positive self-perception of their learning and there did not appear to be an influence on perception of learning that students have typically experienced as the school year is ending. This data is displayed in Table 7.

Table 7

Percent of Student Responses to the Question: I Feel Like I Understand and I Am Learning During Class.

% of Student Responses to the Question: I Feel Like I Understand and I Am Learning During Class.

Cycle	Response	Frequency	Percent	Cumulative Percent
Week 6	Strongly Agree	11	17.2	17.2
	Agree	41	64.0	81.2
	Neither agree or disagree	6	9.4	90.6
	Disagree	3	4.7	95.3
	Strongly Disagree	3	4.7	100.0
Week 12	Strongly Agree	6	9.4	9.4
	Agree	43	67.1	76.5
	Neither agree or disagree	0	0.0	0.0
	Disagree	12	18.8	95.3
	Strongly Disagree	3	4.7	100.0

Results of the June 2021 data analysis of the student engagement questions related to levels of engagement and relationship with the teacher indicated a favorability rating (strongly agree, agree) of 81.2% in the sixth-week data collection and 81.2% in the twelfth week of the data collection. The favorability scores were identical despite the shift in responses from the study group, which was an interesting occurrence noted by the NIC in the data analysis. In additional analysis of the data, the NIC noted that none of the study participants in this question selected disagree or strongly disagree. The NIC shared in their discussion of this data that the responses may not be accurate if students chose their responses based on a perception that their

teacher would see the results of the survey. The surveys were not administered by the teacher, but the student responses may have inflated the favorable ratings of strongly agree or agree in addition to possibly preventing students from selecting the disagree or strongly disagree option on this question during both data collection cycles. This data is displayed in Table 8.

Table 8

Percent of Student Responses to the Question: My teacher Helps Me Understand and Learn.

Cycle	Response	Frequency	Percent	Cumulative Percent
		% of Student Responses to the Question: My Teacher Helps Me Understand and Learn.		
Week 6	Strongly Agree	16	25.0	25.0
	Agree	36	56.2	81.2
	Neither agree or disagree	12	18.8	90.6
	Disagree	0	0.0	100.0
	Strongly Disagree	0	0.0	100.0
Week 12	Strongly Agree	13	20.3	20.3
	Agree	39	60.9	81.2
	Neither agree or disagree	12	18.8	100.0
	Disagree	0	0.0	
	Strongly Disagree	0	0.0	

The final question in the survey was regarding enjoyment in the SEL class. On this question, all study participants (100%) selected strongly agree or agree in both the sixth and twelfth – week data collection. Based on the response the students had, the NIC noted that it would have been important to determine which aspect of the SEL class made it so popular with the study group. A follow up question where students could have provided independent feedback through an open response question about what was most positive would have been a helpful addition to analyzing and interpreting the survey questions.

A follow-up data collection by one of the NIC leads identified that the SEL class had a 98% average attendance rating for the entire twelve-week instructional cycle for all grade levels in the elementary. NIC members discussed and speculated that there were a few factors that could have contributed to this high favorability rating. One of the NIC members indicated that favorability for hybrid students might be higher due to students having breakfast with their peers before they begin SEL class, and an additional NIC member discussed that it might be the multiple peer interaction opportunities that occur during SEL for both hybrid and remote students.

A summary analysis of the student responses to each of the survey questions indicated that in four out of five questions 60% of the selected responses were favorable (agree or strongly agree), and in three of the questions, the selected responses were 76% - 84% favorable (agree or strongly agree). The NIC observed this as being positive in comparison to the June 2020 survey data where 80% of the overall student responses to questions were disagree and strongly disagree. The positive response to the majority of the questions led the NIC to conclude that engagement rates, based on the student responses, students in the study population were more highly engaged during this twelve-week period than they had been in the previous survey when data was collected in June 2020.

Student Data Collection. The NIC proposed using indirect measures for improvement of student engagement by collecting assignment completion rates (academic engagement), attendance rates in synchronous and in-person learning (behavioral engagement), and grade distributions by grade level (cognitive engagement) that are typical indicators that students have some level of engagement in learning. Students in the study population entered the twelve-week cycle with 36% of the study group having more than ten absences in the previous term. Data on

assignment completion, attendance rates, and grade distributions was collected separately for hybrid and remote students to identify whether or not coming onsite for a portion of student learning would indicate a significant difference in the data from students who were only attending class remotely.

***Attendance rate*s**. Prior to the instructional implementation, the current hybrid student population had an absence rate of 30% of the students having ten or more absences at the end of the previous term and 33.3% of the current remote students had more than ten absences at the end of the previous term. The results of the attendance data analysis indicated 0% of hybrid students with ten or more absences in the sixth week and by the twelfth week of the instructional implementation, attendance rates for students with more than ten absences had increased to 3%. Hybrid student attendance in the first six weeks of the implementation phase indicated a 30% decrease in the number of students who had more than ten absences from the previous term which was noted as a significant positive in the NIC data analysis.

Results of the data analysis indicated 9.6% of the remote study group had ten or more absences in the sixth week, and by the twelfth week of the instructional implementation, 21.2% of the study group had ten or more absences. These results indicated a 23.4% decrease in the number of students who had ten or more absences from the previous term. Although there was an 11% increase in the number of students with ten or more absences in the twelfth week, the NIC noted the increase still placed the remote student population below the number of students who were absent ten or more days during the previous term.

In the data analysis, the NIC noted the 53.4% reduction in the number of students from both hybrid and remote learning who were absent ten or more days from class. It was difficult for the NIC to identify which implemented strategy may have influenced the increased number of

students attending class. Increased attendance would be a positive indicator of students having increased motivation to attend class over the previous term, and increased motivation to attend class is frequently an indication that students are engaged in their learning.

This data is displayed in Table 9.

Table 9

Percent of Students With More Than Ten Absences at End-of-Cycle.

	% of students with more than ten absences at end-of-cycle (6th and 12th week)		
Learning Model	**Students**	**Week 6**	**Week 12**
Hybrid Absence Rate	31	0.0%	3%
Remote Absence Rate	33	9.6%	21.2%

Assignment completion. The analysis of the June 2020 data had indicated only 18% of the students in the 3-5 grade level were completing assignments according to the teacher survey responses. The NIC had selected completing a minimum of 80% of the assignments as a data indicator because anything below this threshold would be too challenging for the student to continue to be successful in the class. It was anticipated by the NIC that a percentage of students meeting that minimum would also be completing significantly more assignments closer to the teacher expectations of 100% completion. Considering the complexities of COVID-19 that were challenging students to meet learning expectations under such new and unique instructional models, using an 80% minimum completion as an indicator of success was proposed by the NIC for this data collection.

Results of the assignment completion data collected from the LMS data system for remote synchronous and onsite learning indicated 90% of the hybrid students were completing 80% or more of their assignments at the sixth week of the term and 87% were completing 80% or more of their assignments at the twelfth week of the term. Results of the assignment completion data for remote learning students indicated 81% of the students were completing 80% or more of their assignments at the sixth week of the term and 74% of the students were completing 80% or more of their assignments by the twelfth week of the term. Although the hybrid students were completing assignments at a 9% higher rate than the remote students at the sixth week of the cycle and at a 7% higher rate in the twelfth week of the cycle, the NIC acknowledged in their discussions that the gap between the two groups did not appear to be as large as was anticipated. Hybrid students had the opportunity for face-to-face instruction time, similar to a traditional in-person learning schedule. It was hypothesized by the NIC that having these opportunities might give Hybrid students an advantage that the remote students who were only communicating digitally would not have. The data analysis did not indicate that the remote learners had a disadvantage in comparison to the hybrid students, based on assignment completion.

Using the June 2020 data that indicated an 18% assignment completion rate in comparison to the twelfth week data of 87% of hybrid learners and 74% of remote learners completing assignments at the 80% assignment completion rate, indicates a 69% increase for hybrid students and a 56% increase for remote learners.

Assignment completion rates were not collected in the previous term, but the comparison of the twelfth week data of this ISDiP and the June 2020 data on assignment completion provided the NIC with positive outcomes for an improvement in student engagement based on this data. This data is displayed in Table 10.

Table 10

Percent of Students Completing a Minimum of 80% of Their Assignments at the End-of-Cycle. With More Than Ten Absences at End-of-Cycle.

		% of students completing a minimum of 80% of their assignments at the end-of-cycle	
Learning Model	**Students**	**Week 6**	**Week 12**
Hybrid Assignment Rate	31	90%	87%
Remote Assignment Rate	33	81%	74%

Grades. Grading during COVID-19 was not following traditionally established systems at the K-8 school district, as OSPI had instructed districts to not give failing grades to students during the pandemic. The district adopted a grade of "IP" for "in progress" with no value in the grading process to indicate a grade where a student was not at standard to prevent the failing grade from lowering the overall percentage. The district collaborated to reset grading scores of 75% and above as being the minimum for a student to be considered "passing" during the COVID-19. For the parameters of this data collection, the NIC set the minimum passing rate at 75% in alignment with the grading policy with the understanding that students would not have failing grades and if they were not at standard on an assignment it would not necessarily be reflected in the grading percentage being collected by the NIC.

Results of the grades collected at the sixth week of the term for hybrid students indicated 81% of the students were passing their classes at or above 75% at the sixth week of the implementation phase and passing at 78% by the twelfth week. Results of the grades collected for remote students at the sixth week of the term indicated 75% of the students were passing their classes at or above 75% and at the twelfth week, 72% of the students were passing at or above 75%. Both the hybrid and remote learning students had only decreased between the sixth and twelfth week by 3%. During the twelve-week instructional period, the number of students who were passing classes at 75% or above averaged 77.25%. This percentage indicated a higher proportion of the student population passing classes. The NIC was not able to directly correlate the number of students passing classes to student engagement or the implemented strategies for the purpose of this ISDiP. This data is displayed in Table 11.

Table 11

Percent of Students With Passing Grades of 75% or Above at the End-of-Cycle.

		% of students with passing grades at 75% or above at the end-of-cycle	
Learning Model	**Students**	**Week 6**	**Week 12**
Hybrid	31	81%	78%
Remote	33	75%	72%

In the final analysis of the collected student data for the twelve-week instructional design implementation, the NIC was able to identify the following positive indicators of student engagement, 1) the study population reduced the number of students with ten or more absences from the previous term by 53.4% (behavioral engagement), 2) an average of 77.25% of the study

population were passing their classes (cognitive engagement), and 3) The hybrid study population exhibited a 69% increase in assignment completion and the remote student population exhibited a 56% increase in assignment completion (academic engagement).

Anecdotal Observations. Qualitative data from anecdotal observations collected by NIC leads during the twelve-week instructional model implementation of the "DO" phase of the PDSA cycle were included in the data analysis of this ISDiP. In the scheduled team meetings, NIC leads reported on and discussed the pertinent observable and anecdotal comments from teachers and administrators regarding the implemented strategies, student engagement behaviors, and response to implementation strategies from students and families that were shared by teachers during PLC meetings. Official prompting or recording did not occur during these meetings, but key information was noted by the researcher for debriefing discussions at the end of the meetings. The qualitative data collected through these anecdotal observations provides additional insight on the influence and effectiveness of the implemented strategies to improve student engagement. A log of the key observations organized by the implemented engagement strategy they addressed from the researcher's meeting notes is provided in Table 12.

Table 12

Anecdotal Observations Collected by the NIC Leads

Strategy	*Anecdotal Observations*
Small Group	- Teachers appreciate how the class sizes are allowing them to have more time with individual students. Several teachers have shared that they feel like they are getting to know students better this way than when they are in the classroom. Students seem to be responding to the small group instruction very positively. - Teachers have expressed that teaching the same lesson to three different groups helps them improve on it each time. Getting to do same day intervention with students has been really powerful. - A teacher shared with me that she has one student that she has does a 15-minute check-in with every day where they read together and it has improved her fluency immensely. - Parents have appreciated the small group instruction and they have shared that their child is having more success during this school year than last year before COVID-19 due to the extra attention her child is getting. - Today I walked through a hybrid classroom and a teacher shared that having students back onsite in such small groups has really helped with student learning and behavior. The teaching ratios are a teachers dream. I have a better knowledge of my student's cognitive levels than when I am struggling to keep up with 50 different things at once in the classroom. - I feel like it's easier for my students to focus on what we are learning and definitely better than we were in the large groups online. When they are playing a game on their phone or off task, I can immediately see it now. When I have so many faces on the screen it is really hard to feel connected or like I can make them focus on what I am doing. Having the small groups of kids has been wonderful for being able to connect with them. - I wish we could teach like this all of the time, I feel like the skills I am giving my students right now at this vulnerable time is invaluable.
SEL	- Starting my day by teaching this class has been such a great way to begin our day. I think I am learning as much from the lessons as my students are. I hope we can keep doing this after we get back to regular school. - The hardest thing about teaching SEL lessons is how fast they go. I love giving the students a chance to interact and apply what they have learned, it gets challenging to manage the time.
Family Engagement	- I have seen teachers regularly reaching out to each of their student's families during the afternoon parent/teacher time, it seems to work out well for parents too. I've heard that sometimes it seems to help the parents feel less frustrated about the school situation if they can connect with us during this period.
PLC/PD	- I am grateful to have this time with my colleagues, it's not the same as in-person but it's better and I think people are paying more attention in the virtual meetings because of it. I appreciate learning from my peer and being able to apply something they have successfully already done. The opportunity to collaborate on instructional strategies is something we all need right now. - Having the PD sessions after the PLC meeting seems to be really effective. Teachers appreciate getting to learn from their peers.

The discussions at the NIC meetings during the instructional implementation were where the team and the lead researcher were able to gain insight and understanding on the strength of the implementation strategies in the remote and in-person classrooms. NIC leads that had their own classrooms and who also led the PLC process had a unique opportunity to collect information on a weekly basis that was beneficial to the NIC team meetings where successes and challenges could be identified to determine the effectiveness of each of the implemented strategies. In the final NIC team meeting of this ISDiP, the lead researcher recorded and transcribed the notes as the team summarized the effectiveness of the implementation strategies on addressing the problem of practice. The lead researcher compiled the transcriptions' pertinent notes which are summarized below. The NIC reviewed the qualitative data for accuracy and authenticity prior to publishing.

At the final meeting in June, the NIC discussed and reviewed the strategies utilized in this ISDiP, to determine which were most effective. The NIC members shared that teachers had expressed the most appreciation for the small group instruction and the data from student grades and the decrease in absences indicated there was some level of academic success using small group instructional delivery during implementation of the models. Positive feedback had been consistently provided from parents, students, administrators and teachers, including those who were NIC members. Through anecdotal observations, one of the most important aspects for one of the teachers who was only teaching remotely was “being able to know my students so well, even though I haven’t met them in-person yet, makes this small group process so valuable”. Most of the NIC members agreed that relationships that were developed through the small group interactions, both teacher-to-student and student-to-student were a huge benefit of the small group instruction.

For the NIC members who were teachers, the second most valuable strategy was more difficult to identify. SEL classes had a huge impact on the students and daily attendance in SEL classes among the study population and the general school population was nearly 98% at each grade level. The district had never had a class with this consistent level of high attendance and the NIC team noted that having this level of attendance during COVID-19 was a positive indicator of success with the implementation. The PLC model that included opportunities for professional development, especially from peers was identified as one of the more important strategies to teachers, but it was a close tie among NIC members between SEL implementation and the PLC model.

The SEL classes definitely improved attendance for the SEL class itself and the majority of students were engaged and involved during the classes, according to teacher observations, but it was not clear to the NIC team if the class improved engagement outside of the SEL classroom. The PLC process gave the teachers the greatest opportunity for growth and collaboration with their peers and NIC members who were teachers and those who had gathered anecdotal or observational data from teachers about the PLC meetings, agreed. Many teachers were still working in isolation in remote locations and the virtual PLC process allowed them to interact professionally and gain instructional strategies that they could immediately apply in the remote learning classroom.

One of the solid benefits of the PLC model in companion with the small class size was the ability of teachers to share their students and capitalize on the specific talents each of the teachers had to assist students in reaching standards.

The teachers had developed a process of grouping and regrouping as needed for instructional delivery until all students were having the greatest opportunity for successfully reaching the standard being taught. This regrouping process allowed the teachers with the strongest skill in that content area or best practices for teaching a specific skill to work with the individual student groups to prepare them to reach specific standards. Teachers on the NIC team strongly expressed that their students were more successfully engaged in learning because of the strategies they were gaining from their PLC meetings and professional development sessions that they could bring immediately back to the classroom. Having the PLC meetings weekly and following the PLC sessions with individual professional development workshops around instructional strategies in a peer-to-peer model was perceived by the teachers as being effective in developing their professional practices for instruction.

The final strategy of family engagement was less clear on how it had improved student engagement. The NIC members had all heard or observed positive feedback regarding the daily family connection time, but measuring the impact on student engagement was more challenging. The NIC agreed that family engagement was important and teachers and staff felt that family connections had improved with the scheduled connection times each day and the improved communication process within the LMS, but the parents of the study group were about as equally connected to the school before the implementation of the strategy as they were after.

Qualitative Analysis: The qualitative data discussed in the previous section provides the researcher and the K-8 school with possibilities for improving engagement and student achievement through implementation of the strategies of small group instruction, SEL lessons, family engagement, and PLC meetings. Each of these strategies provided observation data or personal feedback data that was valuable to the team. Teachers, administrators, staff, and parents

were able to see students succeed in a challenging educational environment due to the complexities of managing COVID-19, but despite the challenges each of the strategies brought something positive to student learning and engagement.

In a traditional in-person learning environment, these strategies could be continued to benefit student engagement within a normal schedule. In addition to improving student engagement, students were able to experience positive relationship building with their peers and teachers, develop critical SEL skills that will benefit them throughout their lifetime, and to positively benefit their well-being during an exceptionally stressful time period in our history. Teaching students in small learning groups, providing students with daily SEL lessons, connecting students' families to the school, and providing teachers with opportunities to increase their instructional effectiveness through implementation of a uniquely designed schedule supports the theory of the ISDiP that implementing these strategies will support improvement of student engagement.

Benefit to the K-8 School. As the district prepares to begin another school year following the COVID-19 Pandemic, it would be beneficial to utilize the strategies that were implemented in this ISDiP to possibly increase student engagement. The district is planning to implement daily SEL lessons, weekly PLC's, and will use small group instruction for intervention in the new school year. The NIC team has become a permanent instructional leadership team within the district and will function as a district learning improving team using the PDSA process to develop the district's 2021 summer learning recovery plan required by OSPI.

Limitations

This ISDiP generated data that supports the possibility of implementing instructional design to improve student engagement but it is not clear if the positive results of implementing these strategies were specifically correlated to the strategies implemented during the 90-day cycle. It was clearly evident that the study population of the ISDiP exhibited positive results in the cognitive, academic, and behavioral domains of student engagement during the implementation of the schedules and strategies. A limitation of the study, is that the positive results for students who returned to school in hybrid learning may have been influenced by their personal experience of returning to school after the COVID-19 lockdowns that may have inflated some of the positive results from this ISDiP. It is also possible that the isolation students experienced due to COVID-19 made the experience of participating in the SEL class more engaging and possibly inflated the positive response, attendance, and participation in the class than would have been experienced in a traditional learning environment when students were not exposed to the experience of being locked down and isolated from school and peers.

Summary of Findings

The NIC feels confident that the data collected and presented in this ISDiP provides viable strategies for implementing instructional design that will support improving student engagement. The data collected during this ISDiP indicated positive results in the observable and quantifiable indicators of improvement in the academic, cognitive, and behavioral domains of student engagement.

Chapter 4: Act

In the final meeting of this ISDiP the NIC reflected on the positive results of the data collected in this ISDiP, which was presented in the previous chapter and provides a possible correlation between implementation of instructional design strategies for the improvement of student engagement. In this meeting, the NIC shared observations of the engagement strategies that were implemented and their study of the quantitative and qualitative data within this ISDiP. The team considered the future role of the NIC as they would be continuing to function as a collaborative learning improvement team for the district to support continued instructional change and learning improvement for students in the K-8 district.

The lead researcher used this ISDiP to provide immediate benefit to students in her school community, organized a Network Improvement Community to focus on developing specific instructional design strategies, and made actionable plans to develop instructional models that would support improving student engagement during the second school year of the COVID-19 Pandemic. The team reviewed June 2020 data that was previously collected and completed a root cause analysis to recognize the factors that were leading to decreased student engagement in the students at the K-8 school. The NIC hypothesized about the factors that were contributing to the decreased engagement and to address these causes, the NIC team devised a plan to implement specific targeted strategies in the development of their instructional models for implementation with a specific study population of students in the K-8 school who were experiencing low student engagement. The implementation of the strategies through the instructional model produced positive results in the data analysis of the implementation and

provided a viable correlation to the improvement of student engagement and through this ISDiP, the NIC formed into a new district learning improvement team that will continue to benefit the school community.

As outlined in Chapter 3, the data collected from the student engagement survey, attendance, assignment completion, and grading data, indicated there was some level of improvement in student engagement and achievement. The NIC team members worked together with the lead researcher to design an effective instructional model for hybrid and remote learning that would include the engagement strategies that would support improvement in student engagement. The NIC team members discussed the success of the implemented instructional models and the strategies implemented to improve engagement and are collaborating and planning to incorporate these strategies into the schedules for the new school year.

Impact of change to field. This study was immediately beneficial to the K-8 school district and NIC members feel confident that the data collected in this ISDiP can positively influence the larger field of education. School district leaders across the state and nation are trying to determine strategies for meeting the learning recovery needs of students in the 2021-2022 school year. District leaders who utilize one or all of the strategies included in this ISDiP have the opportunity to improve student engagement, instructional effectiveness, and systems of support for family engagement and relationship building that influence improved learning outcomes. As COVID-19 continues into the 2021-2022 school year, the possible need for remote or virtual learning is still a real possibility. For schools that utilize the instructional design models in this ISDiP, educational systems could address some of the complexities of engaging students in a remote environment or in traditional learning. As school district leaders explore possibilities for reframing instructional delivery to individually meet student needs post-COVID-

19, instructional schedules that include these engagement strategies can be immediately beneficial to other educational leaders in remote, hybrid, or traditional in-person learning. As the nation and world is continuing to struggle with the COVID-19 virus, this study would be beneficial to school districts and educational leaders who are faced with the possibility of providing unique remote learning environments in future school years.

The NIC would like to encourage other school districts to utilize the strategies included in this ISDiP to improve student engagement for their students through the implementation of instructional design models that are focused on student engagement. This ISDiP did not intend to add to existing research in the way a traditional action research dissertation would have, but it is reasonable to believe that the data included in this study could support improvement of student engagement through implementation of instructional design strategies.

Next Steps/Future Research Recommendations

There are two actionable next steps that the NIC intends to complete or recommend to others now that this study has concluded. These next steps include (1) the dissemination of the results of this study to various stakeholders and publication outlets, and (2) the recommendation for future research to continue to explore the plausible benefits of instructional design on the improvement of student engagement.

Final Summary & Conclusion

This Improvement Science Dissertation in Practice (ISDiP) aimed to examine a plausible solution to the decrease in student engagement at a K-8 school during the second school year of the COVID-19 pandemic by implementing research-based engagement strategies into the design of instruction to improve student outcomes. The NIC collaborated to develop unique instructional models for remote and hybrid learning that included small group instruction, social

and emotional learning, family engagement, and weekly Professional Learning Community (PLC) meetings and were able to support an upper elementary group of students to improve student engagement. Based on district data collected at the end of the prior school year, student engagement was identified as being significantly low and the district had a priority to address engagement to improve student achievement in the school year following the outbreak of the COVID-19 Pandemic.

The NIC was established to address the learning needs of the students in the K-8 district and to complete this ISDiP study focused on improving student engagement through implementation of instructional models that may contribute to an improvement in student engagement. The NIC team developed instructional models for remote and hybrid learning that were implemented in the final term of the 2021 school year as a means of improving student engagement that would lead to student achievement for a study population of students in grades 3-5 who had experienced decreased student engagement during the school year when the COVID-19 Pandemic occurred. In the context of this study, the NIC provided positive benefits to the student population of this study and the long-term benefits they may experience from the implementation of this ISDiP expands beyond the scope of this study.

The aim of this ISDiP was to examine if instructional design models that included engagement strategies to support development of effective instructional practices, relationship building, and systems of support for family engagement would provide improved outcomes for a specific population of upper elementary students. The data collected in this ISDiP indicates improved outcomes and supports the theory that instructional design that includes the strategies identified by the NIC serve as a catalyst for intervention in a remote learning environment.

As the K-8 district continues to develop interventions, this study will provide a foundation for supporting improved outcomes for student learning through instructional design. This ISDiP has established a NIC within the district that will continue to support and design instructional change as a district learning improvement team. The district will continue to utilize the strategies of small group instruction, daily SEL lessons, Professional Learning Communities for teachers, and student engagement in the 2021-2022 school year in both traditional and remote learning environments.

The continued use of the NIC learning improvement team and utilization of the strategies from this study will support the students at the K-8 school to have improved student engagement and achievement. Beyond the specific K-8 context, this study has added to existing research for the field of education that suggests strategies for improving student engagement will lead to improved educational outcomes for student achievement. In the context of the lead researcher and the NIC team members who participated in this ISDiP, this study has contributed to and inspired long-term professional and personal growth. In this ISDiP, the lead researcher and the NIC team were able to institute instructional improvement to immediately benefit a specific population of students in one of the most unique learning periods in history to positively influence learning improvement through instructional change that will have long lasting impact on the students in this study and their learning community.

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APPENDIX A

IRB APPROVAL DOCUMENTS

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GEORGE FOX UNIVERSITY HSRC INITIAL REVIEW QUESTIONNAIRE **Page** 8

Title: Increasing Student Engagement During the COVID-19 Pandemic Through Instructional Change

Principal Researcher(s): Jill Diehl

Date application completed: 11/23/20

(The researcher needs to complete the above information on this page)

COMMITTEE FINDING: For Committee Use Only

☒ (1) The proposed research makes adequate provision for safeguarding the health and dignity of the subjects and is therefore approved. **Expedited #3**

☐ (2) Due to the assessment of risk being questionable or being subject to change, the research must be periodically reviewed by the **HSRC** on a basis throughout the course of the research or until otherwise notified. This requires resubmission of this form, with updated information, for each periodic review.

☐ (3) The proposed research evidences some unnecessary risk to participants and therefore must be revised to remedy the following specific area(s) on non-compliance:

☐ (4) The proposed research contains serious and potentially damaging risks to subjects and is therefore not approved.

Chair or designated member

3-9-21

Date

APPENDIX B

NETWORK IMPROVEMENT COMMUNITY INFORMED CONSENT

Network Improvement Committee Member

Informed Consent

RESEARCH SUBJECT INFORMED CONSENT FORM

Prospective Research Subject: Read this consent form carefully and ask as many questions as you like before you decide whether you want to participate in this research study. You are free to ask questions at any time before, during, or after your participation in this research.

RESEARCH SUBJECT INFORMED CONSENT FORM

Prospective Research Subject: Read this consent form carefully and ask as many questions as you like before you decide whether you want to participate in this research study. You are free to ask questions at any time before, during, or after your participation in this research.

Project Information	
Project Title: Increasing Student Engagement During the COVID-19 Pandemic Through Instructional Change	Project Number:
Site IRB Number:	Sponsor:
Principal Investigator: Jill Diehl	Organization: [redacted]
Location: [redacted]	Phone: [redacted]
Other Investigators:	Organization:
Location	Phone:

1. *PURPOSE OF THIS RESEARCH STUDY*
    - You are being asked to participate in a research study to examine solutions that will increase student engagement, attendance, and achievement during the non-traditional learning environments of remote distance learning and hybrid in-person learning during the COVID-19 Pandemic.
2. *PROCEDURES*
    - If you agree to participate, you will be asked to review anonymous student and parent survey data on student engagement. You will also review teacher survey data on student engagement of their

class as a whole along with confidential data on grade level group student attendance and achievement.
- You will also voluntarily participate on a district Learning Improvement Team (Networked Improvement Community) that will collectively research, examine, and lead implementation of instructional practices through Professional Learning Communities (PLC) to increase student engagement, attendance, and achievement.
- Participation will take place during a 90-day cycle March 2021 – June 2021.
- Survey data, attendance data, and student achievement data will be collected at 4-week intervals for review during the study.
- Survey data may contribute to a better understanding of solutions to improving student engagement and achievement during non-traditional learning environments during the COVID-19 Pandemic.

3. *POSSIBLE RISKS OR DISCOMFORT*
   - Questions or concerns regarding the risks of participating in this study may be asked of the principal investigator.
   - Participation in the study is voluntary and will not include any payment, have any impact on employment in the organization, or be connected to or included in any annual employee evaluations.
   - Participants have the right to refuse to participate or withdraw from the study at any point up until results are published.
   - Participants who choose to withdraw from the study at any point prior to publication will have the opportunity to withdraw without any consequence.
   - Minimal risks involved in participating in this study may include loss of time or the psychological burden of completing a survey.
   - Any new information developed during the study that may affect willingness to continue participation will be communicated to participants.

4. *OWNERSHIP AND DOCUMENTATION OF SPECIMENS*
   - All results of this study will be kept strictly confidential. All data from the study will be stored on a secured flash drive and will be secured in the principal investigator's office in a locked file drawer.

5. *POSSIBLE BENEFITS*
   - Benefits to the participants may include an increased understanding of the instructional change practices that will have the greatest opportunity to improve student engagement, attendance, and achievement during traditional or non-traditional learning environments. This understanding may increase instructional effectiveness and student performance.

6. *FINANCIAL CONSIDERATIONS*
   - There is no financial compensation for your participation in this research.
7. *AVAILABLE TREATMENT ALTERNATIVES*
   - N/A
8. *AVAILABLE MEDICAL TREATMENT FOR ADVERSE EXPERIENCES*
   - This study involves minimal risk.
9. *CONFIDENTIALITY*
   - Your identity in this study will be treated as confidential. The results of the study, including laboratory or any other data, may be published for scientific purposes but will not give your name or include any identifiable references to you.

- However, any records or data obtained as a result of your participation in this study may be inspected by the sponsor, by any relevant governmental agency (e.g., U.S. Department of Energy), by the (George Fox University) Institutional Review Board, or by the persons conducting this study, (provided that such inspectors are legally obligated to protect any identifiable information from public disclosure, except where disclosure is otherwise required by law or a court of competent jurisdiction. These records will be kept private in so far as permitted by law.
- No specific school names, staff names, or student names will be used in the reporting of results, whether in publication or conference presentation.
- Course instructors, department chairs, or program deans will not know the names of those who participate.

10. TERMINATION OF RESEARCH STUDY

You are free to choose whether or not to participate in this study. There will be no penalty or loss of benefits to which you are otherwise entitled if you choose not to participate. You will be provided with any significant new findings developed during the course of this study that may relate to or influence your willingness to continue participation. In the event you decide to discontinue your participation in the study,

- There are no potential consequences that may result.
- Please notify the principal investigator at [redacted] of your decision to withdraw from the study so that your participation can be orderly terminated.

11. AVAILABLE SOURCES OF INFORMATION

- Any further questions you have about this study will be answered by the Principal Investigator:

  Name: Jill Diehl
  Phone Number: [redacted]

- Any questions you may have about your rights as a research subject will be answered by:

  Name: Jill Diehl
  Phone Number: [redacted]

- In case of a research-related emergency, call:

  Day Emergency Number: [redacted]
  Night Emergency Number: [redacted]

12. AUTHORIZATION

I have read and understand this consent form, and I volunteer to participate in this research study. I understand that I will receive a copy of this form. I voluntarily choose to participate, but I understand that my consent does not take away any legal rights in the case of negligence or other legal fault of anyone who is involved in this study. I further understand that nothing in this consent form is intended to replace any applicable Federal, state, or local laws.

Participant Name (Printed or Typed):
Date:

Participant Signature:
Date:

APPENDIX C

PARENT/GUARDIAN INFORMED CONSENT

PARENT/GUARDIAN INFORMED CONSENT

RESEARCH SUBJECT INFORMED CONSENT FORM

Prospective Research Subject: Read this consent form carefully and ask as many questions as you like before you decide whether you want to participate in this research study. You are free to ask questions at any time before, during, or after your participation in this research.

Project Information	
Project Title: Increasing Student Engagement During the COVID-19 Pandemic Through Instructional Change	Project Number:
Site IRB Number:	Sponsor:
Principal Investigator: Jill Diehl	Organization: [redacted]
Location: [redacted]	Phone: [redacted]
Other Investigators:	Organization:
Location	Phone:

1. *PURPOSE OF THIS RESEARCH STUDY*
   - You are being asked to participate in a research study to examine solutions that will increase student engagement, attendance, and achievement during the non-traditional learning environments of remote distance learning and hybrid in-person learning during the COVID-19 Pandemic.
   - This study will be an intervention study to identify solutions to the student engagement, attendance, and achievement challenges facing the [redacted] during the Covid-19 Pandemic.
   - During the study, teachers will be focused on improving instruction to result in an increase in student engagement, attendance, and achievement.
2. *PROCEDURES*
   - If you agree to participate, you will be asked to complete an anonymous survey on your child's engagement in their classroom learning. Your name and your child's name will not be included in the survey.
   - The district will also be collecting attendance and assignment completion data as a whole class group for the students enrolled in your child's class. None of the data being reviewed by the district will identify your child or you by name.
   - Participation in the survey of your child's engagement in learning and the district's review of classroom attendance and assignment completion data will take place during a 90-day cycle March 2021 – June 2021.
   - The surveys, attendance data, and student achievement data will be collected at 4-week intervals during the study through an anonymous Google survey.

- Survey responses may contribute to a better understanding of solutions to improving student engagement and achievement during non-traditional learning environments during the COVID-19 Pandemic.

3. *POSSIBLE RISKS OR DISCOMFORT*
   - Questions or concerns regarding the risks of participating in this study may be asked of the principal investigator.
   - Participation in the study is voluntary.
   - Participants have the right to refuse to participate or withdraw from the study at any point up until results are published.
   - Participants who choose to withdraw from the study at any point prior to publication will have the opportunity to withdraw without any consequence.
   - Minimal risks involved in participating in this study may include loss of time or the psychological burden of completing a survey.
   - Any new information developed during the study that may affect willingness to continue participation will be communicated to participants.
4. *OWNERSHIP AND DOCUMENTATION OF SPECIMENS*
   - All results of this study will be kept strictly confidential. All data from the study will be stored on a secured flash drive and will be secured in the principal investigator's office in a locked file drawer.
5. *POSSIBLE BENEFITS*
   - Benefits of parent/guardian participation may include contributing to the school staff developing an increased understanding of instructional practices that will improve student engagement, attendance, and performance.
6. *FINANCIAL CONSIDERATIONS*
   - There is no financial compensation for your participation in this research.
7. *AVAILABLE TREATMENT ALTERNATIVES*
   - N/A
8. *AVAILABLE MEDICAL TREATMENT FOR ADVERSE EXPERIENCES*
   - This study involves minimal risk.
9. *CONFIDENTIALITY*
   - Your identity in this study will be treated as confidential. The results of the study, including laboratory or any other data, may be published for scientific purposes but will not give your name or include any identifiable references to you.
   - However, any records or data obtained as a result of your participation in this study may be inspected by the sponsor, by any relevant governmental agency (e.g., U.S. Department of Energy), by the (George Fox University) Institutional Review Board, or by the persons conducting this study, (provided that such inspectors are legally obligated to protect any identifiable information from public disclosure, except where disclosure is otherwise required by law or a court of competent jurisdiction. These records will be kept private in so far as permitted by law.
   - No specific school names, staff names, or student names will be used in the reporting of results, whether in publication or conference presentation.
   - Course instructors, department chairs, or program deans will not know the names of those who participate.

10. *TERMINATION OF RESEARCH STUDY*

You are free to choose whether or not to participate in this study. There will be no penalty or loss of benefits to which you are otherwise entitled if you choose not to participate. You will be provided with any significant new findings developed during the course of this study that may relate to or influence your willingness to continue participation. In the event you decide to discontinue your participation in the study,

- There are no potential consequences that may result.
- Please notify the principal investigator at [redacted] of your decision to withdraw from the study so that your participation can be orderly terminated.

11. AVAILABLE SOURCES OF INFORMATION

- Any further questions you have about this study will be answered by the Principal Investigator:

  Name: Jill Diehl
  Phone Number: [redacted]

- Any questions you may have about your rights as a research subject will be answered by:

  Name: Jill Diehl
  Phone Number: [redacted]

- In case of a research-related emergency, call:

  Day Emergency Number: [redacted]
  Night Emergency Number: [redacted]

12. AUTHORIZATION

I have read and understand this consent form, and I volunteer to participate in this research study. I understand that I will receive a copy of this form. I voluntarily choose to participate, but I understand that my consent does not take away any legal rights in the case of negligence or other legal fault of anyone who is involved in this study. I further understand that nothing in this consent form is intended to replace any applicable Federal, state, or local laws.

Participant Name (Printed or Typed):
Date:

Participant Signature:
Date:

Principal Investigator Signature:
Date:

Signature of Person Obtaining Consent:
Date:

APPENDIX D

STUDENT ASSENT

Elementary Student Research Assent Form

What is a research study?

Research studies help us learn new things. We can test new ideas. First, we ask a question. Then we try to find the answer.

This paper talks about our research and the choice that you have to take part in it. We want you to ask any questions that you have. You can ask questions any time.

Important things to know…

- You get to decide if you want to take part.
- You can say 'No' or you can say 'Yes'.
- No one will be upset if you say 'No'.
- If you say 'Yes', you can always say 'No' later.
- You can say 'No' at any time.
- We would still take good care of you no matter what you decide.

Why are we doing this research?

We are doing this research to find out more about how students are learning from their teachers and in their classroom.

What would happen if I join this research?

If you decide to be in the research, we would ask you to do the following:

- Complete a Google Survey every 4-weeks about how you feel about learning in your classroom.

Could bad things happen if I join this research?

No, but some of the questions might be hard for you to answer. You can say 'no' to being part of this research study or stop doing the surveys at any time.

Could the research help me?

We think being in this research may help you as a student because it will help our school understand how to teach students in ways that help improve how all students learn.

What else should I know about this research?

If you don't want to be in the study, you don't have to be. It is also OK to say yes and change your mind later. You can stop being in the research at any time. If you want to stop, please

tell your teacher or have your parent/guardian tell your teacher.
You can ask questions any time. You can talk to your teacher to ask any questions you might have. Take the time you need to make your choice.

Is there anything else?

If you want to be in the research, please write your name below. We will write our name too. This shows we talked about the research and that you want to take part.

Name of Participant _____
(To be written by child/adolescent)

Printed Name of Researcher

_____

Signature of Researcher

_____

_____ _____
Date ***Time***
Interpreter Information ***(applicable if ELL participant)***

_____

_____
Printed Name of Interpreter during initial presentation of study
Date
Original form to: Principal Researcher **Copies to:** Parents/Guardian

APPENDIX E

STUDENT ENGAGEMENT SURVEY

Elementary Student Engagement Survey

1. **I attend most of my classes because I enjoy being in class.**
   Strongly Agree Agree Neutral Disagree Strongly Disagree

2. **My teacher helps me understand and learn in my classes.**
   Strongly Agree Agree Neutral Disagree Strongly Disagree

3. **When I am in class I feel like I belong.**
   Strongly Agree Agree Neutral Disagree Strongly Disagree

4. **I feel like I understand and I am learning during class.**
   Strongly Agree Agree Neutral Disagree Strongly Disagree

5. **I enjoy being in my daily SEL classes.**
   Strongly Agree Agree Neutral Disagree Strongly Disagree