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Ready to Engage? Urban Middle School Teachers' Responsiveness to Targeted Engagement Interventions on Their Virtual Instructional Practices: An Action Research Study

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Interventions on Their Virtual Instructional Practices: An Action Research Study

by

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Abstract

Teachers' effectiveness is associated with their instructional practices and is ultimately linked to students' learning outcomes. In order to impact teachers' effectiveness, schools focus substantial effort and resources on professional development led by an assumption that teachers' classroom practices can be improved through targeted interventions. Even if this premise is correct, little information is available about how much a teacher's practice may change through interventions, or which aspects of an instructional practice are more receptive to improving teacher effectiveness (Garret et al., 2019).

This study took place at an urban middle school and examined teachers' responsiveness to targeted engagement intervention in their instructional practices during six weeks of virtual learning. These interventions were addressed through action research and consisted of professional development, coaching and instructional feedback. There were six teacher participants in this study, three math and three science. Data collected in this study contains observational field notes, coaching plans, coaching cycles, engagement frequency charts, professional development constructs, surveys, artifacts and interviews.

Findings from this study show: (a) positive responsiveness to teachers' engagement interventions evidenced by increase in engagement practices during the length of the study; (b) increase in teachers' perceptions about instructional feedback and professional development; (c) coaching with feedback grounded in data surfaced as most impactful intervention in this study; and; (d) engagement practices relevant to the socio-emotional and behavioral domain were least responsive to change; and (e) teachers' beliefs and growth mindset drove the need in practice change. There was no evidence of practices in the behavioral engagement domain.

Future recommendations of this are geared towards exploration into virtual environments that address: a) socio-emotional and behavioral engagement domains; b) student-teacher relatedness as referenced by Marzano and Pickering (2011); and c) deep understanding and high participation as referenced by Himmele's (2011) Cognitive Engagement Model.

Keywords: targeted intervention, teacher responsiveness to intervention, instructional practices, teacher effectiveness, professional development, engagement practices, coaching cycles, instructional feedback, socio-emotional engagement, behavioral engagement, cognitive engagement, Depth of Knowledge, virtual learning, engagement platforms.

Acknowledgement

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Introduction

When students don't meet desired outcomes, schools seek answers in research based-practices to improve teachers' effectiveness. There are many factors that impact teachers' effectiveness. One of these factors is teachers' response to interventions in their instructional practices. While working as an academic instructional coach in a middle school for 14 years, my goal is to continuously contribute to the transformation of the school by impacting teacher practices which are geared toward improving students' outcomes.

To change teachers' instructional strategies, I have utilized various access points such as professional development sessions, instructional feedback, and coaching cycles during both one-on-one and group settings. However, the implementation of these interventions varies drastically. Teachers' responsiveness to intervention usually spans from total rejection to implementation with fidelity of a specific instructional practice. In addition, there is often inconsistency in implementation. Some teachers implement a certain new practice for a period of time, then resume back to their previous teaching routines, while others implement the practice with far less fidelity or just periodically, even if this is relevant to a critical practice such as student engagement. When observing instruction, I notice the same occurrences; highly engaged students working on complex tasks with little to no disruptions. This does not happen by chance. The teacher ensures that the environment and instructional practices are conducive to students learning. There are ample opportunities for vibrant talk as students wrestle with questions and learning expectations, eager to share their answers. Yet, there is another class with mostly teacher talk, little to no interaction, disengaged and seemingly bored, yet compliant students. Since both teachers received the very same professional development on engagement techniques, I wonder: What factors make teachers more or less receptive to interventions? Why is a student's engagement, for

instance, high in one class and yet low in another? Is there a correlation among professional development design, coaching, instructional feedback, and the degree to which these affect change in a teacher's instructional practice? A further analysis of the features of the intervention, sample, setting, and instructions is necessary for a better understanding of what works, for whom, and when.

My educational values are grounded in continuous professional development, growth mindset, and transformative coaching that builds on the strengths of the staff and community within the school system and leads to continuous improvement based on decisions informed by research and practice as response to changing expectations in a globalized world. Moreover, I believe in the implementation of research-based engagement strategies that empower teachers to invest in a collaborative and caring school culture where effective educational practices promote democracy with rigorous curriculum that employs cognitive and affective learning experiences. These interventions can empower teachers to learn how to critically question events and conditions around them and take innovative and constructive actions to improve themselves.

Problem of Practice

Over the years, educational policymakers have focused their interest in teacher effectiveness starting with a mandate by the federal No Child Left Behind Act in 2002, followed by Race to the Top in 2009, with emphasis on teacher instruction and more vigorous teacher evaluation systems. The federal requirements under Every Student Succeeds Act (ESSA) for teacher evaluation issued in 2015 loosened teachers' evaluation accountability; still, states continue to emphasize teacher quality by focusing resources toward professional development (Garret et al., 2019). While some teachers adapted new

practices that align with these new guidelines, others did not. Throughout my educational career as a teacher and in my current role as an academic instructional coach, I have seen many educational initiatives come and go. Still, the same questions persist: How responsive are teachers' instructional practices to intervention? Which aspects of an instructional practice are more amenable to improving teacher effectiveness?

The transition to virtual learning during the last quarter of the 2019-2020 school due to the COVID-19 pandemic put teachers on a high learning curve in online instructional delivery methods. During this time, teachers faced many instructional challenges, a major one being linked to student engagement. Even during in-person learning students' and teachers' perceptions of student engagement were low (See Appendix C). This was evidenced by the school's 2019 Student Culture and Climate survey that ranked engagement in the lowest category among seven surveyed. (See Appendix D). Specifically, this survey showed that 41% of 194 surveyed students felt invested and attentive in instruction. On the same measure, teachers' perceptions of students' enthusiasm to being at school were 25% (See Appendix E). Thus, students' and teachers' perceptions of student engagement practices were low. Consequently, this data put me on a path of exploration into teachers' receptiveness to intervention and teachers' practices to make learning more engaging for students. In order for students to learn they need to be cognitively, behaviorally and emotionally engaged (Daviset al., 2012). This need drove my beliefs in this study.

There is no doubt that teaching qualities have a high impact on students' growth since "teacher quality is one of the few school characteristics that significantly affects student performance" (Goldhaber, 2016, p. 56). Teacher qualities are demonstrated by content knowledge, instructional skills and by their intrinsic motivation (will, desire, passion, or commitment). Many times during my instructional observations I noticed all

these three qualities. However, sometimes there is this thin line between knowing what we see, and seeing what we know. This dilemma can be addressed by various approaches. One of these approaches can be a cause-effect approach during instructional observations. For instance, the cause can be evidenced by the way a teacher raises a question. The effect of this question can be evidenced by students' answers linked to Depth of Knowledge (DOK levels), from concrete to analytical. In other words, when conducting observations, it is important to question the effects of teachers' practices that lead to students' active learning (all brains working). Contrary, we might see just two of the three teaching qualities, either the teacher delivering the content with no student engagement, or student engagement with content but no teacher involvement. Good teaching has all three teacher qualities addressed in a way that is balanced and well intertwined to best serve students' learning. In addition, for good teaching to take place there is a constant need for professional growth. This can be achieved through various coaching models, instructional feedback based on instructional observations and continuous professional development (PD) grounded in theories of adult learning and development.

Purpose of the Study

The main purposes of this study were: (a) to investigate how urban middle school teachers' instructional practices respond to targeted student engagement intervention in a virtual environment; (b) to find how specific intervention such as coaching cycles, instructional feedback, and professional development improve in teachers' engagement practices; and (c) to find specific features (cognitive, socio-emotional, behavioral) of teachers' instructional practices that are responsive to intervention. The premise of the study was that change in an instructional practice may vary in specific aspects and differ by

various approaches relevant to the features of the intervention. Therefore, identifying these specifics as well as effective approaches to teacher professional learning were additional goals of this study. This study took a systematic approach using current research to address intervention in teachers' engagement practices by aligning professional development, coaching and instructional feedback with the aim to improve teachers' effectiveness specific to instructional practices used.

Research Questions

The research questions for this study are based on my own beliefs, practices and curiosity while working as an academic instructional coach and are validated by a meta-analysis of randomized field studies on responsiveness to intervention in teachers' classroom practices (Garret et al., 2019). This meta-analysis recommends further research in effective learning opportunities for teachers that link their classroom practices to students' outcomes. Specifically, the study suggests an inquiry into the effects of interventions by a more in-depth look at the extent of their implementation and the surrounding implementation context as well as teacher experiences during professional learning and later as they seek to apply the interventions in their classrooms. Consequently, my research questions are derived from the purpose, significance and context of this study, and are as follows: (a) How do urban middle school teachers' instructional practices respond to targeted engagement interventions in a virtual learning environment?; (b) How does a specific intervention such as coaching cycle, instructional feedback and PD improve an instructional practice?; (c) Which specific features cognitive, socio-emotional or behavioral of teachers' instructional practices are more or less responsive to intervention? Starting with the premise that change in an instructional practice may vary in specific aspects and differences relevant to the features of the intervention yields, furthermore, the need of

identifying these specifics as well as effective approaches to teacher professional learning and growth.

Significance of the Study

Since the format of this study is action research, advancement in knowledge will be achieved through the use of action research methodology in which teachers reflect and act to continually improve their practice (Hendricks, 2013).

This study used insights from the 2019 findings of Garret, Citkowitz, and William's meta-analysis of research relevant to teachers' responsiveness to intervention in instructional practice in order to continue to build knowledge in the area of effective teaching practices. These authors suggest that their "ability to understand the effects of interventions would be enhanced by further more in-depth information about implementation and implementation context" as well as "qualitative explorations of how interventions were implemented and teacher experiences both during professional learning and as they seek to apply learning in the classroom" (p.134). Therefore, this study sought to provide deeper understanding of teachers' responsiveness to intervention by examining teachers' experiences during coaching, as they received observational feedback, and during professional learning. An impact on teachers' decisions regarding effective practices is derived from the methodology and results of this study. An understanding of the context in which teachers' practices are most responsive to intervention can help a school replicate these to make informed instructional and coaching decisions to ultimately impact students' learning outcomes. Teachers can benefit from knowing how to change their practice to engage students in meaningful learning experiences. Coaches can explore the research methodology to engage teachers in reflective practices relevant to their own professional

growth and their impact on student engagement. Seeing the complexities of teachers' response to intervention can help coaches meet teachers' professional needs at their own zone of proximal development. Ultimately, this study can help policy makers in decision-making processes regarding teacher effectiveness.

Literature Review

Teacher Effectiveness and Outcomes

Findings from previous studies provide strong empirical support for "the potential to improve instructional practices through professional learning intervention" and advocate continuous inquiry for effective ways to provide "useful learning opportunities" to identify links "between changes in classroom practice with changes in student outcomes" (Garret et al., 2019, p.133). Educational research has continuously recognized the importance of teacher quality for student achievement besides other school indicators (Garret et al., 2019, p 106). Studies show that classrooms are responsive to interventions. On average, there is a correlation between interventions directed toward a classroom practice and meaningful positive impacts; however, there is a substantial variation in their effects and ability to improve classroom practice. Sometimes limited dosage of intervention yields similar effects as the more intense approaches (Garret et al., 2019). There are several research reviews on the outcomes of interventions on teachers' practice in K-12 schools. While most of these reviews investigate the relationship between professional learning strategies and student outcomes, they fail to examine the "degree to which they affect immediate outcomes like classroom practice" (Garret et al., 2019, p.109).

For positive educational outcomes relevant to intervention in teachers' practices, building a school culture in which all staff members are involved in the decision-making process is crucial because "buy-in can happen successfully when leadership crafts a vision

and mission that involves all members of an organization" (Okantey, 2012, p.43). In this study, I implemented this recommendation by giving voice to teachers during PD and coaching sessions and by seeking continuous input through surveys for PD evaluation. Okantey (2012) points out the necessity of a convincing purpose for change by stating that "the vision for change must be compelling to draw even the most skeptical individual on board with the change process" (p.45). The use of engagement data in this study was one of the most powerful indicators that impacted teachers' beliefs and led to intervention buy-in. Kanter (2013) points out the importance of leaders to speak up and explain their purpose. Therefore, PD, instructional feedback and coaching sessions need a clear purpose linked to a specified outcome. In this study, this was achieved by the use of coaching plans and by collaboratively linking baseline engagement data with their individually chosen engagement goals as measures of intervention implementation. Senge (2017) explains that a learning organization is one where people give their best in collaborating with others in order to continuously learn. As a result, I intentionally included teacher collaboration in the design of every PD that was part of study's intervention. Change agents who repair relationships are less likely to encounter resistance (Ford et al., 2008). Over the years, in my position as academic coach, I invested a lot of time and effort in building trusting relationships with teachers which led to teacher buy-in and my positive experiences during this study.

Ultimately, studies continuously show positive impacts of instructional interventions; however, their effects and ability to improve instructional practices vary. Some studies investigate the relationship between professional learning strategies and student outcomes but fail to examine the degree to which these affect teachers' instructional practices. School culture plays a key role in teachers' effectiveness. Conditions for change are created by a

leadership that fosters an environment of collaboration, reflective practices, clear vision and support.

Teacher Mindset

Teachers' success in their professional development depends in part on whether they approach goals with fixed or growth mindset and not just on their instructional abilities and talent. Dweck (2006) points out that a change in mindset is not about learning more on random topics but is about seeing the same in a new way.. This also means intentional commitment to growth over a period of time to transition from a "judge-and-be-judged framework" to a "learn-and-help-learn" framework (Dweck, 2006, p. 244). This is based on the belief that although we all differ in talents, aptitudes, or temperament, we all can change through application and experience by cultivating qualities through effort, strategies, and help from others (Dweck, 2006).

Teachers with a growth mindset are continuously monitoring instructional processes by conducting an "internal monologue" that is not about "judging themselves and others"; instead, they are receptive and sensitive to positive and negative information in terms of constructive actions and its implications for learning (Dweck, 2006, p.225). They constantly question their learning, improvement and opportunities to help others become more successful (Dweck, 2006). As a result of these recommendations, during coaching cycles, teachers were given opportunities to self-reflect on their practices (See Appendix J). In addition, they were given opportunities to evaluate their learning in PDs by the use of surveys after each PD session (See Appendix O). Coaching questions were used as a reflective and monitoring instrument of intervention implementation (See Appendix K).

Contrary, individuals with fixed mindset thrive when things are "safely within their grasp" and lose interest when "things get too challenging" (Dweck, 2006, p. 22). Therefore,

the key to success for a school and academic coach is to cultivate a culture in which "teachers believe in the growth of the intellect and talent" (Dweck, 2006, p. 194) and one where they are fascinated with the process of learning.

Although a schools' culture can have many barriers to change, teachers' approach to goals with a fixed or growth mindset can be detrimental for the success of a school's progress. A teacher's fixed mindset can be approached with a strong vision and purpose for change that is grounded in building relationships and collaboration. Subsequently, teachers' mindset is linked to the success of professional development, coaching, and instructional practices and thus to students' educational outcomes.

Interventions: Coaching, Instructional Feedback, and Professional Development

From an instructional coach perspective, interventions relate to "transforming schools through improving teacher practices, addressing systemic issues, and improving outcomes for children" (Aguilar, 2013, p.3). In this study, instructional interventions are addressed through various coaching strategies, instructional feedback, and sustained professional development.

Coaching

Teachers need additional support besides the traditional approach to improvement when dealing with the complexities of their profession. Coaching is considered "a critical strategy to improve practice and outcome of schools" (Rebora, 2019, p.9). The role of a coach is to help "build the capacity of others by facilitating their learning" (Aguilar, 2013, p.19). Gawanade (2011) states that "Coaching done well may be the most effective intervention designed for human performance" (p.9) while reaffirming the crucial role of a coach in the transformative process of development.

In a meta-analysis of research, Kraft and Blazar (2018) found coaching to have significant positive effects on both teachers' instructional practice and students' achievement that is comparable to the "difference in performance between a novice teacher and an experienced veteran" (p.69). According to the authors, coaching is so impactful because of the coach's attention to teachers' essential classroom practices. The authors also found coaching to be more effective with a smaller number of teachers and less effective with larger ones. Therefore, in order to increase the effectiveness of coaching in this study, the sample size consisted of just six participant teachers, since Kraft et al.(2018) suggest that components of effective coaching such as coaching quality, teacher engagement, and programmatic flexibility decline as the numbers increase.

Aguilar (2013) sees coaching as "a form of professional development that brings out the best in people, uncovers strengths and skills, builds effective teams, cultivates compassion, and builds emotionally resilient educators" (p. 6). According to this author, the essence of transformational coaching consists of "doing a set of actions, holding a set of beliefs, and being in a way that results in those actions leading to change" (Aguilar, 2013, p. 20). My coaching beliefs in engagement practices were modeled during PD by using various engagement domains and collaborative platforms (See Appendix H).

According to Aguilar (2013), a coach can use various models of coaching such as *directive, facilitative*, and *transformative* in dependence of teachers' individual needs and level of expertise in specific instructional practices. Directive coaching generally focuses on changing behaviors. The coach is the "expert in a content or strategy and shares her expertise" (Aguilar, 2013, p. 21). A facilitative coach "does not share expert knowledge" instead "builds on existing skills, knowledge, and beliefs" towards "constructing new skills, knowledge and beliefs" geared to improve an instructional practice (Aguilar, 2013, p. 23).

Specifically, a facilitative coach operates in the zone of proximal development by creating necessary scaffolding of a range of abilities that enable the teacher to accomplish necessary tasks (Vygotsky, 1978). This scaffolding process is also known as "gradual release model" (Aguilar, 2013, p. 23). Transformative coaching is grounded in system thinking and explores the interrelationship of patterns of change rather than isolated events in behaviors, beliefs and being while "incorporating strategies from directive and facilitative coaching, as well as cognitive and ontological coaching" (Aguilar, 2013, p. 25).

In this study, I made use of both facilitative and transformational coaching exemplified in the participant's individual coaching plan (See Appendix I). This plan takes a scaffolding approach to coaching as specified by Aguilar (2013) and consists of high-leverage activities, break-down of learning, indicators of progress, coaching theories, resources and coaching goal that is grounded in the interrelationship of observational data.

The coach's role as a system thinker is to "carve out the time and psychological space" for the teacher to explore the "root causes" for specific problems and then identify "high-leverage areas of action as entry points that could result in transformational changes" (Aguilar, 2013, p. 27). Specifically, in this action research, I used engagement data relevant to depth of knowledge (DOK Levels), participation frequency, and engagement strategies as entry points for teachers' reflection and identification of high leverage actions that lead to transformational change.

O'Shell (2019) recommends the use of video to showcase great teaching for the purpose of coaching and professional development. The author points out that besides using the videos for teachers' self-reflection, videos can help teachers implement targeted practices with more fidelity by focusing on the process of the practice as well as on the potential obstacles. O'Shell recommends selecting 10-15 minutes of good spots of practice

within a lesson to share and highlight small scale instructional techniques. Moreover, the coach can use these videos as exemplar feedback to lesson observations. During the course of this study and due to the 2019 Coronavirus pandemic, participant teachers pre-recorded some of their lessons and shared them online. These videos were also used for instructional feedback, teacher reflection, and coaching. In addition, during instructional observations, I kept a detailed minute by minute log (double entry journal) of class interactions relevant to engagement that was shared with teachers as part of feedback (See Appendix L).

Knight (2014) points out that "video captures the rich complexity of the classroom" (p. 60) and suggests that coaches use video as a solution to "unique challenges and opportunities" (p. 60) in teachers' experiences. The video components of instructional coaching are straightforward. After the teacher gets enrolled in the coaching process, a measurable goal is identified well as the teaching strategy that will help the teacher achieve the goal. Then, the teacher observes a model practice based on the set goal. Later, the coach observes the teacher implement the practice and gathers data. Knight's recommendations that pertain to the use of videos, setting coaching goals (part of Coaching Plan), and modeling of practices (during PD) were implemented in this action research.

In order to identify change the teacher wants to see based on the pre-set goal, the coach asks the teacher a set of questions. Knight (2014) suggests some of the following guiding questions that would lead the teacher closer to the goal: "On a scale of 1 to 10, how close was the lesson to your ideal, what would have to change to make the class closer to a 10, what would that look like, how would you measure that"? (Knight, 2014, p. 48). These suggested questions were used in the methodology of this study (See Appendix K).

As a result, research is linking coaching to schools' outcomes by pointing out significant positive effects on both teachers' instructional practice and students'

achievement. While there are various coaching models, transformative coaching is grounded in system thinking and overarches some of these models. In any coaching model, a coach's role is to serve as a system thinker by exploring root causes in a teacher's practice and by addressing these with high leverage actions that lead to transformational change. Some researchers suggest video recording lessons for PD and coaching, while others recommend the use of questioning as instruments to measure change towards a pre-set coaching goal. Based on these research practices, I used video recorded lessons, Teacher Self-reflection Forms, coaching questions, and coaching plans, as coaching strategies to improve teachers' engagement practices (See Appendix J, K, and I).

Coaching Cycles

Knight (2018) created a process for coaches to use with teachers in order to improve their teaching and learning. This process is called the *Impact Cycle* (Knight, 2018, p. 27) and consists of three stages: identify (set a goal), learn (implement a strategy), and improve (or adapt it until the goal is met). See below Figure 1.

Figure 1

Coaching Impact Cycle (adapted from Knight, 2018, p.25)
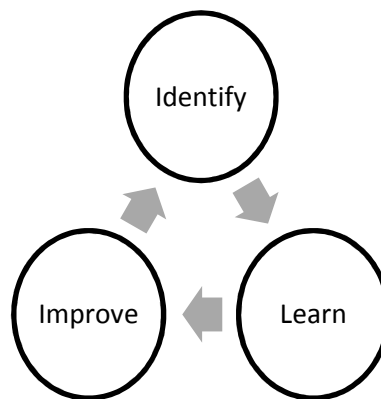
Knight (2018) describes a specific approach to coaching he calls "instructional coaching" (p. 2) where the coach partners with a teacher to undergo a coaching cycle consisting of several steps. First, the coach analyzes "current reality"(Knight, 2018, p. 2) of what is actually happening in a teacher's classroom and then identifies and sets goals for improvement together with the teacher's input. Next, the coach identifies and explains teaching strategies to meet those goals. Lastly, the coach monitors progress and provides support until the goals are met" (Knight, 2018, p. 2).

In order to achieve this, Knight (2018) has found that instructional coaches must engage in two key practices: treat teachers as partners and engage in a coaching cycle. Knight (2018) explains the partnership between the coach and teacher as one that addresses: equality (teacher and coach share decisions), choice (teacher is the final decision maker), voice (teacher feels safe to express opinion), dialogue (back and forth conversation seeking teacher's ideas), reflection (coach encourages teacher's reflection for growth), praxis (both, teacher and coach learn), and reciprocity (teacher and coach learn).

Similarly to Aguilar (2013), Knight (2018) describes the use of various approaches in coaching such as *facilitative, directive* and *dialogical.* Knight is a proponent of dialogical coaching and it is used with the Impact Cycle. Dialogical coaching involves inquiry, using questions, listening, and a conversational approach to move teaching forward. In this approach, the coach both helps the teacher unearth what he already knows and shares her own expertise. Still, the teacher is the one who decides which approaches to use (Knight, 2018).

Subsequently, coaching based on the impact cycle overlaps with the spiraling action research process in terms of analyzing a teacher's current reality (reflect), then setting a goal and strategies for improvement (actions) and by monitoring the progress until the goal is

met (evaluation). Research recommends two important factors in this process that need to be taken in account for a positive effect: teachers' partnership and engagement in the coaching cycle, preferably, with a dialogical approach. Some of my past successful outcomes with the use of the impact cycle made me decide to use this approach for this study.

Instructional Feedback

Educational research supports the idea that by teaching less and providing more feedback, we can produce greater learning (Bransford et al., 2000; Hattie, 2008; Marzano et al., 2001). This specific research supports students' as learners. However, coaches and administrators provide feedback to teachers after instructional observations with the aim to learn and improve teacher practices. Hattie's (2008) research revealed that feedback was among the most powerful influences on achievement, and acknowledges that he has "struggled to understand the concept" (p. 173).

Buckingham and Goodall (2019) use compelling research to argue that there is often a misunderstanding about feedback in terms of evaluative versus improvement focused, stating that: "telling people what we think of their performance and how they should do better" (p. 92) stating that this "doesn't help them thrive and excel" (p. 92). In addition, the authors point out that telling those individuals how we think they should improve actually "hinders learning" (Buckingham & Goodall, 2019, p. 92). They further explain:

> Since excellence is idiosyncratic and cannot be learned by studying failure, we can never help another person succeed by holding her performance up against a prefabricated model of excellence, giving her feedback on where she misses the model, and telling her to plug the gaps. (Buckingham & Goodall, 2019, p. 94)

My approach to feedback in this study coincides with Buckingham and Goodall(2019) since it pertained to missing gaps in teachers' implementation of engagement domains with suggestions for improvement rather than my evaluation of their performance.

Knight (2019) advocates for coaching feedback that is in a form of dialogue to honor teachers' autonomy as a path to improve a practice. Moreover, the author promotes the necessity for a structured conversation with teachers as dialogue "where both members are heard and where both parties' opinion count" (p.19). This process empowers the teacher in the feedback process (Knight, 2019. The author does not exclude the importance of coaches sharing their thoughts, but he suggests that these need to be "non-judgmental" and with the "humility appropriate for any conversation about what happens in a classroom" (Knight, 2019, p.19).

Coaches use checklists as a way of providing feedback to teaching practices. Checklists are an efficient way for providing feedback because they contain a clear description based on a common language and understanding between coach and teacher (Knight, 2018). Creating these checklists collaboratively is a desired practice because it sets a pre-established reference point for feedback. In the case of this study, an engagement frequency chart was used as a way of providing measurable feedback to teachers (See Appendix M). This instrument had a major impact on teachers' responsiveness to intervention. Teachers valued data driven feedback.

In sum, researchers emphasize the major impact of instructional feedback on student achievement. For this process, researchers again recommend the use of video recordings and checklists, this time as means to develop clear and precise language for the teacher and coach to describe a practice. Consequently, this claim confirms the benefits of using video recordings and checklists in this action research. In the process of providing feedback,

researchers also recommend the use of dialogue as an effective way to empower teachers and give them autonomy in changing their practice. Moreover, researchers suggest use of feedback focused on improving performance rather than evaluative focused on failures. In this study, I will use this dialogical coaching approach with improvement driven feedback and frequency charts as checklists, based on confirmed research practices.

Instructional Feedback: High Leverage Action Steps

Deep coaching, according to Knight (2018), requires setting aside all trivial requests for support and focus on "high leverage services that have the greatest potential for improving teaching and learning" (p. 15). Still, based on my experience, trivial requests for support by a teacher need to be addressed so that the teacher does not feel dismissed. According to Bambrick-Santoyo (2019), a working group of coaches developed a scope and sequence named "Getting Better Faster," consisting of a menu of high leverage action steps that help coaches provide specific building blocks to teachers, with a common language around abilities that define great teaching. Coyle (2009, as cited in Bambrick-Santoyo 2019), points out the importance and power of high leverage micro-feedback addressed in "smallest possible chunks" (p. 48) for each skill that needs to be perfected. Bambrick-Santoyo (2019) also highlights the need of these action steps to be observable and clear with a common language that describes the specific action.

Video recordings of lessons can serve as a great feedback tool for high leverage action steps when used by teachers to reflect on their instructional practices. Knight (2014) points out that videos are great to monitor a teacher's progress in a specific instructional practice. Coaches can benefit from video recordings by helping teachers deepen their understanding of a practice by examining specific actions of impact and by explaining the various approaches to data collection that lead to high leverage actions. Specifically,

coaches can use videos for selecting variables as means for measuring instructional goals set collaboratively with teachers. In this particular action research, the variables pertained to the ratio of interactions, question type and level (DOK), instructional engagement time versus total time, positive reinforcement, corrective feedback and others.

As a result, researchers agree on the powerful effects of instructional feedback with the use of high leverage action steps. These action steps consist of small scaffolds in skills that can effectively improve a practice. In this study, high leverage action steps were part of the coaching plan and instructional feedback and were aimed to impact teachers' effectiveness in their engagement practices.

Professional Development

Research on what constitutes high-quality professional development for teachers has been mixed, although there is general consensus about its typical components (Hill et al., 2013). Desimone (2009) describes this consensus on effective professional development as consisting of a robust content, features of active learning, collaborative format and aligned with curricula and policies, and provides enough learning time for participants.

For a professional development to be effective its design must address how and what teachers learn. In their review of 35 methodologically rigorous studies, Darling-Hammond et al. (2017) have found a positive link between teacher professional development, teaching practices, and student outcomes. Based on their methodology, Darling-Hammond et al. (2017) identified seven characteristics of effective professional development to be as follows:

- content focused;
- using active learning and adult learning theory;
- collaborative, typically in job-embedded contexts;

- modeling effective practices;

- focused on coaching and expert support;

- offering opportunities for feedback and reflection;

- of sustained duration (p. 4)

Using several theories of learning and adult development, Trotter (2006) outlines themes that are relevant for designing teacher professional development as follows:

• Adults come to learning with experiences that should be utilized as resources for new learning.

• Adults should choose their learning opportunities based on interest and their own classroom experiences/needs.

• Reflection and inquiry should be central to learning and development (p. 8).

Darling-Hammond et al. (2017) state that this outlined framework helps explain why teacher professional development that addresses active learning is impactful in supporting student learning. "Active learning" (Darling-Hammond et al., 2017, p. 7) moves from traditional lecture models toward models that engage teachers directly in the practices they are learning and, preferably, are connected to teachers' classrooms and students. These models engage teachers in using authentic artifacts, interactive activities, and other strategies to provide highly contextualized professional learning while incorporating the elements of collaboration, coaching, feedback, and reflection and the use of models and modeling (Darling-Hammond et al., 2017, p. 7). According to Aguilar (2013), "coaching is a form of professional development that brings out the best in people, uncovers strengths and skills, builds effective teams, cultivates compassion, and builds emotionally resilient educators" (p.6).

Snow-Renner and Lauer (2005) point out the importance of opportunities for "sense-making" (p. 10) activities during professional learning experiences. Therefore, when designing PDs it is important to integrate active learning opportunities for teachers with follow up reflections on students learning where they can experience the same activities as students to build pedagogical knowledge. Darling-Hammond et al. (2017) add that such activities could involve modeling the new practices and creating opportunities for teachers to "analyze, try out, and reflect on the new strategies" and state that active learning experiences "allow teachers to transform their teaching and not simply layer new strategies on top of the old, a hallmark of adult learning theory" (p. 7). Consequently, PDs need to incorporate opportunities for role-play to help teachers create a vision of a model instruction that is linked to their curriculum and builds their own learning.

Knight (2018) emphasizes the power of modeling a specific teaching strategy to frame it in action. It is not sufficient for teachers to hear about a strategy; they also need to see it implemented in a classroom. That is where modeling comes into place. A teacher can observe a coach or another teacher model the targeted strategy effectively. Pre-recorded videos are also a useful aid for demonstrating a practice. The ultimate goal of modeling is for teachers to learn the targeted strategy so that they can confidently implement it in a classroom.

In review, research on what makes a high-quality PD is mixed. There are some guidelines on components and characteristics of effective PD design that address how teachers learn. These characteristics pertain to teachers using authentic artifacts, interactive activities, and other strategies that provide contextualized learning. Researchers recommend the incorporation of collaboration, coaching, feedback, reflection, use of models and modeling for effective PD design. In the PD design of this action research I incorporated

modeling, collaboration, active learning, and reflections with follow up coaching and feedback. My aim was to create impactful learning opportunities for all participants. Teachers were given opportunities to reflect on PD effectiveness thru surveys administered pre, post and during PD implementation (See Appendix O and R).

Adult Learning Theories

Adult learning theories have an essential role in the implementation of teachers' professional development. Understanding these theories and implementing them based on the learning needs of teachers can lead to a greater responsiveness and a more effective implementation of their learning in practice. Adult learners from a humanistic psychology perspective focus more on the perspective of "how adulthood could be distinguished from childhood learning" (Meriam, 2017, p. 23). According to Merriam (2017), research in adult learning began in the West in the early twentieth century and was dominated by behavioral and cognitive science. It focused on how increased age impacts performance and intelligence scores. By the mid-twentieth century three major streams of adult learning emerged: andragogy, self-directed learning and transformative learning, focus on individualism, competency and self-development. Research conducted by cognitive and educational psychologists made the shift in adult learning theories towards situated cognition and context-based learning. This shift made learning a function of the context in which it takes place.

Non-Western perspectives of adult learning have a holistic approach, they value learning embedded in everyday life, and are responsive to learners from other cultures. This approach "recognizes the interrelationship among an adult learner's body, cognition, emotion, and spirituality" (Meriam, 2017, p. 78). Recent work in adult learning has been centered towards a holistic approach, involving emotions, body and spirit. Research about

situated learning points out that contexts that are as 'authentic' as possible such as internships and simulations can maximize learning (Meriam, 2017). The more we understand about teachers' learning preferences and the implementation context of their learning, the better we can design PDs that maximize their growth. Addressing both Western and non-Western approaches to learning can broaden the repertoire in facilitation of PDs especially if using contexts that align with situational needs and current technological advances. For instance, during the COVID-19 outbreak, teachers were in search of socio-emotional supports to address the many challenges with distance learning. To address some of participants' socio-emotional needs, during PD we established a shared time of challenges and reflection on virtual learning ('Grows and Glows') followed by motivational quotes and educational articles that evidenced similar roadblocks and ways to cope. All of the six PD sessions in this study were facilitated in a synchronous virtual environment (Microsoft TEAMs), authentic to the environment used in teachers' instructional practices. Thus, this modality addressed the context of authentic learning described by research.

According to Mukhalalati and Tylor (2019), educational philosophy and learning theories relate to educational practices that provide frameworks of an individual's acquisition of knowledge, skills, and attitudes to achieve changes in behavior, performance, or potential. Adult learning theories known also as 'andragogy' have been divided into the following categories: instrumental (behavioral, cognitive, and experiential), humanistic, transformative, social, motivational, reflective and constructivist.

At the end of the 2019-2020 school year, teachers at the school study site were asked to take a survey on the theories that best fit their learning style. The majority of the 11 teachers who took the survey opted for the motivational and reflective theories (See

Appendix G). This is an important factor that needs to be taken into consideration when designing professional development and is further examined in the data analysis section. The motivational theory implies two elements: motivation and reflection. This means that individuals drive on self-determination, expectancy of success, self-evaluation, and goal setting. On the other hand, the reflective theory focuses on two types of reflection: first, "reflection on action" (Mukhalalati & Tylor, 2019, p. 7) meaning evaluation of relevance and rigor of processes and second, "reflection in action" (Mukhalalati & Tylor, 2019, p. 7) as one that allows the learner to reflect on the activity as it happens . My view on adult acquisition of knowledge coincides with the constructivist theory because it includes elements of all other theories and indicates that knowledge is constructed actively based on an individual's environment, physical and social world. Constructivist theory can be cognitive and socio-cultural where learning is defined as "a process of constructing new knowledge on the foundation of existing knowledge" (Mukhalalati & Tylor, 2019, p. 3). I integrated these three theories when designing professional development by building using data from teachers' coaching plans relevant to the breakdown of learning processes (See Appendix I).

During the 2020 COVID-19 pandemic, many teachers were forced into self-directed learning relevant to technologies for distance learning. In self-directed learning (SDL) "individuals take responsibility for their own learning process" (TEAL, 2011, p. 2) based on their needs, goals, resources, plan, and expected outcomes. SDL can take place at learner's convenience and preference. It can involve isolated or group activities using various instructional resources such as books, articles and methods (Internet searches, lectures, electronic discussion groups). With the transition to virtual learning due to the 2019 Corona pandemic, teachers at the school site of study used hybrid learning consisting of

asynchronous and synchronous virtual environments. Professional development was sought

by teachers independently and part of the intervention aimed to improve their engagement

practices.

In short, research shows that adult learning theories are linked to the effectiveness of

professional development. There are various Western and Eastern frameworks of

acquisition of knowledge that evolved over the years and proved effective. These need to be

taken in account when designing PD. As I designed the PD sessions for this study, I took in

account teachers' preferences in learning theories based on a survey (motivational and

reflective) as well as my own beliefs which align with the constructivist approach. The

above mentioned learning theories were partially combined with self-directed learning

(SDL) based on the same survey where teachers opted for a hybrid learning format that

combines synchronous and asynchronous learning (See Appendix G). Additional

instructional PD videos were uploaded in TEAMs so that teachers could implement SDL.

Engagement Practices

Research has recognized the importance of effective teachers and their effect on student

achievement. On their part, teachers know that engagement is crucial in connecting students

to school and learning, thus leading to a school's success (Davis et al., 2012).

Engagement occurs on multiple levels. Addressing each level can increase a

teacher's chance to sustain students' engagement. There has been some disagreement on the

number of theoretical dimensions of engagement. Some scholars argue for two dimensions:

behavioral and emotional (Finn & Voelk, 1993; Skinner & Belmont, 1993, as cited in Davis

et al., 2012), while others for three: behavioral, emotional and cognitive (Fredricks et al.,

2004 as cited in Davis et al., 2012). Davis et al. (2012, p. 22) emphasize the need of three

interconnected dimensions: behavioral engagement, cognitive engagement, and relational

engagement. During PD teachers reflected on these three engagement domains and acknowledged their importance in incorporating them in instructional practices.

Figure 2

Engagement Domains: Cognitive, Relational, and Behavioral (Davis et al., 2012, p.22)

Relational Engagement
The quality of students' interactions in the classroom and school community

How do students' ways of relating to their teachers and peers affect their motivation, performance, and understanding of academic content?

Behavioral Engagement
The quality of students' participation in classroom and school community

How do students' patterns of behavior and participation in the classroom affect their motivation, performance, and understanding of academic content?

Cognitive Engagement
The quality of students' psychological engagement in academic tasks, including their interest, ownership, and strategies for learning

How do students' emotional and cognitive investment in learning process affect their performance and understanding of academic content?

According to Davis et al. (2012), behavioral engagement relates to the quality of students' participation in the classroom and school community while integrating "effort, persistence, participation, and compliance with school structures" (Davis et al., 2012, p.23). On the other hand, cognitive engagement encompasses "the quality of students' psychological engagement in the academic tasks, including their interests, ownership and strategies of learning" (Davis et al., 2012, p. 22). Lastly, relational engagement, according to the same authors, relates to "the quality of students' interactions in the classroom and school community" (Davis et al., 2012, p.22).

It is important to note that students can have one dimension of engagement present but not the others. For instance, a student may be behaviorally engaged, yet struggling with learning due to absence of cognitive engagement. Both cognitive and behavioral engagement addresses effort in their definitions. This further builds on the notion that "cognitive engagement refers to the quality of students' engagement whereas sheer effort refers to the quantity of engagement" (Pintrich, 2003, p. 105).

Relational engagement encompasses "students' reports of perceived teacher supports, perceived press for understanding and their sense of belonging" (Davis et al., 2012, p. 24). Researchers relate to this notion as emotional engagement to students' interest, happiness, anxiety, and anger during educational activities (Skinner & Belmont, 1993). In contrast, other researchers describe emotional engagement as the extent of students' sense of belonging and degree to which they care about their school (Sciarra & Seirup, 2008). Theories of relational engagement address this type of engagement through the motivational system and self-determination theory. The first theory is also known as competence and is defined as "attainment of personally or socially valued goals" (Davis et al., 2012, p. 25). The second theory is also referred to as relatedness and autonomy and is explained as social-contextual conditions that provide individuals with prospects to satisfy their basic needs and leads to intensified motivation, favorable functioning, and psychological well-being (Deci & Ryan, 2000).

In a school setting, this means that students' self-determination is dependent on the level in which teachers and the classroom satisfy their basic needs and their need to relate to others (Davis et al., 2012). Skinner and Belmont (1993, as cited in Davis et al., 2012) suggests that more research is needed to understand how students achieve relatedness with their peers and how schools can promote this practice.

Marzano and Pickering (2011) examined research on engagement and motivation and found an abundance of strategies in which teachers can increase engagement in their classrooms. The authors encompassed engagement through four elements: emotions, interest, perceived importance, and perceptions of efficacy. Furthermore, the authors supplement these engagement elements with corresponding questions: 'How do I feel?, Am I interested?, Is this important?, Can I do this?' The first two questions address short-term perceptions of engagement, specifically, a student's attention during the range of a few seconds to a few minutes. The following two questions deal with long-term perceptions of engagement, specifically, the extent to which class activities relate to students' goals and help them develop self-efficacy.

The authors introduce extensive strategies that teachers can employ to purposely and methodically maintain a positive, lively, and accepting atmosphere in class. These strategies include effective pacing, incorporating physical movement, demonstrating intensity and enthusiasm, using humor and building positive teacher-student and peer relationships, use of effective feedback, questioning to increase response rate, tracking and studying progress, teaching self-efficacy, connecting to students' lives and others (Marzano & Pickering, 2011).

Fisher et al. (2018) state that students must be engaged to learn while pointing out that "engagement in learning is one of the major contributors to student achievement" thus also making the correlation between increase in engagement and student achievement. The authors describe how to tend to the emotional, behavioral and cognitive engagement of students by focusing on practical strategies that deal with relationship building, teacher clarity, and student challenge. Fisher et al. (2018) describe that: "Effective classrooms don't just happen. They are led by teachers who deeply understand their craft and the essential

nature of the interaction between student, teacher, and context" (p. 17). The context of this type of engagement (Fisher et al., 2012, p.13) is illustrated in Figure 3.

Figure 3

Model of Engagement by Design (Fisher et al. ,2012, p.13)
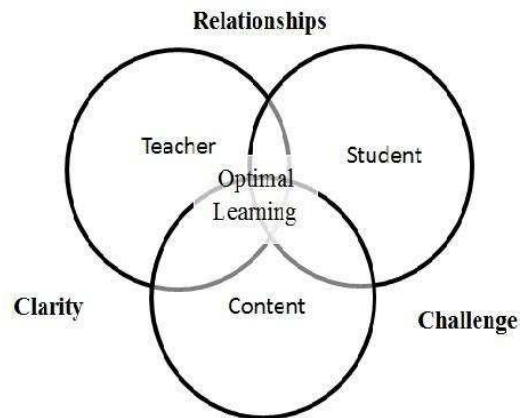
Optimal learning and engagement occur from the intersection of the teacher, the student, and the content. The authors describe this intersection in terms of overlapping circles, with each overlapping section representing necessary components of engagement: relationships, clarity and challenge.

Hattie (2008), in a synthesis of over 800 meta-analysis studies, found that teacher-student relationships have an effect size of 0.72, and yet, according to Fisher et al., (2018) only 52% of students report that teachers make an effort to know them. Therefore, teachers can purposefully foster stronger relationships for student growth. Hattie (2008) found clarity to have an effect size of 0.75. Clarity consists of a combination of teachers knowing what to teach, effectively explaining to students what they are supposed to learn, and providing achievable success criteria. In addition, according to Hattie (2008) providing an appropriately challenging task has an effect size of 0.57 yet Fisher et al.(2018) state that

43% of students find school boring. Therefore, instituting high expectations from students keeps them engaged. Fisher et al. (2018) recommend a balance in task difficulty and complexity to increase the task challenge. The same authors define difficulty as the amount of time, work or effort the learner has to employ on a task, while complexity as a type of thinking, the number of steps, or background knowledge required to complete the task. The authors (Fisher et al., 2018, p. 94) illustrate these two concepts on different axes, resulting in four distinct tasks to increase challenge: fluency, stamina, strategic thinking, and struggle. The graph in Figure 4 indicates each task with corresponding complexity and difficulty level.

Figure 4

Difficulty and Complexity Chart (Fischer et al., 2018, p.94)
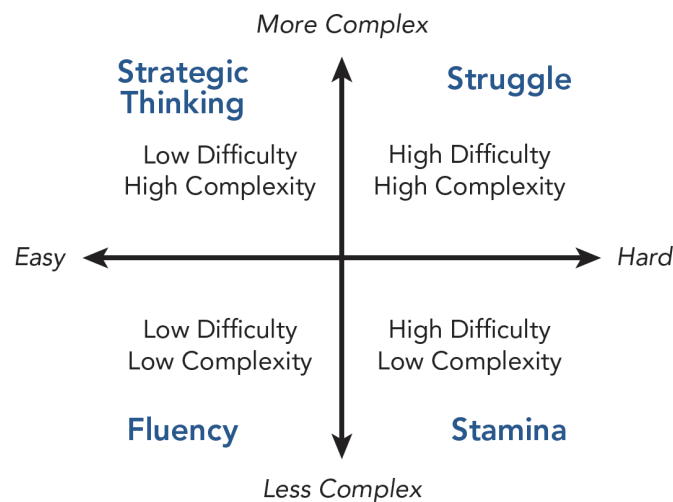
Fundamentally, engagement by design instructs teachers to intentionally tend to behavioral, cognitive and emotional needs of their students through the planning for the following:

- Academic behaviors and actions
- Psychological effort put into learning and mastering content

- Feelings and attitudes about school and students' relationships in school

Teachers can stimulate engagement by encouraging students' self-worth, purpose, and voice while investing in relationships and curriculum choices that ensure that students remain at the center of engagement driven by teachers' design practices (Fisher et al., 2018).

Himmele and Himmele (2011) explain that total participation techniques are teaching techniques that allow teachers to get evidence of active participation and cognitive engagement from all students at the same time. Figure 5 (Himmele & Himmele, 2011, p. 15) illustrates the cognitive engagement model and shows the relationship between total participation and higher-order thinking that can take place in a classroom. Even though learning happens in all four quadrants, activities that occur in Quadrant 4 bring evidence of high cognition and high participation.

Figure 5

Cognitive Engagement Model *(Himmele & Himmele, 2011, p. 15)*
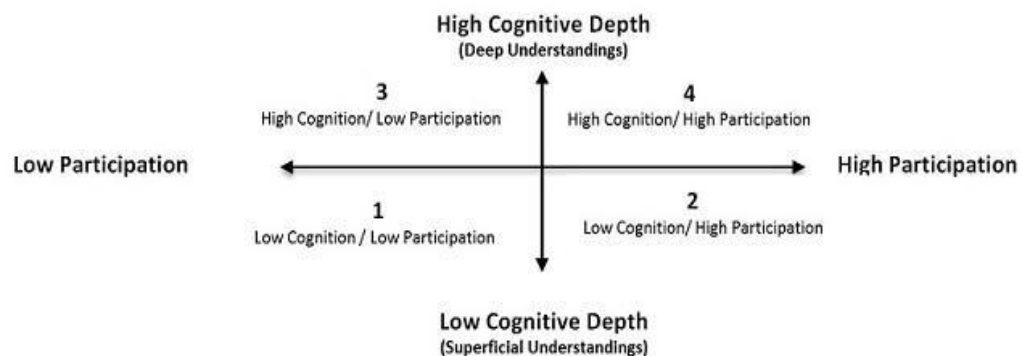
During instructional observations, the Cognitive Engagement Model and the Difficulty and Complexity Chart served as a reference point when analyzing trends in students' learning and engagement. This framework helps develop questions for teachers such as: In which quadrants did your aim to linger? Can you develop questions through the

lens of total participation techniques to ensure the engagement of all students rather than just few? (Himmele & Himmele, 2011).

Lemov (2010) studied teaching techniques that distinguished good teachers from great ones and compiled those as a toolkit to help teachers improve their craft. Some of these techniques are aimed towards engaging students in learning, such as cold call, wait time, call and response, everybody writes and others. Lemov (2015) found that great teachers share some common elements, a tool box, for closing the achievement gap. He describes the techniques of a "champion teacher" (Lemov, 2015, p. 9) in "concrete, specific, and actionable way, that allows them easy application in teachers' daily practices (Lemov, 2015, p. 9).

In this study, due to the virtual nature of the instructional environment, some of these techniques presented many challenges since students kept their cameras turned off and thus eliminated the visual cues between teacher and students that are necessary to guide engagement. Still, one of the most commonly used engagement techniques was cold call and wait time.

Consequently, researchers disagree on the number of theoretical dimensions of engagement. Some argue for two dimensions: behavioral and emotional, while others argue for three by adding the cognitive domain. Engagement by design guides teachers to intentionally plan instruction based on the three domains to meet the needs of their students. Researchers claim that engagement is one of the major contributors to student achievement and found an abundance of strategies in which teachers can increase engagement in their classrooms. Some researchers recommend a balance in task difficulty and complexity to increase the task challenge when addressing the cognitive domain. Others recommend an

enhanced approach with total participation techniques that allow teachers to get active

participation and cognitive engagement from all students at the same time.

In this action research, I used a combination of Marzano et al. (2011) and Davis et

al. (2012) approach to engagement intervention. Consequently, I relate to socio-emotional

engagement (SE) domain in terms of instructional practices that are linked to students'

emotions, interest, perceived importance, and perceptions of efficacy. Likewise, I relate to

the behavioral (BE) and cognitive domains through the lens described by Davis et al.

(2012). When analyzing teachers' practices, the cognitive domain is further linked to the

Cognitive Engagement Model Himmele and Himmele (2011) and Difficulty and

Complexity Chart (Fisher et al., 2018). Teachers received professional development in these

frameworks during the first, fourth and fifth week of this study (See Appendix H).

Responses to Interventions-Studies

There are several reviews of research studies on the effects of intervention on teacher

practices in K-12 schools. For instance, Slavin et al. (2014) found positive effects on student

achievement in science as result of focused intervention teaching practices. This indicates

the importance of addressing classroom practices towards improving students' outcomes. In

a synthesis of 42 studies of mathematical interventions for students with disabilities, Gersten

et al. (2009) found positive and "statistically significant mean effects" (p.1202) for all

classroom practice they studied except student feedback with goal-setting and assisted-peer

learning . Some of this research on response to intervention did not include empirical

studies. For instance, Kennedy (2016) found 28 study reviews of teacher development to

address student achievement. However, these were not quantitative synthesis and did not

examine the average effectiveness of strategies for students or teacher outcomes.

Kraft et al. (2018) identified 60 studies in a meta-analysis of coaching intervention of preK-12 teachers and found positive effects of coaching on both classroom practices and student achievement. However, these studies did not address the difference between pre-K and grade level teaching. Although there are positive effects of improving teacher classroom practices and student achievement, studies are limited in specific intervention (coaching, science instruction) and types of sample participants (beginning teachers, students with disabilities). More meta-analysis across a range of intervention is necessary to help understand professional learning outcomes that impact teacher practices and student outcomes.

A review of a meta-analysis of 40 studies by Garret's et al. (2019) that focused primarily on the range of impacts of instructional practice found on average that randomized field trials targeting classroom practice yield a positive, statistically significant mean effect of 0.42 (0.07) standard deviation based on classroom observations. The study found no significant difference when comparing studies with 20 or fewer hours of intervention with those of 100 or greater, meaning that teachers are likely to benefit in less intensive than more intensive interventions. The intervention features did not indicate any statistically significant outcome approach to professional learning other than indicating some insights. Specifically, the study found positive differences in mean effects in favor of interventions that provide active learning to practice instructional skills during training (0.18), as well as use of instructional materials (0.11) and data (0.19) to guide instructions. Intervention over the school year and summer had lower effect (0.29) than those that lasted just over the school year (0.39). There was also a lower mean effect among studies that used a "structured protocol for observations and feedback" (0.21) versus studies that allowed "ad hoc feedback" or (0.49) of studies that did not specify the process of intervention (p. 128).

Studies that used a combination of remote and in-person coaching had higher mean effect by 0.12 standard deviation compared to the just in-person. There was also no significant change in intervention features such as teacher-driven and technology-enhanced learning (0.1). The study found the effect of intervention on average to be positive and affected substantially classroom practice. Another result was that interventions can support teachers in various classroom practices and are not tied to a specific observable skill. The study suggests greater improvement in tenured teachers (averaging teaching more than 10 years) than novice teachers contrary to previous studies that showed the opposite. Overall, the study indicates that interventions that "directly target a classroom practice through professional learning can bring meaningful shifts in classroom practice" (Garret' et al.,2019, p. 130) particularly through "short-cycle professional development approaches" (Garret' et al., 2019, p. 133). Indications of improvements were found "midstream to the interventions" (Garret et al., 2019, p. 133) even before full implementation which suggests that those short dosage efforts in classroom practices may be successful. In addition, interventions for smaller scales of teachers were more successful than larger ones with studies with over 100 teachers.

Findings from a study conducted by Bradshaw et al. (2018) indicate a potential promise of coaching combined with school-wide professional development for improving classroom management practices and possibly reducing office discipline referrals. This study consisted of a randomized controlled trial (RTC) and was aimed to assess the impact of a new coaching approach. This approach utilized one element of the Double Check cultural responsivity and student engagement model. The study included 158 elementary and middle school teachers randomized to receive coaching or serve as comparisons. All teachers participated in school-wide professional development activities.

Duchaine et al. (2011), in a study on the effects of teacher coaching, yields the use of performance feedback as an effective method for teacher training. In this case, performance feedback was used to increase behavior-specific praise statements (BSPS) in inclusion classrooms at high school level. Positive teacher responses suggest that this may be an acceptable source of professional development. The authors point out the necessity for further research to explore and introduce other teaching strategies and feedback into the teacher coaching sessions.

A study on effects of professional development on behavioral engagement of students conducted by Gregory et al. (2013) found that intervention teachers had significantly higher increases, albeit to a modest degree, in student behavioral engagement in their classrooms after one year of involvement with the program compared to the teachers in the control group. The intervention consisted of personalized coaching and feedback on teachers' interactions with students, based on observation of video recordings of teacher-student interactions in the classroom.

In brief, review of research points to positive effects of various interventions in teacher practices and student outcomes. These interventions relate to instructional practices, coaching, performance feedback, and professional development. Research indicates a need for more analysis across a range of intervention to help understand how professional learning impacts teacher practices and student outcomes. In addition, research indicates the need of further exploration in effective ways to address teaching strategies and feedback in coaching sessions.

Action Research Studies

There is action research conducted on intervention in educators' classroom engagement practices. The purpose of looking into these types of studies is to inform my

own study by examining the impact of similar interventions, especially since these made use of action research methodologies.

Strambler and McKown (2013) conducted an evidence-based action research with randomized groups of teachers to promote student academic engagement among elementary school students. The group with intervention teachers studied evidence-based instructional practices on academic engagement and implemented selected practices in their classrooms whereas the control group of teachers participated in a self-study. Greater gains in students with initial low engagement and low reading grades were demonstrated in action research classrooms than self-study classrooms.

Day (1985) in his action research tries to answer three interesting questions about professional learning and researcher intervention. These questions relate to ways teachers learn, contexts that impact teachers' change or lack of change, and the role of the researcher as an intervener in the process of teachers' thinking and behavior. For a contribution to teacher learning and change, the author argues towards a move to a more interdependent role in which collaboration, consultation, and negotiation are first principles and recommends that the researchers move away from being the prime designers and interpreters of the motivations, thoughts and actions of others. This notion overlaps with the framework of transformative coaching. To achieve success, Day recommends talking with teachers about their practice and observing teachers in their classroom setting. The author recommends further research concerning the relationship between teachers' thinking and classroom practice.

In summary, these three action research studies give evidence of positive effects on teachers' practices by the use of various interventions. The first study showed measurable improvement in both behavioral and cognitive engagements of preservice teachers after the

implementation of interventions. The second study showed greater gains in students with initial low engagement and low reading grades after interventions. Finally, the third study showed positive effects in teacher learning with interventions based on collaboration and transformative coaching. These studies confirm the positive effects of interventions that I implemented in this study.

Literature Review Summary

In order to close the educational achievement gap, interventions need to target teaching practices. There are many factors that impact change and teachers' mindset such as teachers' attitude, beliefs about students' learning, training contact hours and other factors. It is crucial for a coach to cultivate a growth mindset amongst teachers. Coaches transform schools through improving teaching practices. They address interventions mostly through coaching models, professional development, and instructional feedback. Coaching models can be transformative, facilitative, and directive. Other models consist of stages: setting a goal, implementing a strategy, then adapting it until the goal is met. Use of video can be a powerful tool for coaching and professional development especially if used in conjunction with checklists based on pre-set instructional goals. Instructional feedback is considered to have the most powerful influences on achievement. Some coaching feedback can take the form of dialogue to honor teachers' autonomy as a path to improve practice. Feedback can also take the form of high leverage action steps as building blocks to define great teaching. Besides coaching, interventions to teaching practices are addressed through professional development. This can have multiple characteristics such as: focus on content, incorporates adult learning theories, supports collaboration and modeling, provides coaching, includes opportunities for feedback and reflection, and is of sustained duration. Professional development is effective if it integrates adult learning theories. These premises evolved over

the previous century and include various frameworks of an individual's acquisition of knowledge, skills, and attitudes to achieve changes in behavior, performance, or potential. Studies on teachers' response to intervention indicate meaningful shifts in classroom practice and suggest further study of the most effective ways to provide useful learning opportunities for changing teachers' classroom practice. There is a need for a deeper understanding of how interventions are implemented and teacher experiences during coaching, observational feedback, and professional learning. This can be accomplished by investigating the effects of interventions by a more in-depth exploration of implementation and implementation context. Significant numbers of reviews investigate the relationship between professional learning strategies and student outcome but neglect to examine the degree to which they affect immediate outcomes like instructional practice. Interventions in engagement practices can be defined through various dimensions such as cognitive, behavioral and socio-emotional.

To proceed with the targeted engagement interventions in teachers' practices, a more in-depth look at the study context and participants, and intervention implementation is needed. Therefore, the methodology section will offer a framework on the context of the study and on how data was collected and analyzed.

Methodology

Context and Participants

This study took place during virtual learning, due to the COVID-19 pandemic, in the fall semester of the 2020-2021 school year. The timespan of this study was eight weeks of exclusively virtual learning, both synchronous and asynchronous. The entire student and staff population received iPads and in case of need, Internet hotspots. Microsoft TEAMs platform was used as the school's main unified communication and collaboration platform

with access by all students and staff members. This platform combines chat, video meetings, file storage (including collaboration on files), and application integration. In addition, the platform features extensions that can integrate with non-Microsoft products.

Six teachers, three math and three science, three male and three female, of the 40 employed in the school were invited to participate in the study to ensure grade and content diversity. Participants' ages ranged from early 30-ies to mid-40-ies with more than 80% having a master's degree or beyond. Study participants' teaching experience ranged from two to 15 years mostly in urban school districts serving medium to low-income student populations. Participants' routines include teaching responsibilities, weekly content specific professional learning communities (PLCs) and grade level teams' responsibilities. During the PLC time they collaborate and often receive professional development. Although in the past few years, intervention in teachers' engagement practices were part of professional development, other mandates set by the district were prioritized and created a shift in the school's focus. All participants in this action research study were asked to sign a general consent letter as part of Institutional Review Board (IRB) procedures (Appendix A).

The study's participants are part of an urban middle school where I have been employed for the past 14 years of my 20 years in education. The school is part of a large Midwestern district with P-12 students. Moreover, the school has approximately 420 culturally diverse students enrolled (60% Black, 39% White, <1%Hispanic, and <1%Asian) with 40 staff members and is situated in a middle class neighborhood. The school is part of a large Midwestern district with P-12 students; specifically it serves 6th, 7th, and 8th grade students of whom 90% are from low-income communities, receiving free or reduced-price meals. The school offers the state's mandated core curriculum classes consisting of English language arts, math, science, social studies, music, physical education and art. It used to

have a "magnet" emphasis on academic and athletic instruction that was later changed into emphasis in character education. Character education is part of the school's mission and it is integrated in all aspects of school processes. The school's mission is: "to inspire our students to value academic and personal growth through character education and to empower them to become contributing members of our global society." The school's character education practices, besides strong emphasis on building relationships with students and creating a sense of belonging, attempt to address social emotional needs of students.

Although most students in public school districts go to the school they are closest to, with magnet schools, the public school system has created schools that exist outside of zoned school boundaries. Their goal is to offer something special over a regular neighborhood school which makes attending them an attractive choice to many students, thereby increasing the diversity of the student population within them. The admission to these schools is based on a lottery system (WestEd, 2008). Being a magnet school of character, the school also offers daily character development classes. The staff turnaround rate in the 2019-20 school year was about 30%, much higher than in previous years due to teacher attrition and two resignations. The student population also increased during this school year, by about 100 students (from 315 to 420) mostly in sixth and seventh grade, which led to the hiring of new teachers. These new teachers are mostly young enthusiastic professionals with none to a few years' teaching experience.

My Role

In an action research participants are purposely chosen based on the goal of the study and the researcher is also considered a participant (Hendricks, 2013). My and teachers' role in this action research can be classified as collaborative participants. I conducted this action

research by collaborating with teachers and by participating in the implementation of engagement interventions with the aim to improve teachers' instructional practices.

For the past 14 years, I have held the position of academic instructional coach at this school site and have established personal and professional relationships with the majority of the faculty members. My duties include being an academic coach, math and science team leader, and facilitator of weekly professional learning communities (PLCs) and professional development (PD). Additionally, I have been a mentor for some of the teachers.

My duties on the school's leadership team may lead teachers to see me as an outsider and limit their responses to teaching challenges they encounter. However, during my previous coaching sessions I have established myself as an insider by developing trusting relationships with teachers where they openly shared their instructional challenges with me. Therefore, in this study, I identify myself primarily as an insider and collaborative participant.

Action Research

According to Hendricks (2013), there are three types of action research: collaborative, classroom, and participatory. The first, collaborative action research, implies multiple researchers working and studying together. The second, classroom action research, is conducted by teachers in their classrooms with the goal to improve their practice. Lastly, the third, Hendricks (2013) pointed out pertains to participatory action research, as a "social and collaborative process" (p. 12) aimed to "investigate reality so that it can be changed" (p. 12). In this study, I used the participatory approach since I actively participated in the study as an academic instructional coach and implemented interventions relevant to teachers' engagement practices using PD, coaching and instructional feedback. My participatory role relies on teachers' participation in this action research.

According to Hendricks (2013), an action research study is a "systematic inquiry based on ongoing reflection"(p. 11) and consists of three continuous cycles: reflection, action, and evaluation with the aim to lead practitioners to study how to improve a specific practice The methodology of this study fits the characteristics of an action research process because of my participatory role in intervention, use of reflection in data analysis, and use of evaluation of my interventions.

An action research study consists of spiraling cycles "reflect-act-evaluate process" (Hendricks, 2013, p. 17). In this study, I used the spiraling process of action research with continuous reflections, actions and evaluations to refine teachers' engagement practices. See cycle one of my action research process in Figure 6:

Figure 6

Action Research Process-Cycle 1(Adapted from Hendricks, 2013, p11)

Start Here: Reflect
Teachers' engagement practices have low effectiveness.
How can I change teachers' engagement practices?

Act
Implement research based PD on engagement in three domains: cognitive, socio-emotional, and behavioral.

Evaluate
Evaluate the effectiveness of coaching, instructional feedback, PD, and continue this spiraling cycle.

Act
Conduct coaching cycles, ask follow up questions, implement additional PD, revise teachers' Coaching Plans, and continue to give instructional feedback.

Evaluate
Observe teachers' practices to evaluate their implementation of PD and keep a reflective journal; collaboratively develop a coaching plan on engagement practices.

Reflect
Analyze all data sources (PD survey, instructional feedback, Teachers' Reflection Form) for evidence on increase in engagement practices.

Action research does not always have a targeted audience although there is a potential for educators to share their findings and learn from each other contrary to quantitative and qualitative research where there is an intended audience. The knowledge advancement of an action research consists of informing practice through continuous action and reflection.

Actions

An action research study concentrates on "investigating whether actions result in desired outcomes" (Hendricks, 2013, p. 2) using mixed methods, both quantitative and qualitative data analysis In this study, the investigated actions are geared towards interventions in teachers' practices. The practitioner's goal in an action research is to study self and others while taking an action to "investigate and improve" (Hendricks, 2013, p. 3).a specific educational practice. In this specific study, my role is one of a collaborative participant since I collaborated with teachers to implement three types of interventions: coaching, instructional feedback, and professional development in order to improve their engagement practices.

My first step in this action research consisted of reflection on teachers' engagement practices using observational data. My next step consisted of an intervention. Specifically, I facilitated professional development to participant teachers in the three engagement domains: cognitive, socio-emotional and behavioral. As a baseline for PD, I used the PD section of the 2020 Teacher Culture and Climate Pre- Survey. Following this action step, I evaluated the effectiveness of the implemented PD based on instructional observations and PD survey (See Appendix O). Specifically, during observations I provided instructional feedback to teachers' practices and kept a reflective double entry journal to document their implementation of PD (See Appendix L). In addition, I met with each teacher and developed a coaching plan on engagement practices (See Appendix I). Next, I reflected by analyzing data sources (PD survey and instructional feedback) for evidence on increase in engagement practices. I documented these reflections in the same double entry journal. My next actions pertained to the analysis of the previous data sources as a reference point for additional interventions. These interventions consisted of implementation of one coaching cycle per

teacher, an additional engagement PD, continuous instructional feedback to all participant

teachers, and revisions in teachers' coaching plans in function of their individual needs. As a

baseline for instructional feedback and coaching, I used corresponding categories of the

same 2020 Teacher Culture and Climate Pre-Survey. Later, in my next step, I evaluated the

effectiveness of coaching, instructional feedback and PD based on my collected data (PD

surveys, reflections, artifacts). This action research process spiraled for six weeks as

evidenced in Figure 6.

Reflections and Evaluations of Interventions

Action research advances knowledge through educators' reflection and action aimed

towards "continually improving instructional practice" (Hendricks, 2013, p.3). During the

duration of this study, I reflected on the data that I collected, since an action research is "in

and of itself, a process of reflection" (Hendricks, 2013, p.29). The data collection for this

study consists of inquiry data, observational data, and artifacts.

 My process of reflection was one of continuous reflective inquiry. After I completed

each instructional observation, coaching plan and cycle, I used the following reflection

instruments: double entry journal (See Appendix L), coach's reflection section of both, the

coaching plan (See Appendix I) and coaching cycle question form (See Appendix K).

I also gave voice to participant teachers by providing them with opportunities to

evaluate the quality of interventions. This was achieved by the use of surveys for each PD

(See Appendix O), by the use of reflections after developing their coaching plans (See

Appendix I), and after coaching cycles (See Appendix K). This reflection process gave

teachers a chance to examine "what they believe and value, what they know and don't

know" (Hendricks, 2013, p. 29) and what they actually implement in practice). At the end of

the study, I referred back to the participants for a member check to acknowledge where the participants and I disagree or agree with the interpretation and representation.

Deep reflections can reveal hidden assumptions, biases and disconnections between stated and enacted values (Hendricks, 2013). Therefore, during coaching cycles, I made sure to keep an ongoing process of examining and redefining the practice in the given context (curricular, professional, intellectual, instructional) by trying to understand how this context impacts teachers' practice. Specifically, by asking follow-up questions during coaching sessions, I examined if teachers have any curricular constraints, if they need more in-depth professional development, if they need additional scaffolds in understanding these interventions, or if they have any instructional issues. These questions were built on the initial coaching questions (See Appendix K) and answers were recorded on this form.

As reflexive inquiry instrument, I used the Teacher Self-Reflection Form (See Appendix J) to provide teachers with a framework of knowing where they are and where they are going with their practices by placing " present thoughts and actions in the context of past thoughts, actions, and history" (Hendricks, 2013, p. 31). This helped me and teachers determine when their practices are not aligned with their values. Reflective forms were used to find the connection between teachers' values and experiences as means to uncover their assumptions, biases and differences between what they say and do.

Instructional feedback was used to make sure that my reflections are tied to actions and that actions are followed by experiences. During instructional observations, to help me understand how my interventions impact teachers' engagement practices, I used a double entry journal (See Appendix L) to document this feedback and my reflections. In addition, instructional feedback was sent separately to teachers through the district's online platform (Frontline) and by email. Documented reflections and feedback allowed me to identify

problems in interventions and served as reference points to act and solve them. This helped me create a self-understanding of how my experiences and values affected actions during interventions.

Intervention

This study took place during virtual instructions in the fall semester of the 2020-2021 school year. The time span of the study was eight weeks, with the first six weeks dedicated to intervention, and last two weeks for teachers' interviews and post surveys (See Appendix B). Table 1 illustrates the first six weeks of intervention with associated activities, goals for virtual instructions, timeline with weekly occurrences and duration of each occurrence.

Table 1

Interventions, Activities, Goals, and Timeline

Intervention	Activity	Goal Explanation for Virtual Instruction	Number of Occurrences						Hours/ Occurrence
			Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	
Instructional Feedback	Instructio-nal Feedback	Conducted weekly synchronous observations in Microsoft TEAMs of 6 teachers for 5 weeks lasting 45 minute each *Provided Feedback* (double-entry journal)	-	6	6	6	6	6	45 min
	Engage-ment Rubrics and Frequen-cy Charts	Completed an Engagement Frequency Chart for each teacher based on the same 45 minute long observations.	-	6	6	6	6	6	45 min

Coaching	Coaching Plan	Develop a coaching plan with each teacher virtually in TEAMs lasting up to 45 min	6	-	-	-	-	-	45 min
	Coaching (identify, learn, improve)	Implement 6 Coaching Cycle for 3 consecutive weeks lasting up to 60 minutes each in TEAMs *Coaching questions and Teacher Reflection Form*	-	6	6	6	-	-	60 min
Professional Development	Professio-nal Develop-ment	In collaboration with teachers, facilitated virtual PD on teacher engagement practices lasting 60 min in TEAMs.	1	1	1	1	1	1	60 min

The purpose of interventions in this study was to help teachers intentionally implement targeted engagement practices that align with instructional feedback, coaching, and PD. In order to achieve this, teachers received professional development in all three engagement domains: socio-emotional, cognitive and behavioral as well as in virtual collaborative platforms such as Microsoft TEAMs, Class Notebook and Forms, Nearpod, Flipgrid, Canva, Ledgends of Learning, and Padlets. See Figure 7 for detailed intervention framework.

Figure 7

Intervention Framework
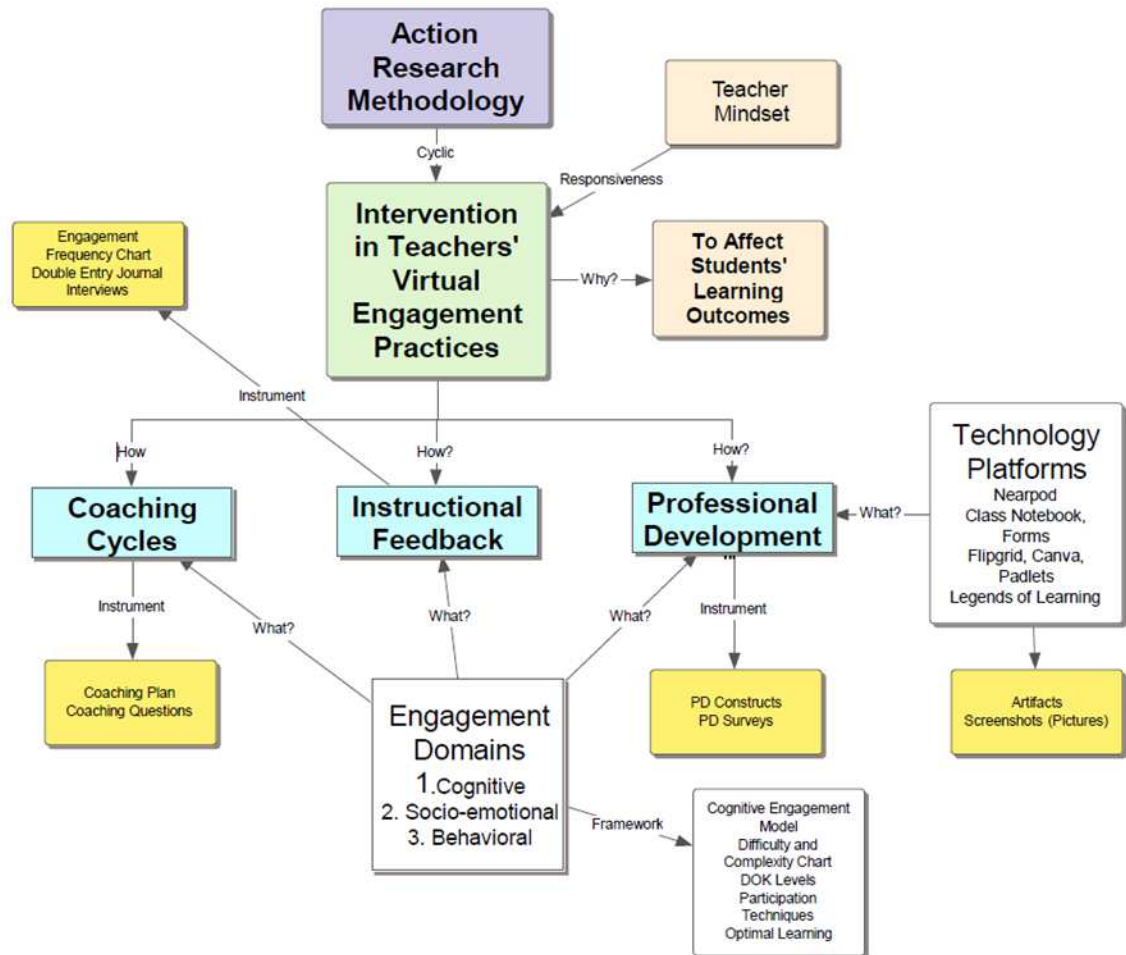
In addition, they participated in coaching cycles, and received weekly instructional feedback in the targeted practice based on instructional observations. (See Appendix F) Various instruments were used as measures for teachers' implementation effectiveness.

Instructional Feedback

Observations of all six teacher participants were conducted weekly lasting 45 minutes over a period of five weeks (starting week two to six). Synchronous video lessons on the school's Microsoft TEAMs platform were observed for targeted intervention and written

feedback was provided. I watched for intentionally planned solicitation of student

engagement and strategies that ensure participation.

Instructional feedback offered teachers an additional opportunity to improve their

practice and increase their effectiveness in teaching. The action steps, which were part of

instructional feedback, were observable and used a common language around abilities that

define great teaching. This feedback was documented in the district's online platform

(Frontline) to which teachers have access. In addition, the feedback was sent to them by

email and copied in my double entry journal (See Appendix L).

Coaching Cycles

Coaching was an additional intervention. For three consecutive weeks, (starting

week two), each teacher participated in virtual coaching via TEAMs. Coaching sessions

lasted up to 60 minutes and fluctuated between the three coaching models: directive,

facilitative and transformative based on teachers' needs, expertise, and their "zone of

proximal development." I implemented Knight's (2018) impact cycle of setting a goal,

implementing a strategy, then adapting it until the instructional goal was met (See Figure 8).

This model served as a framework for coaching sessions and was based on teachers'

coaching plans.

Figure 8

Coaching Cycle (adopted from Knight, 2018, p.25)
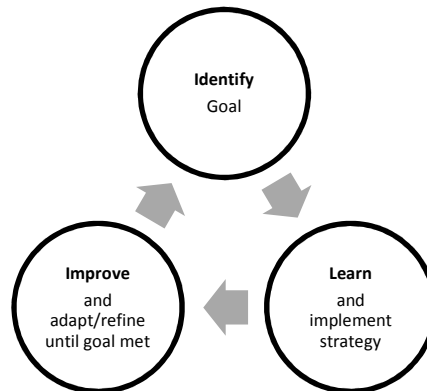
Individual coaching plans were developed in collaboration with each teacher (See

Appendix I) based on engagement practices facilitated at the professional development

sessions. During the coaching cycles, I consistently monitored teachers' progress towards

their set coaching goal, as suggested by Aguilar (2013). Teachers' initial engagement

practices (Observation 1) were used as a baseline for coaching. At the start of each coaching

cycle teachers completed a Self-Reflection Form (See Appendix J) based on the

synchronous lesson observed or using a pre-recorded synchronous video lesson of

themselves implementing the targeted engagement practices. The form offered teachers an

opportunity to reflect on their perception of the effectiveness of the lesson. Teachers'

reflections were followed up by coaching. Coaching consisted of questions and reflections

aimed to drive change in practice and refine intervention goals (See Appendix K). This

implied the use of one of the three coaching models, facilitative or transformative, during

which the coaching plan was refined or improved. These revisions were entered in the

coaching plan and the cycles repeated until each teacher participated in three consecutive

coaching cycles. I followed up on teachers' coaching plans during instructional

observations and provided feedback that pertained to their individual goals as a means to increase teachers' effectiveness.

Professional Development

In collaboration with teachers, I facilitated six virtual professional development sessions using the Microsoft TEAMs platform. PD was facilitated in six consecutive weeks, each lasting 60 minutes (Table 2).

Table 2

Professional Development Sessions

Week	PD Focus	Acquired Knowledge	Skills
1	DOK Levels Socio-Emotional and Behavioral Engagement Domains	Exploration of: 1. Cognitive Engagement Model (Himmele & Himmele, 201) 2. Difficulty and Complexity Chart (Fischer et al., 2018) 3. Model of Engagement by Design (Fisher et al. ,2012)	-Analyzing DOK levels and engagement practices through the three research frameworks.
2	Nearpod and review of PD1	Use of: 1. Collaborative boards, content simulations and delivery from the standpoint of the three engagement domains.	-Step-by-step implementation of collaborative and monitoring tools in Nearpod for virtual engagement practices in math and science.
3	TEAMs, Notebook, Forms, and review of PD1 and PD2	Review of: 1. Three research frameworks (PD1) and Nearpod Use of: 2. Collaborative boards in	-Step-by-step implementation of collaborative (TEAMs, Notebook) and assessment tools (Forms) for

		Notebook, use of Forms and features of TEAMs (asynchronous and synchronous lessons)	instructional engagement in math and science.
4	Flipgrid, Canva, Legends of Learning and review of PD1, PD2 and PD3	Use of: 1.Three engagement domains in Flipgrid with integration of video and audio capabilities. Use of: 2. Canva as a communication platform (information sharing) Use of: 3. Legends of Learning as an assessment platform Review of: 4. Previous content and skills	-Step-by-step implementation of Flipgrid, Canva, and Legends of Learning in math and science.
5	Padlets and review of PD1, PD2, PD3 and PD4	Use of: 1. Collaborative boards from the standpoint of the three engagement domains. Review of: 2. Previous content and skills	-Step-by-step implementation of Padlets in math and science.
6	Integration of all Technology Platforms and Socio-Emotional and Behavioral Engagement Domains	Integration of: 1. All platforms from the standpoint of the three engagement domains.	-Step-by-step implementation of all platforms and engagement domains in math and science.

These professional development sessions were designed based on the seven characteristics of adult learning theories and were facilitated in small group settings (three participants) rather than large ones, since these seem to be more effective based on research review. The format of professional development took into account teachers' feedback from the survey on teachers' preferred learning styles and formats given at the end of the 2020 school year (See Appendix G).

Data from this survey indicated that teachers' preferred learning style was mostly based on reflective and motivational adult theories of learning. The majority of teachers opted for a hybrid professional development format as a way that helps them best acquire knowledge. As part of motivational learning theory, teachers had opportunities to set goals and expectations, self-evaluate their learning using PD surveys, use self-determination to process information in a hybrid format and reflect on the relevance and rigor of the PD process after each session. The PD design mirrored targeted engagement practices as suggested by the literature review. This implied the use of collaborative learning in platforms such as Nearpod (to address social and behavioral domain) and Jigsaw reading structures (to address cognitive domains) based on teachers' personal choice and interest in desired practice (See Appendix H). The goal of each PD was to help teachers acquire knowledge and skills in engagement practices and thus, increase and refine their effectiveness in teaching.

Implementation Challenges

Challenges during this study were relevant to the COVID-19 pandemic, technology, scheduling, mandates set by the district and teachers' absences from work. These issues were addressed by re-scheduling planned tasks and by working with teachers to accommodate their needs. In addition, I used my established relationships with teachers and

continued to build trust and collaboration in order to proceed with the study and thus benefit the school in multiple ways.

Methods of Data Collection

The types of data collected in an action research varies and can consist of observations, interviews, video records, work samples and journal entries (Hendricks, 2013). In order to answer the guiding questions of this study and determine the responsiveness to targeted engagement interventions in teachers' instructional practices, I collected artifacts, observational and inquiry data in various ways. The table below (Table 3) illustrates the data collection timeline, data sources used and data collection type.

Table 3

Data Collection Timeline

Data Collection Timeline	Data Source		Data Collection Type		
Existing Baseline Data	Teacher Pre-Culture and Climate Survey			Observations	Inquiry
Week 1	Coaching Plans	PD1	6 Coaching Plans; 1 PD Construct	Observations	Inquiry
Week 2	Synchronous Instructional Observations and Video Files; Coaching Cycle	PD2	6 Double Entry Journals; 6 Instruct. Feedbacks; 6 Teacher Reflection Forms; 1 PD Construct	Observations	Inquiry
Week 3	Synchronous Instructional Observations and Video Files; Coaching Cycle	PD3	6 Double Entry Journals; 6 Instruct. Feedbacks; 6 Teacher Reflection Forms; 1 PD Construct	Observations	Inquiry
Week 4	Synchronous Instructional Observations and Video Files; Coaching Cycle	PD4	6 Double Entry Journals; 6 Instruct. Feedbacks; 6 Teacher Reflection Forms; 1 PD Construct	Observations	Inquiry
Week 5	Synchronous Instructional Observations and Video Files	PD5	6 Double Entry Journals; 6 Instruct. Feedbacks; 1 PD Construct	Observations	Inquiry
Week 6	Synchronous Instructional Observations and Video Files	PD6	6 Double Entry Journals; 6 Instruct. Feedbacks; 1 PD Construct	Observations	Inquiry
Week 7	Teacher Interviews.			Observations	Inquiry
Week 8	Teacher Post-Culture and Climate Survey			Observations	Inquiry

Teacher Pre-Culture and Climate Survey	6 PD Surveys	6 PD Surveys 6 Engage. Frequency Charts 6 Coaching Cycle Question Forms	6 PD Surveys 6 Engage. Frequency Charts 6 Coaching Cycle Question Forms	6 PD Surveys 6 Engage. Frequency Charts 6 Coaching Cycle Question Forms	6 PD Surveys 6 Engage. Frequency Charts	6 PD Surveys 6 Engage. Frequency Charts	Teacher Interviews	Teacher Post-Culture and Climate Survey
Artifacts	Artifacts	Artifacts	Artifacts	Artifacts	Artifacts	Artifacts	Artifacts	Artifacts
		6 Digital screenshots of class activities	6 Digital screenshots of class activities	6 Digital screenshots of class activities	6 Digital screenshots of class activities	6 Digital screenshots of class activities		

Data collection started during the first quarter of the 2020-2021 school year, after I received IRB and district approval. Data was collected to answer the research questions (RQ) that guided this study.

Research Questions (RQ):

1. How do urban middle school teachers' instructional practices respond to targeted engagement interventions in a virtual learning environment?

2. How does a specific intervention such as coaching cycles, instructional feedback, and PD improve an instructional practice?

3. Which specific features cognitive, socio-emotional or behavioral of teachers' instructional practices are more or less responsive to intervention?

Observational Data

Observational data consisted of double entry journals, instructional feedback, coaching plans, video files, and professional development constructs. The purpose of double entry journals is linked to answering research questions 1, 3 and 4 (See below Table 4, Data

Collection and Analysis). Specifically, double entry journals enabled me to describe

teachers' enacted engagement practices, patterns in behaviors and their attitudes towards

change.

Table 4

Observational Data

Observational Data				
Type of Data	Data Source for Two Class Formats	Purpose	Research Question	Data Analysis
Double Entry Journal with Field Notes and Reflection	Observational notes on teacher practices based on synchronous and pre-recorded lessons in TEAMs	To describe teacher enacted engagement practices (patterns in teachers' behaviors and their attitudes)	RQ1 RQ3	Content Analysis Grounded Theory
Instructional Feedback	Descriptive feedback with action steps based on synchronous and pre-recorded lessons in TEAMs	To describe the effectiveness of engagement practices (increase and decrease in supports and intervention context)	RQ1 RQ2 RQ3	Content Analysis
Coaching Plans	Collaboratively with teachers complete Coaching Plan Form on Microsoft TEAMs Teacher and	To surface factors, of impact on teachers practices (compare dimension gap between	RQ1 RQ2	Content Analysis

	coach reflect on the Coaching Plan	where the teacher is in the targeted practice and his progress towards goal)		
Video Files	Teachers complete the Teacher Reflection Form on synchronous and pre-recorded video lesson in TEAMs	To describe teachers' perception of practice implementa-tion	RQ1 RQ3	Content Analysis
Professional Develop-ment Construct	Collaboratively facilitate PD to teachers during PLCs on Microsoft TEAMs	To measure the effectiveness of the PD design	RQ2	Task Analysis

Double entry journal consists of recorded field notes and my reflections to these notes (See Appendix L) during synchronous and pre-recorded lessons in Microsoft TEAMs platform. These notes were organized in a double entry journal consisting of two columns, noticings and reflections. The "Noticings" column consists of logs relevant to what I saw and heard during the observations relevant to the targeted interventions. The second column labeled "Reflections" contains my thoughts and responses to the observational notes. This journal forced me to be reflective of my own instructional feedback. Reflections were based on an Engagement Frequency Chart and on a common language established by teachers and coaches (See Appendix M). In this study, I conducted instructional observations as a passive observer, gathering and recording information in an unobtrusive, non-interfering way with

an outsider's perspective. Merriam (1998) refers to this perspective as *etic* since the

researcher tries to gain understanding of the phenomenon from the participant's perspective

(p.6). Journals were stored electronically on the computer and external flash drives.

The purpose of instructional feedback is linked to answering all four research

questions. Specifically, data from instructional feedback and high leverage action steps was

used to measure the increase or decrease in support and intensity as well as intervention

context of the targeted classroom intervention. I provided instructional feedback to teachers

as the school's academic coach through the school's 'Frontline' platform, a database that

logs all instructional feedback and notes from classroom observations and by email. In this

way, feedback was instantly shared with teachers, giving them opportunities to respond or

reflect. Also, this feedback was documented in double entry journals for analysis and

reflections.

The purpose of coaching plans was linked to answering research question 1 and 2.

Specifically, a coaching plan set the framework for coaching cycles and was used to surface

factors of impact on teachers' practices. A coaching plan allowed me to compare the

dimension gap between where a teacher is in the targeted practice and his or her progress

towards an established goal (See Appendix I). The development of a coaching plan

consisted of a collaborative effort between the teacher and me as their coach on establishing

clear guidelines, measures and expectations for coaching cycles relevant to an engagement

practice. I used the reflections of the coaching plans, both mine and the teachers', to

evidence teachers' transformation towards their established goal based on the engagement

frequency chart. Coaching plans offered a lens in adult learning and served as an indicator in

a teacher's mindset towards change. These coaching plans were stored electronically on the

computer and external flash drives and were updated during coaching sessions.

The purpose of video files was to serve as a reflective tool into teachers' perceptions of practice implementation. Video files of targeted engagement practices were recorded by the teacher. These files were used in conjunction with the Teacher Self-Reflection Form (See Appendix P) to help me answer research question 1 and 3. This form was completed by the teacher at the beginning of each coaching session. The form helped teachers rate the implementation context (learning structures), fidelity, and effectiveness of practice implementation. This reflective form was saved on the computer and flash drive.

Inquiry Data

One semi-structured interview per each teacher was conducted in week seven of the study, after the implementation of interventions. The interviews lasted up to 30 minutes and were conducted in person at the school site (See Appendix S). The purpose of these interviews was to depict specific features of teacher's classroom practice that are more or less responsive to intervention and teachers' roadblocks to change and to validate the findings of the study based on collected data sources (See Table 5).

The interviews are systematic in terms of content and format. Kahn and Cannell (1957, as cited in Marshall, 1999) describe interviewing as "a conversation with a purpose" (p. 108) and this statement aligns with one of the strategies employed in the study. For accuracy check, the semi-structured interviews can be supplemented with clarifying questions through the use of flexible wording and adjusted levels of language complexity. Berg (2007) describes these sorts of interviews as systematic with a consistent order; however, the researcher is allowed to digress and probe beyond the prepared interview questions. The probing questions help draw out a more complete explanation of participants' understanding. In the event that responses were not sufficient to address the purpose, additional clarifying questions were asked as follow up. Ritchie and Lewis (2003)

point out that a "researcher must hear, digest and comprehend the participant's answer in order to decide how to probe further" (p. 142).

Interview questions were geared towards answering the study's research questions and depict teachers' experiences during interventions. Interview questions gave me an insight into answering all three research questions. For instance: How did a specific intervention such as coaching impact your practices? Which aspects of coaching did you find most beneficial? How did instructional feedback impact your engagement practices? Teacher interviews were conducted at the school site after the implementation of interventions. The transcripts of interviews were given to teachers to read for validity and reliability checks. These were stored electronically on the computer and external flash drives.

Table 5

Inquiry Data

Inquiry Data				
Type of Data	Data Source for Two Class Formats	Purpose	Research Question	Data Analysis
Interviews	Teacher semi-structured interview conducted over Microsoft TEAMs	To depict teachers response to intervention and roadblocks to change	RQ1 RQ2 RQ3	Content Analysis
Surveys	• Pre-Post Teacher Culture and Climate Survey using	To compare outcome of intervention To evaluate the effectiveness	RQ1 RQ2	Content Analysis

	Microsoft Forms • PD Surveys	of professional development		
Engage-ment Frequency Chart	Rubric on practice frequency based on synchronous and pre-recorded lessons in TEAMs	To measure the fidelity and frequency of practice implementa-tion	RQ1	Quantita-tive Rubric Analysis
Coaching Cycle Questions	Questioning Protocol using Microsoft TEAMs	To describe indicators of progress between coach and teachers as measures towards achieving an identified goal	RQ1 RQ2 RQ3	Content Analysis
Professio-nal Develop-ment Survey	Teacher Survey on PD using Microsoft Forms	To measure the effectiveness of the PD design and implementa-tion	RQ2	Quantita-tive Task Analysis

The pre and post Teacher Culture and Climate survey was administered during the first and eighth week of the study. These two surveys were used to compare teachers' perspectives on feedback, coaching, and professional development (See Appendix R).The survey consisted of 13 questions relevant to the instructional feedback and PD. In this survey teachers were asked about their perspectives on the thoroughness, usefulness, quantity and frequency of instructional feedback. In addition they were asked about the

value, relevance, individualization, learning, and growth opportunities of the PD. This survey was administered through Microsoft Forms on the TEAMs platform. Reliability and validity of these surveys was achieved through the automatic features of the Microsoft platform that generated these reports.

The purpose of the Engagement Frequency Chart was to measure the fidelity and frequency of engagement practices based on the three domains: cognitive, socio-emotional and behavioral. (See Appendix M). This chart consisted of the calculated frequency in teachers' engagement practices (number of students engaged out of total in attendance), duration of engagement practices during a 45 minute instructional time and the number and level of DOK questions. These numbers were calculated for each engagement domain and recorded into corresponding scale rubric of below 20%, followed by 20% to 60%, and above 60%. The validity of data in these charts was checked against the minute by minute logs during the 45 minute long observations, recorded video files, and auto generated reports from platforms such as Nearpod, Legends of Learning, Microsoft Forms, and artifacts (screenshots of these reports).

Coaching cycles were analyzed using reflections based on coaching questions that drove teachers' change in practice and were guided by measurable goals. There were 12 coaching questions relevant to the implementation of the engagement practices. These questions required the teachers to rate the lesson outcome in terms of engagement and brainstorm scaffolds towards a desired outcome. The answers to these questions with my own and with teachers' reflections were recorded in the reflection section of the Coaching Question Form and stored electronically on the computer and external flash drives (See Appendix K). The answers to the coaching questions were typed during synchronous coaching sessions and shared with teachers online. This gave teachers a chance to correct

the answers for potential misunderstandings and fidelity. The coaching questions followed the same questioning format for each teacher.

The professional development constructs were analyzed based on teachers' PD surveys administered after each of the six PDs. The survey measured the effectiveness of PD design and implementation (See Appendix O). The survey consisted of 14 rating questions and two constructive response questions. The rating scale was from 1 (lowest implementation) to 10 (highest implementation) rated the PD in terms of effectiveness, learning style, opportunities for teachers to express their voice and choice, teacher collaboration and learning context. The two constructive response questions pertain to challenges encountered in implementation of engagement practices and their means to overcome them. Surveys results from each PD were used to refine the next PD construct in order to attain optimal learning for teachers. The surveys were created using Forms in Microsoft TEAMs. Reliability and validity of these surveys was achieved through the automatic report features of the Microsoft platform.

Artifact Data

Screenshots of online activities relevant to engagement served as a point of reference for illustrating the intervention strategy through tasks and activities (See Table 6). Collected data was secured electronically on the computer and external flash drives that were password protected.

Table 6

Artifact Data

Artifact Data				
Type of Data	Data Source for Two Class Formats	Purpose	Research Question	Data Ana-lysis
Classroom Activities	Conduct task analysis of activities posted in Microsoft TEAMs based on engagement intervention	To describe how certain tasks change over time as result of intervention	RQ1 RQ3	Task Ana-lysis
Photos Screen-shots	Digital pictures of online classroom resources posted in Microsoft TEAMs	To compare how context changes before, during and after the intervention	RQ3	Con-tent Ana-lysis

Ways to Increase Validity and Credibility of the Action Research Study

According to Merriam (1998) internal validity relates to the truth value of the research study specifically, whether or not the research findings match reality. In this action research study, I collected and analyzed multiple data sources to make sure these accurately measure the intended scope of study.

Data Triangulation

Miles et al., (1994) suggest triangulation among complementary methods and data sources. Data triangulation refers to use of "multiple investigators, multiple sources of data, or multiple methods to confirm emerging findings" and is also intended to "establish validity through pooled judgment" (Merriam, 1998, p. 204). This study used multiple data

sources that were compared to each other such as observational, inquiry, and artifact data. These data sources were documented using online folders and external drives. The interview transcripts were compared to the observations and participants' artifacts. According to Stake (1995), triangulation is required to verify "if the phenomenon stays consistent at other times, in other spaces, or as persons interact differently" (p. 112). Charmaz (1990, as cited in Miles et al., 1994) points out the necessity of "clear, coherent, and systematically related" findings (p. 313). The study addresses this guideline by linking presented data to the categories of the prior and emerging themes.

Quality Standards

In order to evaluate the quality of results, Miles et al. (1994) recommend five main standards that pair traditional and alternative terms used in research. The authors give specific guidelines that need to be addressed in order to fulfill the quality standards. These standards are listed below and are further explained as how they relate to this study.

1. Objectivity or Conformability

2. Reliability or Dependability or Auditability

3. Internal Validity or Credibility or Authenticity

4. External Validity or Transferability or Fittingness

5. Utilization or Application or Action Orientation

Objectivity or Conformability

Objectivity relates to the necessity of remaining neutral and acknowledging researcher's biases (Miles et al., 1994). To fulfill objectivity, this study provides detailed descriptions about methods and procedures so that it can be verified by an outside auditor. In addition, there is a description on how data was collected and how it was analyzed and maintained for

reanalysis if required. The researcher disclosed the role and responsibilities in the implementation of this study.

Reliability or Dependability or Auditability

Reliability relates to quality and integrity of the research process (Miles et al., 1994). To fulfill reliability, this study provides clear research questions and a design study that supports these questions. The study consists of a wide range of relevant data sources such as surveys, interviews, observations, and artifacts as a means to support the research question. Peer examination and collaboration were ongoing throughout the study. The research proposal was reviewed by the dissertation committee members from the university in fulfillment of the doctoral program requirement.

Internal Validity or Credibility or Authenticity

Merriam (1998) explains internal validity in terms of whether or not the research findings match reality. Miles et al., (1994) suggest triangulation among complementary methods and data sources. Data triangulation refers to use of "multiple investigators, multiple sources of data, or multiple methods to confirm emerging findings" (Merriam, 1998, p. 204) and is also intended to "establish validity through pooled judgment" (Merriam, 1998, p. 204). This study has multiple data sources that can be compared to each other such as researcher's observations, participants' surveys and interviews, and participants' artifacts. These data sources are documented using online folders. The interview transcripts were compared to the observations and participants' artifacts. According to Stake (1995), triangulation is required to verify "if the phenomenon stays consistent at other times, in other spaces, or as persons interact differently" (p.112). Miles et al. (1994) cite Charmaz to point out the necessity of "clear, coherent, and systematically

related" findings (p. 313). This study addressed this guideline by linking presented data to the categories of the prior and emerging themes.

External Validity or Transferability or Fittingness

External validity relates to the transferability study to other contexts or generalization (Miles et al., 1994). The methods of this study encourage applicability to other similar settings. Though the context could be varied, the framework of this could be replicated in other research studies by the use of same or similar instruments of data collection.

Utilization or Application or Action Orientation

The findings of this study will be published and made available to other users through library services. Furthermore, the study will offer usable knowledge by highlighting the benefits and shortcomings of the implementation of this action research.

Collecting Data Accurately

It is very important to record data accurately during the action research process. This implies planning for various methods to record data when events occur (audio, video, notes). Accuracy in data also relates to details relevant to observational records, field notes and interviews. I used audio, video recordings, and notes during instructional observations and interviews to help me with data accuracy. In addition, I used data reports from platforms such as Nearpod, Legends of Learning and Microsoft Forms to cross check my notes and records for accuracy.

Keeping an Audit Trail

Audit trail refers to keeping a record of data analyzed in the study. This relates to artifacts, inquiry and observational data as well as records on how data was analyzed. This allows stakeholders to look for accuracy in researcher's interpretation of data. Data points from this

research study were stored electronically (secured flash drive and computer) and in print for the audit trail.

Data Analysis

This study used quantitative and qualitative data analysis. The most important data of this study came from surveys, interviews and the engagement frequency chart. Quantitative data was triangulated with qualitative data sources (See Table 7).

Analysis of quantitative data in this study was done through reporting, comparing and displaying (Hendricks, 2013). Although the double entry journal consisted of responses that were not quantitative, the data was reported by counting the numbers of student responses initiated by teachers for the corresponding engagement domain. These were then analyzed through the DOK levels and counted as numeric data points. These numeric data points were represented as ratios of the number of students who participated to the total number of students in attendance. Time logs from double entry journals were counted based on duration of student participation and reported as the ratio of the duration of student participation to total instructional time. The resulting percentages of these ratios were organized in the engagement frequency chart and later displayed as a bar graph for comparing teacher outcomes of implemented engagement practices.

Analysis of qualitative data in this action research implied analysis through microscopic examination of data to determine teachers' responsiveness to engagement intervention within their instructional context. Strauss and Corbin (1998) define this type of analysis as microanalysis and explain it as "detailed line-by-line analysis" (p. 57) that is necessary "to generate initial categories (with properties and dimensions) and to suggest relationships among categories" (p. 57). Logs from double entry journals were analyzed line-by-line for evidence of engagement practices in the three domains. For instance,

teachers' feedback consisting of words of affirmation, praise, corrective, and motivational feedback was coded in the category of socio-emotional engagement. Teachers' practices relevant to cognitive content specific questioning were coded based on DOK levels (category properties). The microscopic examination of data utilizes a technique of "open and axial coding" (Strauss & Corbin, 1998, p. 57). This type of analysis was used for in-depth observations, interviews and artifacts in order to discover relationships among concepts. The purpose of the research was to develop an in-depth understanding of factors that affect teachers' responsiveness to interventions as a result of their involvement in targeted PD, coaching and observational feedback by examining multiple forms of data (observational, inquiry and artifacts).

To begin the data analysis process, all data sources needed to be compiled and organized to infer meaning. Stake (1995) states that "analysis is a matter of giving meaning to first impressions as well as to final complications" (p. 71). Data in this study was analyzed using content analysis as described (Merriam, 1998). The content of interviews, observations (field notes) and documents produced were analyzed qualitatively for recurring patterns and meaning. The process involved the coding of raw data and the construction of categories that capture relevant characteristics of the data content (Merriam, 1998).

The action research questions were guiding the initial search for meaning of events that seemed otherwise ambiguous. One of the challenges in data analysis for this action research was in constructing categories that answer the research questions of the study. Additional sensitizing questions (Who, What, Where, How), theoretical questions (process and connection), structural questions (practical) and guiding questions (evolving, open-ended) helped the researcher develop and define concepts and definition of categories (Straus & Corbin, 1998). Categories were further defined in terms of properties (general or

specific attributes of a category) and dimensions (range on which a property can be located)

in search for communicating meaning (Straus & Corbin, 1998). Therefore, this was a

process of an ongoing comparison and contrast of meaningful details in data sources in

order to identify recurrent patterns, themes, or categories under which they fit best.

Coding procedures were used to help build the categories in a systematic and

creative way by identifying, developing, and inter-relating concepts. Consequently, several

themes and categories in this study emerged from data analysis.

Strauss and Corbin (1998) describe the analysis process as "interplay between

researchers and data" that requires abilities of researchers to apply science, for grounding

the analysis process in data and art, to creatively "name categories, ask stimulating

questions, make comparisons, and extract an innovative, integrated, realistic scheme" (p.

13). There are different types of coding procedures. Strauss and Corbin (1998) suggest open,

axial, and selective coding.

Open Coding

The first, open coding is a strategy of identifying concepts that lead to categorizing.

Strauss and Corbin (1998) explain open coding as a procedure where questions are asked

and "data are broken down into discrete parts, closely examined, compared for similarities

and differences" (p. 102). These similar or related concepts (events, happenings, objects,

actions) are then grouped under "more abstract concepts termed *categories*" (Strauss &

Corbin, 1998, p. 102). Thus categories are concepts that represent *phenomena* and they are

important analytical ideas that emerge from data (Strauss & Corbin, 1998). Developed

categories were specified by properties (general or specific characteristics or attributes of a

category), and on dimensions (the continuum that allows to locate properties).

There are different ways of doing open coding. Some of these include analysis line-by- line (phrase by phrase or word by word), whole sentence or paragraph (main ideas) or analysis of the entire document (Strauss & Corbin, 1998).

Axial Coding

The second, axial coding has been defined as "a process of relating categories to their subcategories along the lines of their properties and dimensions" (Strauss & Corbin, 1998, p.124). Subcategories are also categories that answer the questions of "when, where, why, who, how, and with that consequences" to better explain the main category (p. 125). In addition, to better relate categories a paradigm (organizational scheme) can be used. A paradigm consists of conditions (set of events or happenings that create situations, issues, and problems pertaining to a phenomenon), actions/interactions (response to conditions) and consequences (response to action/interaction). The paradigm helps "systematically gather and order data in such a way that structure and process are integrated" (p. 128). Structure refers to the conditional context in which a category is situated and process refers to a sequence of action or interaction pertaining to a category (p. 123). The purpose of this type of coding is to add depth and structure and to systematically develop and relate categories in order to build a theory (p. 142). Analysis of qualitative and quantitative data points led to the study's findings, implications and further recommendations.

<div align="center">

Findings

</div>

Teachers' Responsiveness to Engagement Interventions

In this study, I aimed towards the development of themes and categories that emerged from analysis that were grounded in data. The emerged categories based on data triangulation in this study were as follows: perceived teachers' outcomes of interventions, organization and implementation of PD, structure and interactions relevant to change in

practices, teacher's perspectives and perceived outcomes, implications of context to change,

and teachers' mindset.

Table 7

Emerged Themes and Categories

Categories and Themes/ Data	Double Entry Journals / Instructional Feedback	Coaching Plans
Teacher's Outcomes of Intervention	Cognitive engagement was most responsive and socio-emotional was least	All teachers met coaching goal in at least one domain / Goals were met at a range of 72% to 92%
Organization and Implementation of PD	Data collected in double entry journals showed evidence of teachers' implementation of practices modeled in PD sessions	Coaching data (teachers' reflections to coaching questions) showed evidence of teachers' progression towards change in practice
Structure and Interaction Relevant to Change in Practice	Teachers were mostly responsive to feedback when grounded in data	Coaching plans served as an effective framework for leading change in practice
Perceived Outcomes	Feedback was effective when backed by data and coaching	Baseline goals in engagement ranged from 40% to 80%
Implications of Context to Change	Feedback was least responsive to socio-emotional and behavioral engagement domains	Coaching was least responsive to socio-emotional and behavioral engagement domains
Teacher Mindset	Data from teachers' self-reflection showed a variance in perceptions of instructional practices as compared to collected data in double entry journals and reports	Coaching goals impacted teachers' motivation and focus as response to change in practice

Interviews	Surveys	PD Construct	Coaching Cycles
Teacher practices were responsive to implementation of cognitive and some socio-emotional engagement strategies facilitated in PD and supported by coaching.	Pre and post Culture and Climate surveys showed average growth of 0.47 in teachers perceptions of feedback and ultimately coaching	Teachers implemented new technology platforms and learned about research based engagement strategies	Coaching grounded in data was most responsive to intervention
Interviews confirmed teachers' responsiveness to modeling, input and collaboration	Pre and post Culture and Climate survey showed average growth of 0.65 Highest change in individualized PD and learning	Teachers were responsive to elements of effective PD design based on modeling, collaboration and sustained duration	PD was aligned with coaching and focused on the three engagement domains and technology platforms
Focus on one instructional practice over sustained period of time was evidenced as impactful	Surveys compared outcome of intervention (pre and post)	Teacher had awareness of low engagement and low student interest	The impact of coaching cycles was achieved thru use of collaborative dialogue, transformative and facilitative was coaching models
Teachers perceived coaching as most responsive intervention Technology platforms that helped monitor student learning and engagement	Highest ratings on Culture and Climate pre and post survey (3.3) on value of colleagues' ideas in improving teaching	Teachers expressed a positive perspective on PD that takes place over sustained amount of time and when it contributes to individual	Coaching cycles were most responsive to cognitive engagement domain and technology platforms
Responsiveness to feedback driven by data	No change in usefulness of feedback – still rated high on pre and post compared to initial ratings of other two questions	Teachers' response to PD was impacted by students' initial high learning curve in technology and school's transition to iPad during COVID Pandemic	Coaching was most impactful for change in practice
Confirmed that teachers' beliefs were the driving force in change of practice.	Culture and Climate survey on PD showed highest growth (0.7) in school's support in teacher's growth	Teachers sought PD in engagement and collaborative platforms as response to their beliefs about students' learning	Teachers perceived coaching grounded in data and feedback as most responsive to their practices

Artifacts	**Screenshots**	Showed evidence in intervention outcome	Showed evidence of PD implementation	Showed evidence of coaching and feedback	Showed evidence in response to intervention	Evidence of engagement context was in activities and reports	Evidence in intervention responsiveness

Coding procedures were used to help build categories in systematic and creative way by identifying, developing, and inter-relating concepts (See Table 7). In addition, themes that emerged from qualitative data analysis relate to my and teachers' positive perceptions of factors of impact in intervention implementation. These themes are as follows:

- Alignment of coaching, PD, and instructional feedback

- Use of modeling during PD

- Teacher collaboration (teacher voice and content focus) during PD

- Sustained focus of PD on one topic over a prolonged period of time

- Coaching more impactful in smaller groups of teachers versus larger ones

Alignment of coaching, PD, and instructional feedback were important factors of impact in intervention implementation. This alignment offered focus, consistency and a common language for dialogue during coaching and teacher collaboration in PD sessions. During coaching, I realized the impact of alignment of the three interventions when used with the cyclic process of action research. Concretely, PD served as a reference point for instructional feedback while both, PD and data collected during instructional observations served as reflection points during coaching cycles. In addition, reflective and evaluative processes of the action research process together with instruments of data collection served as measures and motivators that led teachers to change their engagement practices. Aligned and intertwined interventions were therefore impactful.

Teachers' positive response to PD was impacted by modeling and collaboration as evidenced by Teacher A statement: "I could see through modeling how to implement the strategies" and a survey score of M=8.4 out of 10 for PD collaboration and opportunities for teachers' to express their voice (Figure 15). In their interviews, teachers expressed a positive perspective on PD that is focused on one topic over sustained, prolonged timeframe. For instance, a teacher stated: "It is much more effective to focus on one skills …you perfect that one thing" (Teacher C, Interview).

Findings from this study were based on the data that was selected in response to the research questions: (a) How do urban middle school teachers' instructional practices respond to targeted engagement intervention in a virtual learning environment?; (b) How does a specific intervention coaching cycle, instructional feedback and PD improve a classroom instructional practice?; (c) Which specific features cognitive, socio-emotional or behavioral of teachers' classroom instructional practices are more or less responsive to intervention? Data collected consisted of PD surveys, double entry journals, instructional feedback, professional development constructs, video files, coaching cycles, screenshots of classroom activities and, interviews. These data points showed: (a) positive responsiveness to teachers' engagement interventions evidenced by increase in engagement practices during the six weeks of intervention; (b) increase in teachers' perceptions about instructional feedback and PD; (c) coaching driven by feedback that is grounded in data surfaced as most impactful intervention in this study; (d) engagement practices relevant to the socio-emotional domain were least responsive to change. (e) teachers' beliefs and growth mindset drove their need in practice change. There was no evidence of practices in the behavioral engagement domain. These findings are based on data gathered before, during and after intervention.

(a) How do urban middle school teachers' instructional practices respond to targeted engagement interventions in a virtual learning environment? (RQ1)

In order to evidence how each participant responded to targeted engagement intervention, I implemented a multi-layered data analysis (triangulation) for each teacher based on multiple data points. If the participants implemented some of the engagement practices modeled in PD or addressed instructional feedback during their lessons, they were rated as responsive to intervention, otherwise they were rated as non-responsive. At the same time, reaching their set goal was rated as responsive to coaching intervention (See Table 8).

Table 8

Data Triangulation based on Intervention-Teacher A

Teacher A									
Responsiveness Yes=1, NO=0									
Observation	**PD**	**Responsiveness**	**Evidence**	**Feedback**	**Responsiveness**	**Evidence**	**Coaching**	**Responsiveness**	**Evidence**
0	PD1 SE, BE, DOK Nearpod		PD 1 Survey M=9.6				Coaching Plan		Coaching Goal 40%

4	3	2	1
PD5 Padlets SE BE	PD4 Flipgrid Canva SE, BE	PD3 Nearpod	PD2 Microsoft Notebook &Forms
1	1	1	1
Nearpod -PD 5 Survey M=9.1	-Nearpod Report -PD4 Survey M=10	-Forms Screenshot Artifact -PD 3 Survey M=9.9 "You showing me how to do that stuff, because I could not figure it out on my own, I had to see it done to better understand it." (Interview)	-Class Notebook Screenshot Teams "Learning about virtual resources was helpful. The use of Nearpod was effective because it allowed real time monitoring and encouragement" Interview -PD 2 Survey M=9.9
SE	SE, BE	Use of Forms, DOK	SE, DOK Platforms
1	0	1	0
- Double Entry Journal-feedback (SE 17%, DOK) -Video file	- Double Entry Journal-feedback (SE, DOK levels) -Nearpod Report -video file	-Double Entry Journal-feedback (DOK levels) -Form Artifact -video files	-Double Entry Journal-feedback - Class Notebook Screenshot Teams -Video file
--	Coaching Question &Forms Reflection	Coaching Question &Forms Reflection	Coaching Question &Forms Reflection
---			
---	- Answers to coaching questions -Teacher Reflection -Forms Teacher Effectiveness	- Answers to coaching questions -Teacher Reflection Form Teacher Effectiveness Self-Score M= 0.67 out of 1	- Answers to coaching questions -Teacher Reflection -Forms Teacher Effectiveness Self-Score M=0.27 out of 1 "coaching helps me visualize engagement"

5	PD6 Integration	1	-Nearpod Report -PD 6 Survey M=10	SE, BE, DOK Nearpod	1	Double Entry Journal -feedback (DOK levels) -Nearpod Report	¦	¦	¦
Average	**5/5**	**PD M =9.8/10**	**Feed-back**	**3/5**	**Coaching**		**Yes**	**Goal Met** Highest cognitive engagement reached	

Teachers' responsiveness to intervention (See Appendix U) based on numeric averages that contributed to evidence of engagement practices in data triangulation illustrated in Table 8, was compiled for all six participants as illustrated in Table 9:

Table 9

Responsiveness to Intervention

Teacher	PD Mean Score	Feedback Mean Score
A	5	3
B	0	4
C	4	4
D	5	4
E	4	4
F	5	4
Mean	**M=3.85**	**M=3.85**
SD	**SD=1.77**	**SD=0.37**

This data shows same response to PD and Feedback of M= 3.85 out of 5. However, there is a difference in SD. Standard deviation for PD is SD=1.77 and feedback is SD=0.37. This shows that data is more spread for PD and less spread for feedback when compared to

the mean scores since some teachers did not consistently implement the strategies modeled in PD. Coaching responsiveness to intervention was based on teachers' individual goals which were all met during at least one out of five instructional observations.

Consequently, triangulated data from PD and instructional feedback shows participants positive responsiveness to intervention. All participants coaching goals were met during the study, which brings additional evidence to this claim. Therefore, these data points fulfill the scope of the first research question since they show positive responsiveness to teachers' engagement interventions. Additional data points from interviews, coaching cycles, and surveys relevant to this and the other two research questions bring further evidence to this claim and indicate how much these interventions improved instructional practices.

(b) How does a specific intervention such as coaching cycle, instructional feedback and PD improve an instructional practice? (RQ2)

Survey data shows growth in teachers' responsiveness to feedback (See Figure 9). Specifically, teachers' Culture and Climate pre and post-survey indicates an increase of M= 0.5 (Q4) in the thoroughness of instructional feedback (from M= 2.7 to M= 3.2), increase of M=0.4 (Q3) in the amount of feedback received (from M=2.8 to M=3.2), increase of M=0.5 (Q2) in the frequency of feedback (from M=2.7 to M=3.3), and no change (Q1) in usefulness (M=3.2 to M=3.2) which received the highest ratings on the pre-survey. The difference in SD between pre (SD=0.70) and post (SD=0.04) was SD=0.66.

Figure 9

Culture and Climate Post and Pre Survey –Feedback and Coaching
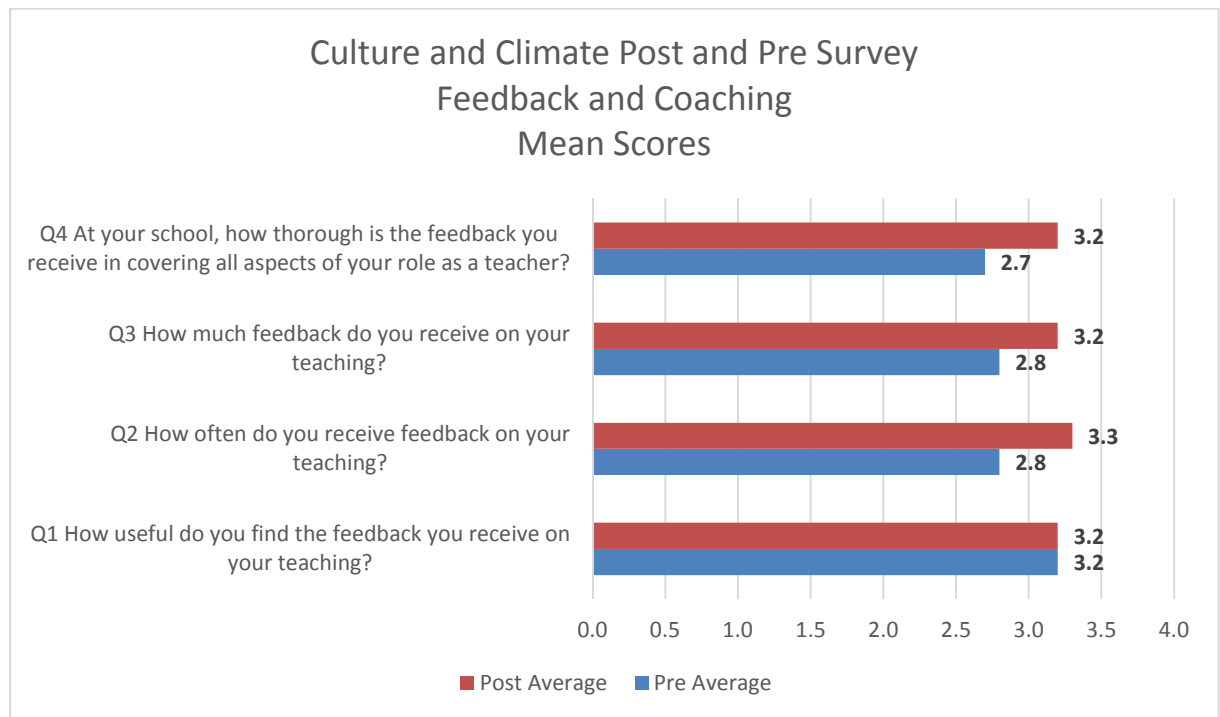
Data collected from interviews attests the power of instructional feedback when grounded in data as response to interventions in teachers' practices. Although it is difficult to fully separate feedback from coaching since instructional feedback to teachers expends the ability to see context during coaching, still, even disjoint from coaching, feedback alone had a high impact on teachers' practices as evidenced by their interviews. "The feedback was most helpful-the analytical one because we were able to look at numbers-which were an indicator of engagement. That made me think of the combination that was most effective" (Teacher C, Interview); and "Feedback led to change in instruction and developed awareness in practice change (socio-emotional engagement too) I also became more self-aware and became more positive towards my students" (Teacher E, Interview).

Teachers' response to my instructional feedback was also evidenced in double entry journals. Notes taken during synchronous lessons consisted of detailed logs of interactions and activities that took place during the 45 minute lessons. A sample of a double entry journal in Table 10 illustrates coded and calculated engagement data in the reflection section as well as my descriptive instructional feedback given to teachers. Both, numeric and descriptive feedback parts of the double entry journal were sent to teachers and were later used as reference points during coaching sessions. To ensure data reliability, this was a consistent practice with all participant teachers.

Table 10

Double Entry Journal

Teacher C	Noticings	Reflections and Analysis
10/5/20 Observation 4	05:00 Students are finishing up an assignment in Edulastic 07:00 T: gives instructions on how to access Edulastic (user names and passwords) insisting that students need to finalize assignments 11:00 transition to Nearpod 12:00 students logging in Nearpod "Transformation" 19:00 S1 Responds to the reflection problem DOK2 does error analysis (Jer…)DOK2 20:00 S1 gives correct answer 21:00 T: gives corrective feedback to all students on reflection and translation 25:00 feedback continues and gives individual support and error correction (gives constant praise to correct answers) 27:00 T: A student's answer is shared (Jor..) praise High participation in Nearpod… New assignment in Nearpod 180 rotation of a point 29:00 feedback continues and gives individual support and error correction (gives constant praise to correct answers) 31:00 S2 is assisted (Ale…) –gets to answer with scaffolds DOK2 32:00 S3 –corrective feedback (Ro…) – scaffolding questions –What do you need to change? Student arrives to correct answer	32 students in attendance 3 problems assigned in the 45 minute - all students received individual feedback from teacher and struggling students were asked scaffolding questions-in order to get to the correct answer until everyone made attempt to complete assignment 100% feedback to all students given by the teacher Nearpod Report indicates average 65% student Participation meaning - 21/32stud=65% 18min/45min=40%of class time DOK was gradually increased form 3DOK2 to 1DOK 3 Exemplary answers were shared and explained for each problem Individual names were called out and teacher feedback was given to students together with praise **Feedback to Teacher** Consider implementing some of the strategies discussed in PLC **Socio-emotional** **Engagement:** Inspirational Hooks Consider how you can incorporate real-

	DOK2	world connections into your lessons.
	34:00 ==All responses are reviewed==	● How can you incorporate the <u>hobbies</u> and outside interests of your students into this material?
	35:00 New assignment-increased difficulty level Students receive feedback DOK 3 43:00 S4 (Ka…, Key…) are asked scaffolding questions 45:00 Individual feedback is given ==Cri…. exemplary answer was shared==	● What type of <u>life-changing lesson</u> can be incorporated into the content? ● What <u>current events</u> are related to this lesson? **Behavioral Engagement**: Real-Life applications Real-life connection such as demonstrations using real objects to show they understand the concepts and can apply to their surrounding (Flipgrid Platform)

Data from double entry journals was coded based the frequency of students'
interactions, interaction length during the 45 minutes' class time and the number and level
of depth of knowledge questions (DOK) that were associated with cognitive engagement.
Likewise, teachers' use of positive reinforcement, participation points, praise and words of
affirmation were associated with socio-emotional engagement. There was no evidence of
behavioral engagement although teachers received PD in this domain. Table 11 exemplifies
an Engagement Frequency Chart with categorized data transferred from one double entry
journal (Teacher C). Likewise, Table 12 illustrates compiled data collected in double entry
journals during five observations (Teacher A).

Table 11

Sample Engagement Frequency Chart, Teacher C

Observation 2 Teacher C	Cognitive	Frequency (Minutes)	Behavioral	Frequency (Minutes)	Social Emotion.	Frequency (Minutes)
Implementation with fidelity most of the time 60% and above class time minutes	**27/33 =81%** 7 DOK 1 1DOK 2	32/45min =71%				
Implementation of some elements-for a short time <60%-20% of class time minutes						
Inconsistent Implementation <20% of class time minutes					**15/33= 45%**	**5/45= 10%**

Table 12

Compiled Engagement and Frequency Charts -Teacher A

Engagement Teacher A Initial Goal 40% Highest Reached 79%							
Observation	Cognitive	Frequency	Socio Emotional	Frequency	DOK1 Frequency	DOK2 Frequency	DOK3 Frequency
1	24%	33%	0%	0%	4	5	0
2	38%	76%	4%	2%	7	14	3
3	14%	29%	3%	2%	6	6	0
4	72%	42%	17%	11%	4	12	0

| 5 | 79% | 22% | 0% | 0% | 16 | 8 | 0 |
| Ave-rage | 45.4% | 40.4% | 4.8% | 3% | 7.4 | 9 | 0.6 |

Calculated and compiled data from double entry journal logs (See Appendix L) relevant to the frequency of engagement was transferred to the Engagement Frequency Charts (Table 13) and then graphed for each engagement domain using a scale of below 20%, followed by 20% to 60%, and above 60%. See Figure 10.

Table 13

Cognitive Engagement during 30 Observations

Cognitive frequency (Nr. of Students Engaged/Total)	Implementation >60% (Number of Lessons)	Implementation <60%-20% (Number of Lessons)	Implementation <20% (Number of Lessons)
Teacher A	2	2	1
Teacher B	1	4	0
Teacher C	4	1	0
Teacher D	3	2	0
Teacher E	4	1	0
Teacher F	4	1	0
Mean	**3**	**1.83**	**0.17**
SD	**1.15**	**1.07**	**0.37**

Figure 10

Percentage of Students Cognitively Engaged
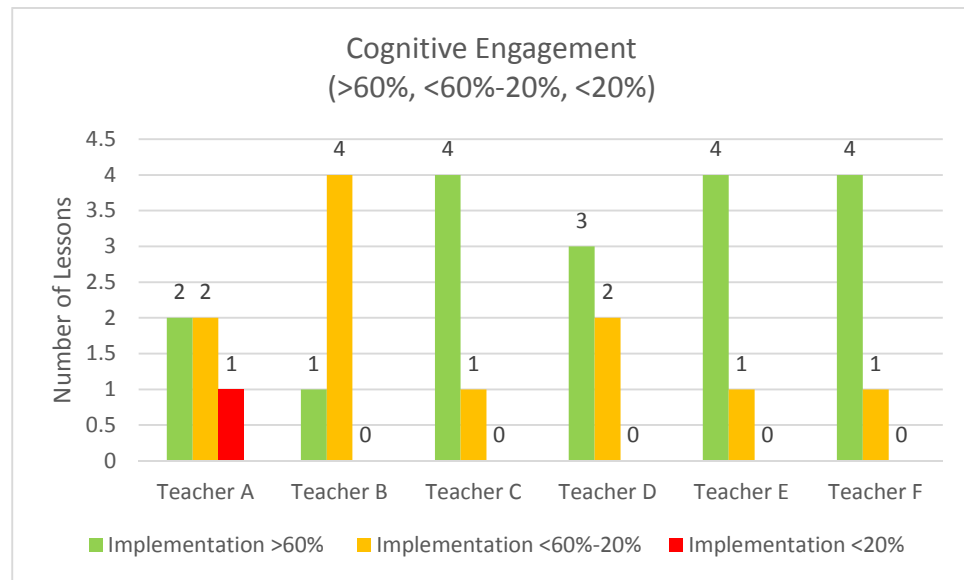

Out of 30 lessons observed, 18 (60%) showed evidence of practices that cognitively engaged over 60% (M=3, SD=1.15) of students, while 11 lessons (37%) showed between 60% and 20% students engaged (M=1.83, SD=1.07). Just one lesson (3%) showed student engagement under 20% (M=0.17, SD=0.37).

Although the number of cognitively engaged students surpassed 60%, in more than half of the 30 lessons observed, the duration of these engagement practices was rather short. Just in six of the 30 lessons (teacher A, C, D, and E), students were engaged over 60% of the time (M=1 and SD=0.82). Specifically, this means that the engagement time surpassed 27 minutes out of the 45minutes planned for synchronous instructional time. Likewise, in six lessons out of the total observed, students were less than 20% of the time engaged (M=1, SD=0.82). This means that engagement practices lasted less than nine minutes of total instructional time. A total of 18 lessons involved engagement practices that lasted between

60% to 20% of the total instructional time (M=3, SD=1.41). This means that in most of the

lessons engagement practices had a duration between nine and 27 minutes. See Figure 11.

Figure 11

Duration of Cognitive Engagement
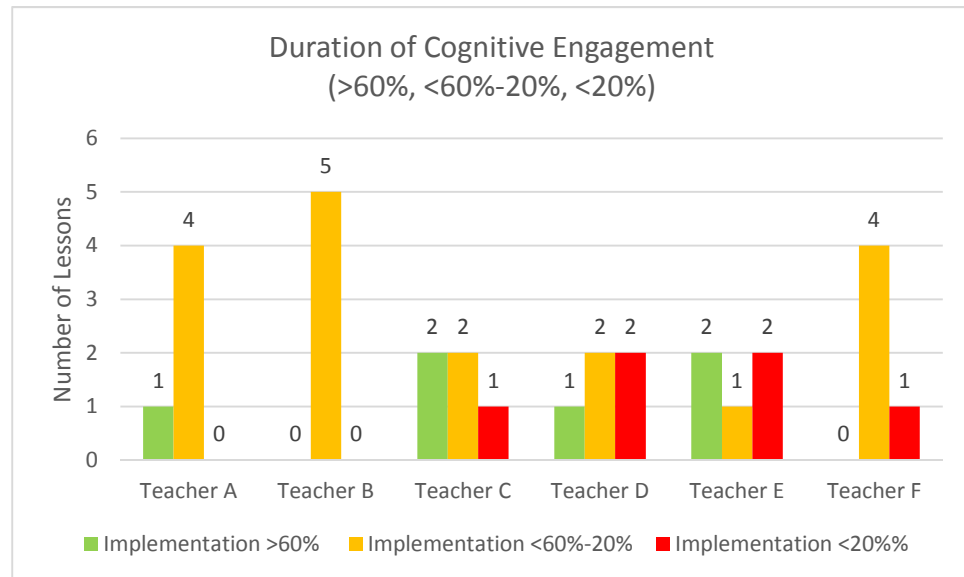
DOK level 1 questioning frequency was higher in math than science classes and was

more efficiently achieved with software platforms such as Microsoft Forms or scaffolding

during problem-solving using whiteboard in TEAMs. However, questions were on average

at a higher DOK level in science than math with the implementation of Legends of

Learning, digital textbook resources in TEAMs and simulations using Nearpod applications

(See Figure 12). Higher DOK levels in science could also be attributed to a more rigorous

curriculum in science than in math.

Figure 12

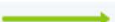*Average DOK Levels during 30 Observations*
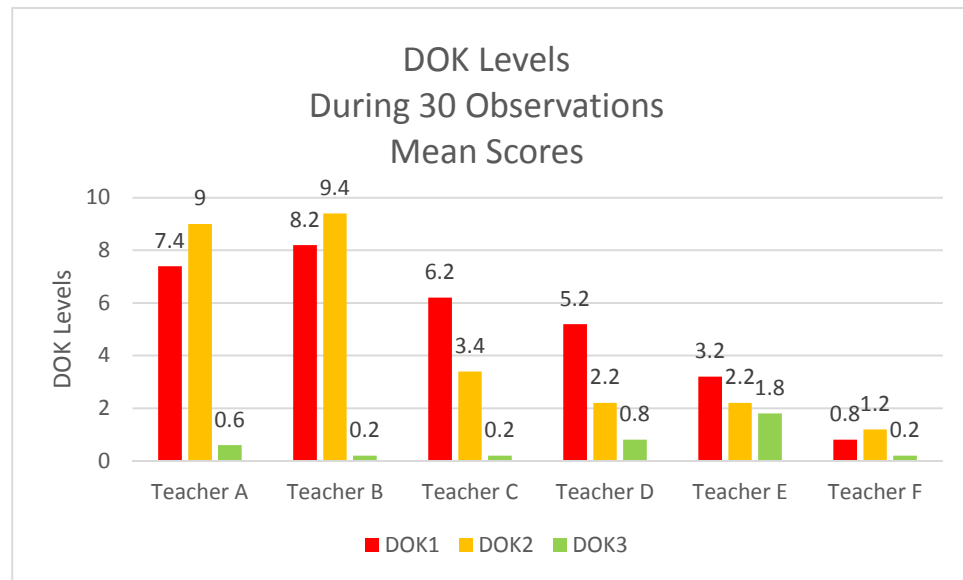
The highest mean score of DOK levels during the five observation cycles was DOK1 (M=5.2, SD=2.52.21) followed by DOK2 (M=4.56, SD=3.21.52) and DOK3 (M=0.63, SD=0.57). This data can be linked to relevant to the quadrant two of the Cognitive Engagement Model (Himmele & Himmele, 2011) consisting of low cognition and high participation due to prevailing DOK1 levels and high engagement in 18 of the 30 lessons observed. Despite the fact that participation increased, teacher practices were mostly in DOK1 and DOK2. These practices were justified by students' comprehension level: "The cognition chart helped me understand and reach students where they are- had to break down the content to bring it at their grasp" (Teacher D, Interview, October 26, 2020).

The same data can be associated with the stamina quadrant of high difficulty and low complexity by Fisher et al. (2018) described in the literature review. The authors define difficulty as the amount of time, work or effort the learner has to employ on a task and complexity as level of thinking, and the number of steps and background knowledge

required to complete the task. Study's artifacts show high difficulty (length of time) and low complexity in completing DOK2 activities. See Figure 13.

Figure 13

Artifact -Instructional Activity

8th (Y.11)	Write a linear equation from two points 2R9	41	1 hr 25 min	0 ⟶ 100
8th (Y.10)	Write a linear equation from a slope and a point VKP	35	58 min	0 ⟶ 100
8th (Y.13)	Graph a line from an equation in standard form 7MZ	21	29 min	0 ⟶ 100
8th (Y.9)	Write a linear equation from a graph WHM	53	2 hr 18 min	0 ⟶ 100
8th (Y.8)	Write a linear equation from a slope and y-intercept WHP	35	9 min	0 ⟶ 100

See all 7 skills ⌄

The impact of PD, as an additional intervention in this study, was evidenced through survey data, interviews, and PD constructs. The pre and post Culture and Climate survey showed significant increase in participant teachers' perceptions of PD (See Figure 14). The highest increase at a mean score of M=1 was attributed to both: teachers' input in individualizing PD from M=1.3 to M= 2.3 (Q11) and to overall learning from M=1.8 to M=2.8 (Q10). An increase at a mean score of M=0.5 was attributed to the value of PD from M=1.8 to M=2.3 (Q9) and learning of new strategies from M=2.3 to M=2.8 (Q8). Additionally, there was increase at a mean score of M=0.7 from M=3 to M=3.7 (Q7) in school's support towards teachers' growth and a mean score of M=0.2 increase from M=3.3 to M=3.5 (Q5) in helpfulness of colleagues in improving teaching. There was no increase in content relevance of PD. Still, the rating to this question in the post-survey was in the same range M=3.2 (Q6) of the previous three questions. The change in standard deviation was SD=0.25 from SD=0.70 on the pre-survey to SD=0.45 on the post-survey.

Figure 14

Culture and Climate Post and Pre Survey on Professional Development
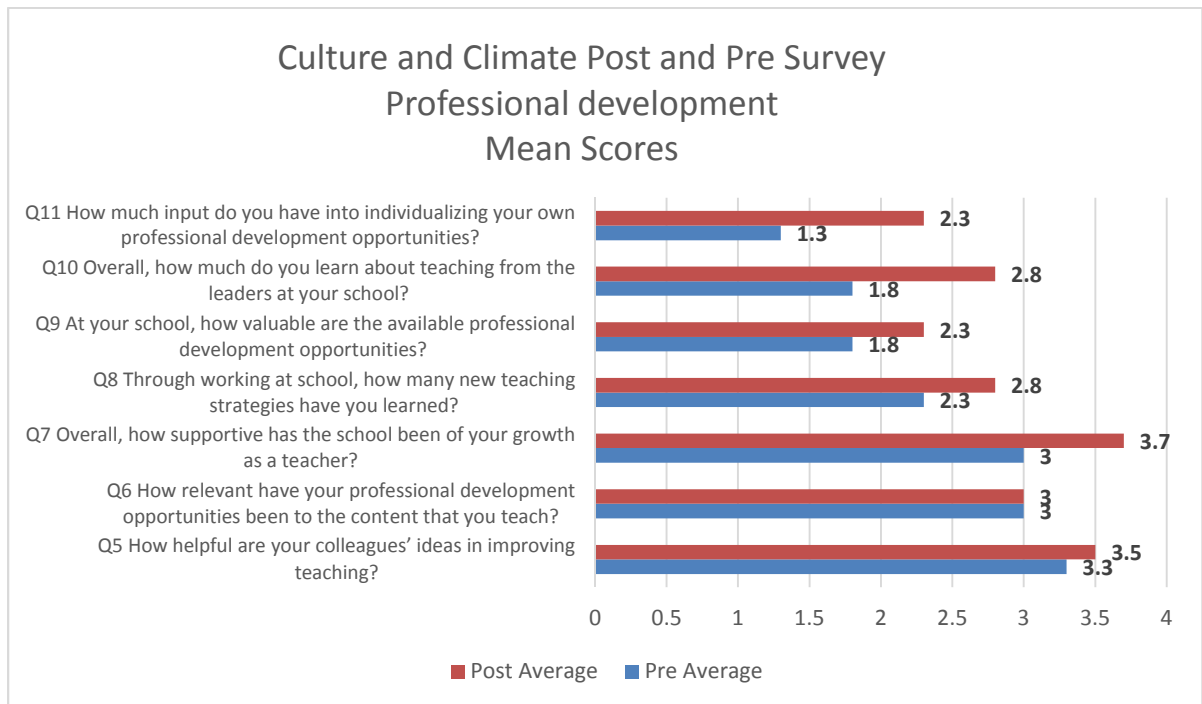
Data from interviews, confirmed the importance of modeling, teacher voice, and collaboration. Teachers' positive perception of PD design were confirmed by the following statements: "Modeling of a practice was an effective approach to PD. I could see through modeling how to implement the strategies." (Teacher A, Interview); "By taking part in PD it made us develop a new lens to look at things in terms of engagement. It made me reflect on some of the technology that I use. It gave me ideas of how to mix up tools and keep things fresh." (Teacher B, Interview); "PD broadened my virtual horizon and added to my skills it added to my repertoire of instruction." (Teacher C, Interview); "All PD was helpful because it broadened my horizons on avenues that were out there, even the different aspects of online learning. I did not think of how to reach all those areas –behavioral, cognitive and socio-emotional." (Teacher D, Interview); "Sharing of teacher practices-teacher morale-

encouragement." (Teacher E, Interview); "Sharing and collaboration." (Teacher F, Interview); "I think the sharing of information and resources was most effective." (Teacher E, Interview); and "We had a chance to talk about what works for us –that jump started the thinking process. I always looked forward to what others would say-and was interesting to see how other teachers would pick up on what I said (opportunities to share and learn from each other)"(Teacher B, Interview).

Surveys administered after each of the six PD sessions measured its effectiveness and design implementation (See Figure 15). The PD was based on the seven characteristics of effective professional development design described by Darling- Hammond et al. (2017). In this survey teachers attributed highest ratings to use of modeling of effective practice at mean score of M=8.7 out of 10 (Q1) and same ratings at a mean score of M=8.4 out of 10 (Q2, Q3, and Q4) to opportunity to express voice, support and collaboration, and content focus of PD. Opportunities for feedback and reflection were rated at mean score of M=8.3 out of 10 (Q5). Same ratings at mean score of M=8.2 out of 10 (Q6 and Q7) were attributed to opportunities for follow up coaching and to learning about engagement strategies. A rating at a mean score of M=8.1 out of 10 (Q8) was attributed to active learning, mean score of M=8 out of 10 (Q9) to opportunities for PD over a sustained amount of time, mean score of M=7.9 out of 10 (Q10) to opportunities to make choices, mean score of M=7.8 out of 10 (Q11 and Q12) to both stimulating context for learning and addressed learning styles. Opportunities to share experiences and resources were rated at a mean score of M= 7.6 out of 10 (Q13). The standard deviation for this survey was SD=0.29.

Figure 15

Professional Development Survey During Interventions
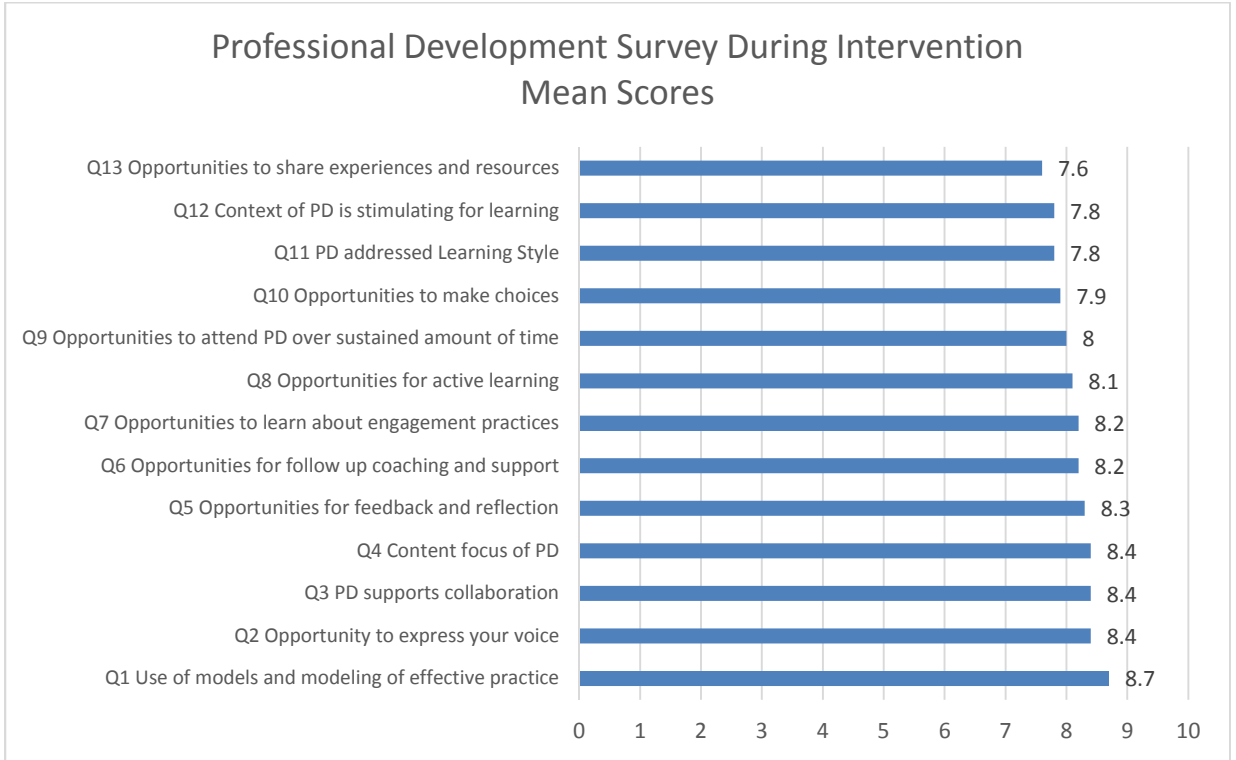
Impact of these strategies was confirmed during interviews by the following

statements: "You showing me how to do that stuff, because I could not figure it out on my

own, helped. I had to see it done to better understand it." (Teacher A, Interview); "I was able

to see how other teachers do in their classrooms and loved to share my stuff that worked"

(Interview, Teacher F) and, "When you had the presentation with examples and categories –

and you had each teacher pick one and share-and I enjoyed listening to others share what

they use and liked sharing what works for me" (Interview, Teacher B).

Average survey data from the six PD sessions illustrates teachers' ratings based on

the topic of each session (See Figure 16). Nearpod collaborative platform session received

highest ratings with a mean score of M=9.1 out of 10 and was the most used platform during

the study. Flipgrid, Canva and Legends of Learning platforms were also highly rated at a

mean score of M=8.9 out of 10. Padlets, socio-emotional and behavioral engagement PD received mean score of M=8.5 out of 10 followed by Integration of all Platforms and engagement domains at a mean score of M= 8.3 out of 10. The introductory PD on DOK levels, Cognitive Engagement Models and Difficulty and Complexity Chart received mean score of M=7.7 out of 10. The lowest ranked PD was the one on Microsoft Class Notebook and Forms with a mean score of M=7.2 out of 10. Standard deviation for this data set was SD=0.65 Teachers found Class Notebook difficult to implement (Interview, Teacher A).

Figure 16

Professional Development Ratings based on Topic

Professional Development Ratings
Based On Topic
Mean Scores

Nearpod	9.1
Flipgrid, Canva, Legends of Learning	8.9
Padlets, SE, BE	8.5
Integration of Platforms, SE &BE	8.3
DOK, SE, BE	7.7
Teams Notebook, Forms	7.2
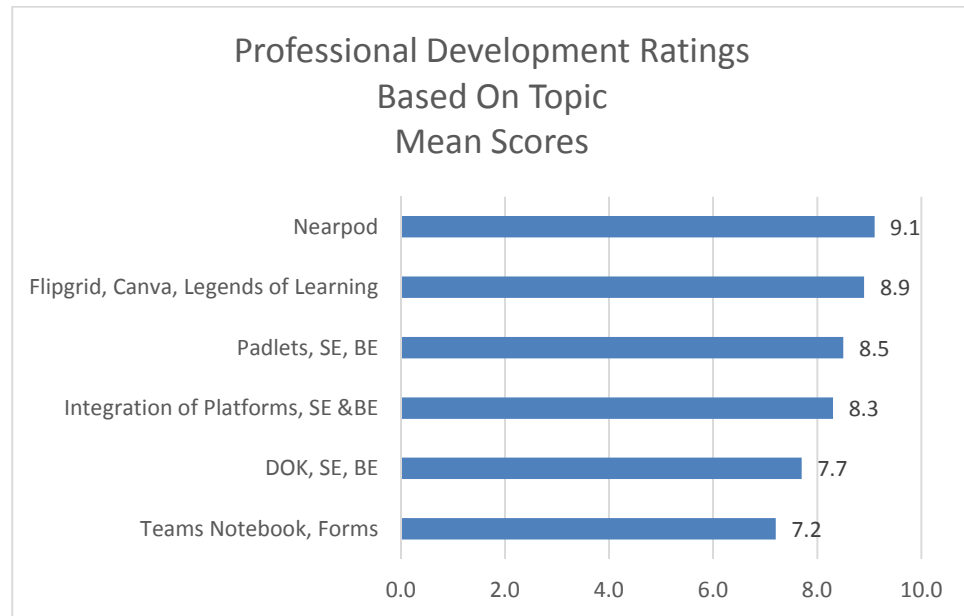
Teachers considered Nearpod as an effective engagement platform. The following are teachers' interview statements based on PD topics: "Once I settled on implementing Nearpod it got way more effective. I could see students working and encourage them." (Teacher A, Interview); " It was helpful-especially with Flipgrid it gave me something more-the first unit sound waves –I was using Nearpod and other resources that I could work with –we were all immersed in all this-PD and idly we would share more bells and whistles

(sticky notes) if we were more experienced at it." (Teacher F, Interview); and "Real time features of platforms helped me most-it related to students 'accountability. I knew that they were actively working and I could see if they were struggling. I could provide instant feedback-that helped." (Teacher D, Interview).

Consequently, multiple data points show increase in teachers' perceptions on instructional feedback and PD and bring evidence to the scope of the second research question. Specifically, survey and interview data shows positive impact of PD based on effective characteristics of PD design (Darling- Hammond et al., 2017). Feedback grounded in data shows high responsiveness as evidenced by teachers' interviews. PD survey data evidenced Nearpod as the most preferable engagement platform. The effective of this platform was corroborated by interviews: "Once I settled on implementing Nearpod it got way more effective. I could see students working and encourage them" (Teacher A, Interview).

In order to evidence how coaching cycles improved teachers' practices, I used multiple data points. Coaching plans served as indicators of baseline data (See Appendix I) and consisted of individualized coaching goals. Data from coaching plans (Table 14) was used to describe indicators of progress between coach and teachers as measures towards achieving an identified engagement goal. This was evident, since some teachers revised their goal during coaching sessions by setting higher standards for their practice. For instance, Teacher C described this process in the following statement: "You challenged me to set higher goals for myself and you made me think of implementing various strategies to make kids participate. You gave me a lot of ideas –then it was up to me to see what works best for my students" (Teacher C, Interview).

Table 14

Sample Coaching Plan-Teacher C

		Coaching Plan **Teacher:Teacher C**
Date **9/16/20**	Identify the areas of coaching: what's the big picture?	Continuous Students Engagement
	Identify standards and criteria	Frequency Engagement Checklist
	Determine a SMARTE goal	During coaching session will identify 3 strategies to help increase student engagement by 16% from 54% to 70% Set higher goal-New goal is now 80%
	Identify high-leverage activities	Microsoft Breakout rooms PD Nearpod
	Break down the learning	Cognitive, Socio-emotional and Behavioral strategies
	Determine indicators of progress	Implement Nearpod Questioning Frequency DOK Levels
	Determine coaching theories of action	Reflective questioning
	Determine coach's goal	Deliver continuous feedback and coaching on engagement strategies and collect data on teacher's instructional engagement practices.
	Compile resources	Teach Like a Pirate (Burgess) Highly Engaged Classrooms (Marzano, Pickering)
	Present and celebrate plan	**Highest Goal Reached 81%**

Teacher's Reflection

"Feedback-produced the most impact it gave me a goal –it gave me specifics and it was easy to focus on increase."

Coach's Reflection

Teacher was very competitive and determined to increase engagement. There was evidence of continuous dedication

towards questioning and providing feedback to all students in attendance. Teacher increased goal to 80% after

reaching initial increase in engagement by 20%. Coaching seemed very helpful as a reflective practice.

In addition, coaching plans helped compare the dimension gap between where the teachers were in their practice and their progress towards their chosen individual goal. Besides improving engagement practices, compiled coaching plans indicate participants' intention to focus on building relationships with students (socio-emotional engagement domain) and reaching less receptive students (cognitive domain). All participants choose the Engagement Frequency Chart (See Appendix M) as a standard and criteria for measurement of engagement practices. Additional implementation measures included Nearpod reports on student participation and logs on the frequency of depth of knowledge (DOK Level) questions collected during instructional observations. Consequently, the overarching goal set by all teachers was aimed towards implementing virtual engagement strategies to increase student interest and participation.

Compiled baseline data from coaching plans in Table 15 indicates that all participants teachers identified student engagement as their main area of coaching. Most of the high leverage activities necessary to reach these goals could be categorized as PD in technology and in socio-emotional engagement. Specifically, teachers requested support in virtual platforms such as TEAMs, (Forms, Collaborative Board, Class Notebook), Nearpod, Legends of Learning and, coaching on positive reinforcement. The way teachers broke down their learning was based on modeling of these practices and additional professional development. Specifically, teachers requested modeling in setting up the Class Notebook application in TEAMs, modeling features in Nearpod and Legends of Learning (virtual interactive science platform) as well as professional development in cognitive and socio-emotional engagement strategies. For all participants an increase in student engagement would serve as an indicator of progress in their instructional practices.

Table 15

Compiled and Analyzed Coaching Plans

Compiled Coaching Plans		Reflection/Analysis
Identify the areas of coaching: what's the big picture?	1. Student <u>engagement</u> 2. <u>Building relationships</u> with individual students, reaching less receptive students 3. Continuous Students <u>Engagement</u> 4. <u>Student Engagement</u> 5. <u>Engagement</u> 6. <u>Engagement</u> small groups (Nearpod group work)	**Main Area of Coaching:** ● Engagement practices ● Building relationships with students (socio-emotional domain) ● Reaching less receptive students
Identify standards and criteria	1. <u>Engagement Frequency chart</u> 2. <u>Engagement Frequency chart</u> (4-5 kids during guided practice) <u>(Nearpod</u> <u>Participation)</u> 3. <u>Frequency Engagement Checklist</u> 4. <u>Engagement Frequency chart</u> 5. <u>Engagement Frequency chart</u> (Checking in with groups on <u>Nearpods)</u> 6. Frequency chart and <u>depth of knowledge</u> engagement	**Data Collection Criteria:** ● Engagement Frequency Chart ● Nerapod Reports ● Depth of Knowledge
Determine a SMARTE goal	1. Finding efficient strategies to engage at least 40% of students in virtual learning 2. Increase 20% student engagement using various strategies using as benchmark observation #1 3. During coaching session will identify 3 strategies to help increase student engagement by 16% from 54% to 70% 4. Find strategies to increase engagement and the have the most efficient use of time to increase student engagement aims for 80% 5. Increase instructional engagement to reach 80% for virtual learning 6. **I**ncrease high engagement strategies so that students	**Goal:** ● Coach teachers on implementing virtual engagement strategies to increase student engagement

	perform/think at higher level 80%	
Identify high-leverage activities	Class Notebook (TEAMs) Students completing assignments and homework (TEAMs) Praise-Social emotional engagement Points for participation Positive reinforcement Microsoft Breakout rooms (TEAMs) PD Nearpod Class Notebook-Activities (TEAMs) Cameras on –see them if they are focused Nearpod Collaborative Board (Nearpod, TEAMs) Microsoft Forms (TEAMs) Implement Legends of Learning and Readworks Coaching, feedback PD	**High Leverage Activities:** ● PD TEAMs (Forms, Class Notebook, Collaborative Board) ● Positive Reinforcement, Praise (socio-emotional domain) ● PD Nearpod ● PD Legends of Learning, Readworks
Break down the learning	Set up class notebook Implement points for participation Use positive reinforcement, socio-emotional engagement strategies Cognitive, Socio-emotional and behavioral strategies Learn how to implement Legends of Learning Practice with Legends of Learning, Nearpod Simulations	**Learning Steps:** ● Modeling the set up Class Notebook in TEAMs ● Model features in Nearpod ● Model Legends of Learning ● PD on Cognitive and Socio-Emotional Engagement
Determine indicators of progress	40% of students able to engage in virtual platforms 20% more students participating than last observed lesson Engagement and frequency Chart Increase in student engagement reach 80% Engagement frequency chart at 80%	**Indicators of Progress:** ● Increase in student virtual engagement would yield progress in teacher engagement practices

Data from teachers' reflection forms (See Appendix P) that were used as coaching

tools, during coaching cycles, showed a misalignment between their perceptions of

instructions and actual practices (Table 16). The examples were twofold: overestimations

(77.4% versus 43%) and underestimations (65.4% versus 81% and 51.14% versus 60%) of

how the practices were implemented. Data shown in the table below illustrates teachers'

self-rated practices versus the actual data collected during the three observations. Teacher

self-reflections were used to find the connection between teachers' values, experiences as a

means to uncover their assumptions and biases. These forms were great discussion points

during coaching that helped teachers compare assumed perceptions versus evidence in data

collection. One added value during virtual learning were collaborative platforms that

generate reports on engagement. Therefore, the use of computer generated reports, video

recordings of lessons, and detailed observation logs were used to validate specific data

points and address participants perceived perceptions versus the ones grounded in data.

Table 16

Lesson Self-Reflection Form- Teacher D

Teacher D Lesson Self- Reflection Data Match Yes=1, No=0									
Observation	I used practices for high cognitive engagement 90% of the time	I used practices for behavioral engaged	I used practices for socio-emotional engaged	As result of my instructional practices students were interested in learning activities as evidenced by	The engagement practices used were implemented with fidelity	My learning structures were effective	My praise to correction ratio was at least 3 to 1	Teachers 'Perception versus Data	Instructional Engagement and on Double Entry Journal and Nearpod Reports
1	0.86	0.14	0.71	1	1	1	0.71	Teacher 77.4%	**43%**
2	0.86	0.71	0.57	0.57 Nearpod	0.71 Nearpod	0.86	0.3	Teacher 65.4%	**81%**

3	0.57	0.14	0.57	0.86 LL	0.71 Exit Slip Thumbs	0.43	0.3	Teacher 51.14%	60%

Coaching questions were used for reflection during coaching sessions (See Appendix N). For instance, during the first coaching session, Teacher A rated engagement at one out of ten (ten representing ideal implementation) stating that "students don't want to take risks of giving wrong answers" while confirming high dissatisfaction with practices involving students' participation in virtual learning. This teacher's engagement strategy mostly consisted of "cold call" and students volunteering answers. During coaching Teacher A expressed high interest in professional development. Teacher A was interested to learn more about Microsoft Class Notebook and Microsoft Forms to increase student participation so that all students could work simultaneously stating "I need a systematic way to check students' answers-need Class Notebook and Forms." Based on the first observation cognitive engagement was at 24% (9 out of 37 students) and by the fifth it reached 79% (23 out of 29 students) after implementing the Nearpod Platform and Microsoft Forms. Even though Teacher A expressed initial resistance towards Nearpod during the second coaching cycle, still the teacher was willing to learn how to implement this collaborative platform.

Data compiled from coaching plans after the completion of the study (Table 15) adds evidence that all participants reached their goal at least once during instructional observations. These data indicates teachers' initial goals at a range from 40% to 80% (M=65%, SD=18.02) and highest reached at a range of 79% to 100% (M=87%, SD=8.3) in students' participation as measures of engagement practices during a 45-minute lesson. For some teachers this meant an increase of 16% to 20% or in some cases even higher. This

brings evidence to the claim that coaching as a reflective intervention helped teachers improve their practices. Table 17 indicates the engagement domains with associated evidence.

Table 17

Compiled Coaching Plans with Goals and Evidence of Impact

Compiled Coaching Plan Goals				
Teacher	**Coaching Goal**	**Highest Reached**	**Engagement Domain**	**Evidence**
A	40%	79%	Cognitive	Double Entry Journal 5 Nearpod Report
B	40%	97%	Cognitive	Double Entry Journal 2 iXL Report
C	70%	81%	Cognitive	Double Entry Journal 5 Nearpod Report
D	80%	84%	Cognitive/Duration	Double Entry Journal 4 Nearpod Report
E	80%	100%	SE	Double Entry Journal 4
F	80%	81%	SE	Double Entry Journal 4
Mean	**65%**	**87%**		
SD	**18.02**	**8.3**		

Data collected in interviews corroborates coaching data from coaching plans and coaching questions, as the most impactful intervention in this study. The use of transformative, facilitative and cognitive coaching grounded in data and system thinking contributed to the exploration of interrelated patterns in teachers' practices (Aguilar, 2013).

Data from instructional observation was used as a coaching tool for system thinking in conjunction with teachers' coaching goals. This conglomerate of instructional data, descriptive feedback, measurable goals and identified engagement strategies constituted the framework towards teacher growth. The high impact of coaching was collaborated with teachers' statements: "Coaching was the most powerful. The statistical breakdown that you gave me made me picture of what you saw and what was in my mind." (Teacher B, Interview); "Coaching and looking at data was most impactful-also the talking about the lesson during coaching." (Teacher E, Interview); "You challenged me to set higher goals for myself and you made me think of implemented various strategies on how to make kids participate-you gave me a lot of ideas –then it was up to me to see what works best for my students." (Teacher C, Interview); and "When you shared with me the numbers (I am very analytical) it made me think of how I can make things better. When I heard the feedback it made me think of opportunities that I can add to lessons."(Teacher B, Interview).

As a result of coaching, teachers' became more reflective, focused and aware of their engagement practices which led to change in their instructions as evidenced by teachers' statements. In addition, coaching offered teachers an opportunity to look at their practices from the perspective of data on socio-emotional and cognitive domains. These are some of teachers' statements that corroborate these findings: "Coaching gives me awareness of things I should be doing and looking for –so I can focus on those areas." (Teacher D, Interview) and "This first quarter it was very frustrating. What I got out of coaching is to see the positives thru a more objective eye. You helped me look at things through multiple angles." (Teacher F, Interview).

Interviews were used to depict teachers' response to intervention and roadblocks to change. Teachers' statements during interviews add evidence to the importance of

collaborative dialogue use during coaching as advocated by Knight (2019). This approach was intended to honor a teacher's autonomy and set a path to improve practice. In addition, dialogical conversations were used consistently throughout the study as suggested by Knight (2019). These are some teachers' statements that corroborate these findings: "Coaching helped most –because we discussed everything together on how I can implement certain criteria in lessons. It encompasses everything else feedback, socio-emotional and behavioral engagement" (Teacher D, Interview); "Much better to receive feedback through coaching than written-because I can follow up with questions. Or if I need examples –you can give them right away. It feels also less informal" (Teacher B, Interview); and "Coaching gives me awareness of things I should be doing and looking for –so I can focus on those areas" (Teacher D, Interview).

Consequently, coaching driven by feedback that was grounded in data surfaced as most impactful intervention in this study. Specifically, data comprised of coaching plans, self-reflection forms, coaching questions, and interviews evidenced coaching as the most impactful intervention in this study due to the comprehensive framework of strategies used. The analyzed findings of the impact of coaching along with instructional feedback and PD fulfill the scope of the second research question.

(c) Which specific features cognitive, socio-emotional or behavioral of teachers' instructional practices are more or less responsive to intervention? (RQ3)

Data indicates engagement practices relevant to the socio-emotional domain as least responsive to intervention. Socio-emotional engaged practices that involved over 60% of the students in attendance were addressed in just eight of the total lessons observed (M=1.33, SD=0.94). Most of the socio-emotional engagement was under the 20% tile range (M=2, 67

SD=1.49). Specifically, this type of engagement was in 16 out of the 30 lessons observed while in six lessons the range was greater than 20% and less than 60% (M=1, SD=1.54). See Figure 17.

Figure 17

Socio-Emotional Engagement based on Percentage of Students Engaged
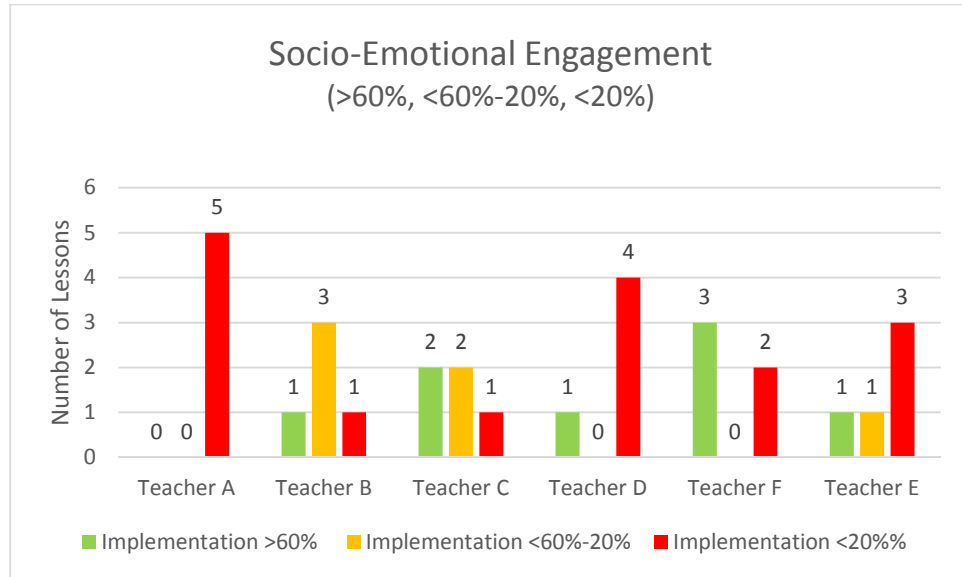
During 30 observed lessons, data from double entry journals and Engagement Frequency charts showed socio-emotional engagement practices lasting less than 20% of the total instructional time(M=4.33, SD=0.75), while in just four of these, engagements lasted more than 20% and less than 60% of total time(M=0.67, SD=0.75). See Figure 18.

Figure 18

Socio-Emotional Engagement Based on Percentage Time

Duration of Socio-Emotional Engagement
(>60%, <60%-20%, <20%)
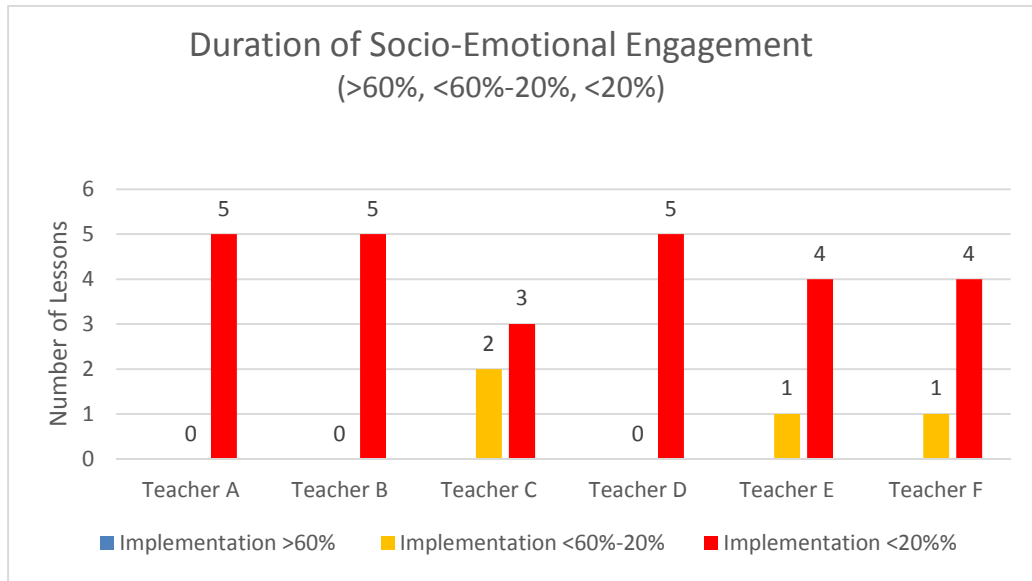
Data evidenced in instructional observations was confirmed in participants'
interviews in terms of higher response to cognitive and low socio-emotional engagement
domains. Identified roadblocks in this study pertain to the context of teaching in a virtual
environment and are linked to technology constraints (students keeping cameras turned off),
difficulty in building relationships in a virtual environment, and teachers' mindset. Socio-
emotional engagement is linked to research done by Marzano and Pickering (2011). The
authors encompassed engagement through the lens of emotions, interest, perceived
importance of content, and perceptions of efficacy. Fisher et al. 2012 claims that optimal
learning is dependent on the quality of relationships between teachers and students.
Challenges that teachers' faced in implementing socio-emotional practices were expressed
in the following statements: "Socio-emotional was most challenging-it is hard to focus on
that when you have so many tech issues, students don't want to show their faces" (Teacher
A, Interview); "Socio-emotional domain was most difficult because I never met my students
in person –they just knew me. I had to take a lot of time to build trust and make them feel

safe. I am honest with them-and consistent –and as time went on we built that participation."(Teacher B, Interview); and "I feel that praise should be provided when they complete a complex task not for minimal effort." (Teacher D, Interview).

Data from double entry journals, teachers' interviews, and coaching identifies the socio-emotional engagement domain as least responsive to interventions. Behavioral engagement was not evidenced during the study. Consequently, these data points fulfilled the scope of the third research question by identifying the least responsive feature in teachers' instructional practices.

Teachers' beliefs and growth mindset surfaced as additional findings that significantly impacted their response to interventions. Teachers' compiled responses of the first professional development construct (Table 18) indicated their awareness of students' disengagement and disinterest in instructions. Moreover, teachers claimed that low engagement is due to students' lack of technology skills, their own time constraints due to helping them troubleshoot technology, and students' lack of interest in their content area. At the same time, teachers' solutions to these challenges relate to implementation of interactive instructional platforms, use of checks for understanding (CFU), content connections to students' personal interests, active lessons, use of real world connections, and use of participation points as ways to motivate students. These identified areas of concern can be linked to the three engagement domains described in the literature review section: cognitive, socio-emotional and behavioral engagement domains.

Table 18

Professional Development Construct Analysis

Students' Skills	Students' Interest	Time Constraints	Solution	Reflection/ Analysis
Students aren't engaged because they don't know how to use the technology.	The data implies that students find that student engagement is very low. It seems as if classes are not interesting and interactive enough for them.	We spend so much time troubleshoot-ing for individual students that those who do know how to use the technology end up checking out.	Make direct instruction lessons shorter, include students in the discussion as much as possible, ask questions for understanding constantly, and get them working on student-centered independent practice as soon as possible.	**Issue:** ● Data shows disengaged students ● Students disinterest-ed and checking out **Constrains:** 1. Students technology skills 2. Teacher spending time troubleshoo ting technology **Solution** ● Implemen-ting interactive platforms ● Use of checks for understand-ing ● Connecting to students' personal interests ● Creating active lessons ● Use of real world connections and attributing participati-on points
	The kids are saying they aren't engaged. We are lucky in that I think we have interesting curriculum for the most part.		We can engage students online by using interactive platforms, but also by talking to the students and connecting with them.	
	The data says, overall, that all measures are low.		I can get them interested in math by connecting it to their personal interests. I can get them interested in math by connecting it to their personal interests.	
			The more real world connections the better to motivate and interest them.	
			Make lessons active to capture student interest. Giving students points are small rewards for participating. To keep them interested, I have to be interested.	

Interview and PD construct data (See Appendix T) shows teachers' awareness of low engagement and need of change in practice. This data points were corroborated by teachers' coaching plans. Therefore, the most important factor that drove teachers' change in practice can be linked to their beliefs about teaching and growth mindset. All teachers believed that in order for learning to take place, students need to be engaged. Dweck (2006) points out teachers' importance of having growth-minded teachers who are reflective and receptive to constructive actions that lead to student learning. These are some of teachers' statements that bring evidence to these findings: *"Students not performing and no indication about students learning led to change in practice."* (Teacher A, Interview); "The fact that I was talking to a screen and I did not have kids responding. I realized that I need a platform that is easy to use, grade, see, and provide feedback. I also did not want to wait one day to see if they are working (example of hyperdocs) Real time aspect is huge-to see if they are following along." (Teacher D, Interview); "If you don't engage students, they are not doing anything-they are not learning. Engagement is part of good teaching." (Teacher F, Interview); "I realized that engagement is the best thing for kids to learn. Even if we come back in class I want them engaged." (Teacher E, Interview); and "I was thinking more in terms of students lacking many skills –I thought of equity –and one of the resources is the teacher –it was my motivation to want them engaged so that they are not left behind-giving them a chance-students learning was already a pandemic –and the discrepancy."(Teacher C, Interview).

Summary

Overall data collected before, during and after the interventions brings evidence to the impact of interventions. Table 7 shows a cross-reference of all data sets used in this study to answer the research questions and validate the findings of this study.

In sum, data triangulation evidenced teachers' positive responsiveness to intervention. Pre- and post-survey data showed increase in teachers' perceptions of feedback and PD. Survey data showed highest growth in opportunities in teachers' input on individualized PD and in overall learning. Interviews and coaching data evidenced coaching as most impactful intervention when driven by feedback grounded in data and collaborative dialogue referenced by Knight (2019). Teachers pointed out socio-emotional engagement as most challenging to implement due to technology constraints, difficulty in building relationships in a virtual environment and their overall beliefs about teaching. Each teacher correlated student engagement to learning outcomes. Interview data showed teachers' beliefs as the most important factor that impacted their response to intervention.

Implications and Recommendations

A limitation of this study relates to fostering teacher-student relationships in virtual settings. Fostering a teacher –student relationships is one of Hattie's (2008) evidences of impact on students' outcomes. During virtual learning students were not required to turn on their cameras and therefore the visual clues in building relationships were non-existent.

Even though engagement was increased, it was mostly linked to low cognition (superficial understanding) and high participation when analyzed through Himmele's (2001) Cognitive Engagement Model and DOK levels. Himmele's framework was used during coaching as a reference point when analyzing trends in teachers' engagement practices and as a coaching tool. Even after additional training in this model, teachers' practices mostly changed just in frequency of participation using cold call, wait time and call and response (Lemov, 2010). Therefore, another recommendation of this study is to further analyze engagement practices through the lens of this model with the aim to find best virtual engagement practices that lead to deep understanding and high participation.

Okney (2012) pointed out the necessity of a convincing purpose to drive change. The most compelling purpose in this study that drew teachers' response to intervention was connected to their beliefs and growth mindset. They were eager to learn new practices since they believed that engagement is linked to students' learning outcomes. When asked what mostly impacted the implementation of engagement practices, a teacher's response was: "Realization that kids learn if engaged" (Teacher E, Interview, October 26, 2020).

According to Okantey (2012), change fails because there is not enough consideration to the many conditions that must be in place that affect the participants. From the practitioner's perspective, the features that affected the implementation of interventions in this study were related to the alignment in intervention design, long- term focus and most importantly the value of pre-existing positive relationships with participant teachers. These were pivotal conditions for teachers' response to intervention. In addition, involving teachers in the decision making process helped with their buy-in.

Darling-Hammond, et al., (2017) evidenced the importance of modeling during learning processes. The value of modeling during PD was confirmed in teachers' interviews. In addition, survey data showed teachers' positive perspectives to collaboration in learning processes and to focused sustained professional development.

Data in this study shows that most tasks were at DOK1 (M= 5.2) and DOK2 (M= 4.6). DOK3 was very low (M=0.63). In addition, these tasks took place in the stamina quadrant of high difficulty (amount of time and effort to complete a task) and low complexity (number of steps and background knowledge). Consequently, although cognitive engagement practices increased as result of interventions, the depth of knowledge evolved mostly at recall level (DOK1) and application level (DOK2). Furthermore, this implies that challenging tasks that require higher order questioning were minimal (DOK3) and therefore

teachers' practices did not address optimal learning according to Fisher et al. , (2012) model described in literature review.

As a coach and collaborative participant in this study, the use of action research methodology helped me see and understand the complexities and challenges that exist in implementing virtual engagement practices. I learned about the importance of taking into account teachers' beliefs in reference to the context of change in their practices. In addition, I learned about the significance of building relationships and collaboration with teachers for effective outcomes of interventions. Furthermore, I learned about the importance of alignment in interventions and implementation of these over a sustained amount of time. As result of this study, I will continue to use the effective characteristics of PD design (Darling-Hammond et al. , 2017), quality instruments for data collection (engagement frequency charts, PD constructs, surveys, artifacts, and interviews), Knight's (2018) impact cycle and coaching plans with structured coaching questions as suggested Aguilar (2013) since all these strategies proved impactful. In addition, I will make use of student learning data to better understand the impact of interventions on students' academic outcomes. Moreover, I will continue to explore deep learning based on Himmele & Himmele's , (2011) Cognitive Engagement Model, as well as the social-emotional and behavioral engagement domains in both virtual and in-person learning environments.

The use of the action research methodology for the implementation of interventions helped teachers inform their practice through continuous actions and reflections. These reflective processes aided teachers in uncovering their assumptions and biases between what they say and do and thus understanding when their practices were misaligned. In addition, the action research process helped teachers make connections between their values and instructional experiences (beliefs and actions).

The action research cycle in this study, offered me a framework of continuous reflective inquiry. It provided me opportunities to evaluate my own practices as well as the quality of interventions. During coaching, I made sure to examine and redefine the practices in the given professional, curricular and instructional contexts and understand how these impact teachers' outcomes and effectiveness. I achieved this by asking follow up questions regarding curricular constrains, needed PD or scaffolds in their understanding of interventions. At the same time, I used reflexive instruments such as the Teacher-Self-Reflection Form, to offer teachers a framework for examining their thoughts and actions relevant to practice implementation.

As result of this study, my recommendations for teachers consist of further exploration of socio-emotional and behavioral engagement practices in virtual learning environments with emphasis on DOK3 and DOK4 levels. Likewise, I recommend that teachers take advantage of coaching, instructional feedback and PD as means to improve their practices and impact students learning outcomes. While doing so, I recommend for in person as well as virtual learning, alignment of coaching, PD, and instructional feedback, use of modeling during PD, incorporating teacher collaboration (teacher voice and content focus) during PD sessions, keeping a sustained focus of PD on one topic over a prolonged period of time, and coaching smaller groups of teachers versus larger ones for higher efficiency and impact.

Future Research Directions

Future recommendations of this study are geared towards exploration into virtual environments to address: a) socio-emotional and behavioral engagement domains; b) student-teacher relatedness as referenced by Marzano and Pickering (2011); and c) deep

understanding and high participation as referenced by Himmele's (2011) Cognitive

Engagement Model.

This study added evidence that conditions for change are tied to teachers' mindset.

This was evident during coaching sessions when teachers used reflective monologue to

explain how their practices affected student engagement. They approached interventions

with a growth mindset while taking risks in implementing more difficult practices especially

relevant to technology platforms. Some even challenged themselves with higher

engagement goals. Still, implementation of socio-emotional and behavioral engagement in a

virtual environment surfaced as least responsive to intervention. Therefore, the

recommendation of this study is geared towards further exploration in those two domains.

During PD, teachers had opportunities to investigate their practices and reflect on

their course content in the context of students' interests, academic tasks, ownership and

relevance. The recommendation of this study is geared towards more research in

understanding how students achieve relatedness and how to promote this practice in a

virtual environment. I had limited success in addressing this practice during coaching and

task analysis. In addition, the implementation of the four engagement elements examined by

Marzano and Pickering (2011) presented challenges for teachers to implement. These

elements are relevant to students' emotions, perceived importance of content, and students'

perceptions of efficacy. Therefore, another recommendation of this study is to further

examine this framework in virtual environments.

Even though coaching with feedback grounded in data surfaced as most impactful

intervention in this study, future research is necessary to study effective coaching models,

especially relevant to teachers' virtual engagement practices. Future studies could address

random sampling and include student-learning outcomes.

Conclusion

Research studies show that teachers' practices are responsive to interventions; however, there is a variation in their ability to improve practice. According to Garret, et al. (2019), there is correlation between professional learning strategies and students' outcomes; however, there is little data on the degree of their immediate outcome. This action research found positive teacher responsiveness to coaching driven by feedback that is grounded in engagement data. Interventions showed immediate outcome in teachers' practices due to alignment of intervention, intense approach and consistent follow up. Coaching resulted in being more effective with a smaller number of teachers than larger ones that I experienced in the past. This added evidence to the study done by Kraft and Bazar (2018). Smaller number of teachers led to a higher engagement in PDs and allowed the practitioner to build on teachers' existing skills, knowledge and beliefs as suggested by Aguilar (2013).

The use of this action research methodology can help teachers reflect and act to continually improve their practice. The outcomes of this study builds knowledge in the area of effective teaching practices during virtual learning. Understanding the impact of these interventions adds in-depth information to implementation context. The design of this methodology can be replicated in similar contexts with the aim to change teachers' practices.

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Appendixes

Appendix A

September 09, 2020

Principal Investigator: Svetlana Nikic (UMSL-Student)
Department: Education PhD

Your IRB Application to project entitled Ready to Engage? Urban Middle School Teachers'
Responsiveness to Targeted Engagement Interventions on Their Virtual Instructional Practices: An
Action Research Study was reviewed and approved by the UMSL Institutional Review Board
according to the terms and conditions described below:

IRB Project Number	2027983
IRB Review Number	271383
Initial Application Approval Date	September 09, 2020
IRB Expiration Date	September 09, 2021
Level of Review	Exempt
Project Status	Active - Exempt
Exempt Categories (Revised Common Rule)	45 CFR 46.104d(3)(i)(B) 45 CFR 46.104d(3)(i)(C) with limited IRB review 45 CFR 46.104d(1)
Risk Level	Minimal Risk
Approved Documents	New edited Informed Consent for Participation in Research Activities for Teachers based on received feedback Engagement Rubric and Frequency Chart and Lesson Plan Checklist Coaching Cycle Forms (used during coaching sessions) Teacher Professional Development Survey for Each PD Session Teachers' Pre and Post Survey on PD, Instructional Feedback and Coaching Teacher Interview Questions (Pre-Post) Teachers' Invite -Recruitment Script School Principal's Letter of Support to Conduct Research

The principal investigator (PI) is responsible for all aspects and conduct of this study. The PI must
comply with the following conditions of the approval:

1. Enrollment and study related procedures must remain in compliance with the University of
   Missouri regulations related to interaction with human participants following guidance at
   http://www.umsl.edu/recd/compliance/umsl-guidance-covid19-restart-6.25.2020.pdf.
2. No subjects may be involved in any study procedure prior to the IRB approval date or after the
   expiration date.

3. All changes must be IRB approved prior to implementation utilizing the Exempt Amendment Form.
4. The Annual Exempt Form must be submitted to the IRB for review and approval at least 30 days prior to the project expiration date to keep the study active or to close it.
5. Maintain all research records for a period of seven years from the project completion date.

If you are offering subject payments and would like more information about research participant payments, please click here to view the UM Policy: https://www.umsystem.edu/ums/policies/finance/payments_to_research_study_participants

If you have any questions or concerns, please contact the UMSL IRB Office at 314-516-5972 or email to irb@umsl.edu.

Thank you,
UMSL Institutional Review Board

UMSL

College of Education

Informed Consent for Participation in Research Activities

Ready to Engage? Urban Middle School Teachers' Responsiveness to Targeted Engagement
Interventions on Their Virtual Instructional Practices: An Action Research Study

Participant _____   HSC Approval Number
_____

Principal Investigator _Svetlana Nikic_____PI's Phone Number(314) 489-2219_____

1. You are invited to participate in a research study conducted by Svetlana Nikic, doctoral
   student at the University of Missouri-St. Louis under the supervision of Dr. Alina Slapac.
   The purpose of the research is to 1) describe teachers' responsiveness to targeted
   engagement intervention relevant to their instructional practices

   2) reflect on how specific interventions such as coaching cycles, instructional
   feedback, intervention length and professional development associate with
   improvement in instructional practices.

2. This research will involve up to six teachers for eight weeks during the fall of the
2020-21 school year.

3. Your participation will involve:

a. Up to two interviews lasting up to 30 minutes, one at the beginning of the study and one at the end of data collection. Interviews will be recorded and conducted via Zoom (see attached interview protocol).

b. Two online surveys relevant to coaching and instructional feedback, one at the beginning of the study and one at the end of data collection. (see attached survey)

c. Participation in six hybrid professional development sessions on engagement practices relevant to cognitive, behavioral and socio-emotional domains.

d. Participation in six professional development (PD) surveys (at the end of each professional development session) (see attached PD survey)

e. Teaching during six virtual, synchronous instructional observations lasting up to an hour each (conducted by the investigator) spread over six weeks and scheduled collaboratively with investigator. These observations will be audio and video recorded and will not include any images of students. The focus is exclusively on teachers' engagement practices.

f. Participation in three coaching cycles spread over six weeks of the study that are scheduled collaboratively with the investigator. During coaching, teachers will set a coaching goal, answer questions relevant to the goal and reflect on their instructional practices. These meetings will be audio-recorded but may not be limited to the following:

  i. Engagement Practices
  ii. Observational data (of synchronous instructions)
  iii. Lesson Plans
  iv. Students' Assignments

Coaching sessions will add up to a total of three hours per teacher during the entire duration of the study.

4. Data will be coded in order to avoid any risk of loss in participants' confidentiality. Each participant will be assigned a code name. Identifiable information will be excluded from the research. This will be ensured by the use committee audits. All collected data will be saved on password protected computer and backed on a password protected digital drive.

5. There may be no direct benefits from participating. Possible benefits for the participants include 1) Professional development and coaching in virtual engagement practices 2) instructional feedback to refine virtual engagement practices 3) professional reflection and support 4) fulfillment of various required practices and performance targets in the SLPS Teacher Evaluation Program.

6. Your participation is voluntary and you may choose not to participate in this research study or withdraw your consent at any time. You will NOT be penalized in any way should you choose not to participate or withdraw. Non-participation will not have any impact on your employment with SLPS.

7. By agreeing to participate, you understand and agree that your data may be shared with other researchers and educators in the form of presentations and/or publications. In all cases, your identity will not be revealed. In rare instances, a researcher's study

must undergo an audit or program evaluation by an oversight agency (such as the Office for Human Research Protection). That agency would be required to maintain the confidentiality of your data. In addition, all data will be stored on a password-protected computer and/or locked office.

8. If you have any questions or concerns regarding this stud, or if any problems arise, you may contact the following individuals:

> Svetlana Nikic (Principal Investigator)-314-489-2219 or svetlana.nikic@slps.org

> Dr. Alina Slapac 314- 516-7358

You may also ask questions or state concerns regarding your rights as a research participant to the Office of Research Administration, at 314-516-5897.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I hereby consent to my participation in the research described above.

_____   _____
Participant's Signature   Date

_____   _____
Signature of Investigator or   Date
Designee

Recruitment Script:

You are invited to participate in a research study conducted by Svetlana Nikic, doctoral student at the University of Missouri-St. Louis under the supervision of Dr. Alina Slapac. The purpose of this research is to:

1) describe teachers' responsiveness to targeted engagement intervention relevant to their instructional practices

2) reflect on how specific interventions such as coaching cycles, instructional feedback, intervention length and professional development associate with improvement in classroom practices

This study will last up to six weeks during the 2020-2021 school year.

Your participation is voluntary and you may choose not to participate in this research study or withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will not be penalized in any way should you choose not to participate or to withdraw.

By agreeing to participate, you understand and agree that your data may be shared with other researchers and educators in the form of presentations and/or publications. In all cases, your identity will not be revealed. In rare instances, a researcher's study must undergo an audit or program evaluation by an oversight agency (such as the Office for Human Research Protection). That agency would be required to maintain the confidentiality of your data. In addition, all data will be stored on a password-protected computer and/or locked office.

If you have any questions or concerns regarding this stud, or if any problems arise, you may contact the following individuals:

Svetlana Nikic (Principal Investigator)-314-489-2219 or svetlana.nikic@slps.org

Dr. Alina Slapac 314- 516-7358

You may also ask questions or state concerns regarding your rights as a research participant to the Office of Research Administration, at 314-516-5897.

Appendix B
Timeline of the Study

Activity	Start Week	Intervention	Data Collection	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
2020 Teacher Culture and Climate Pre-Survey	1		x	1							
Professional Development 1	1	x		1							
DP Survey 1	1		x	1							
Coaching Plans	1	x	x	6							
Instructional Observations Set 1	2	x	x		6						
Coaching Cycles 1	2	x	x		6						
Professional Development 2	2	x			1						
PD Survey 2	2		x		1						
Instructional Observations Set 2	3	x	x			6					
Coaching Cycles 2	3	x	x			6					
Professional Development 3	3	x				1					
PD Survey 3	3		x			1					
Instructional Observations Set 3	4	x	x				6				
Coaching Cycles 3	4	x	x				6				
Professional Development 4	4	x					1				
PD Survey 4	4		x				1				
Instructional Observations Set 4	5	x	x					6			
Professional Development 5	5	x						1			
PD Survey 5	5		x					1			
Instructional Observations Set 5	6	x	x						6		
Professional Development 6	6	x							1		
PD Survey 6	6		x						1		
Teacher Interviews	7		x							6	
2020 Teacher Culture and Climate Post-Survey	8		x								1

Note: Numbers indicate occurances per week

Appendix C
Panorama 2019 Pre-Teacher Survey –Data Summary

Busch MS of Character & A
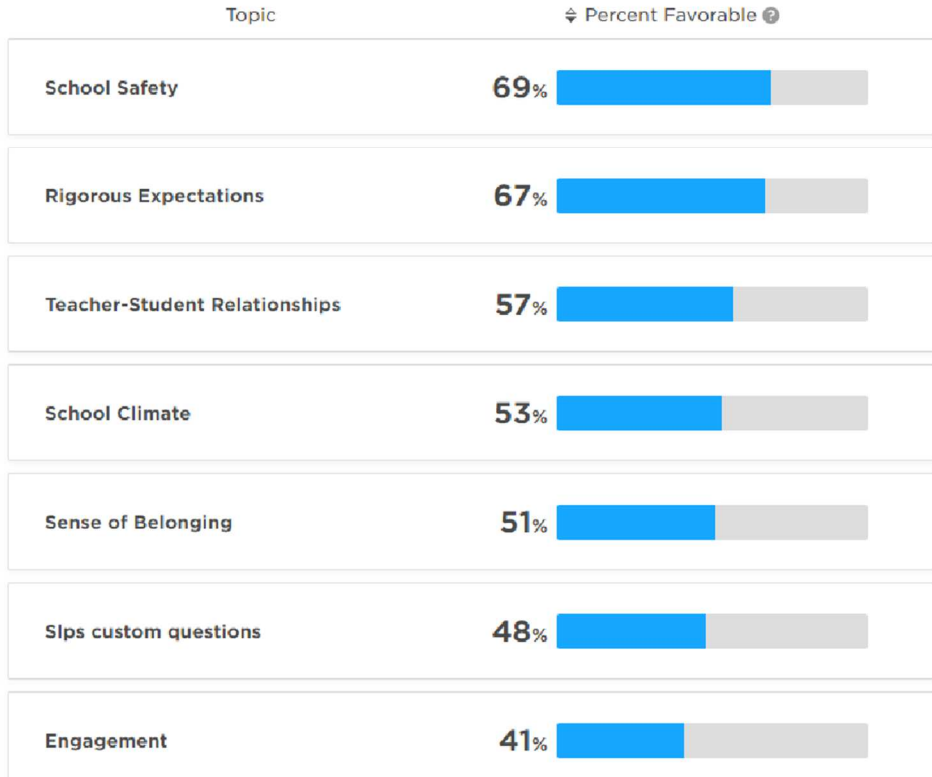Fall 2019 SLPS Teacher/Staff, Teacher Survey

PANORAMA

Summary

Topic Description	Results	Comparison	
District climate	15%	25%	St. Louis Public Schools
Feedback and Coaching Perceptions of the amount and quality of feedback faculty and staff receive.	54%	49%	St. Louis Public Schools
Professional Learning Perceptions of the amount and quality of professional growth and learning opportunities available to faculty and staff.	36%	44%	St. Louis Public Schools
School Climate Perceptions of the overall social and learning climate of the school.	42%	44%	St. Louis Public Schools
School Leadership Perceptions of the school leadership's effectiveness.	60%	52%	St. Louis Public Schools
Sips sense of value	58%	54%	St. Louis Public Schools

Appendix D
2019 Student Culture and Climate Survey

Grades 6-12
194 responses | show breakdown

Topic	⇕ Percent Favorable ⊙
School Safety	69%
Rigorous Expectations	67%
Teacher-Student Relationships	57%
School Climate	53%
Sense of Belonging	51%
Slps custom questions	48%
Engagement	41%

Appendix E
Panorama 2019 Pre-Teacher Survey –Data Details

Busch MS of Character & A
Fall 2019 SLPS Teacher/Staff, Teacher Survey

PANORAMA
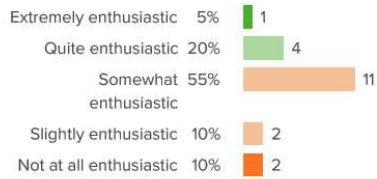
School Climate

Your average

42%

20 responses
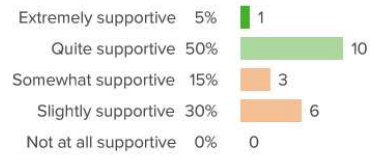
District average: **44%** St. Louis Public Schools

How did people respond?

Q.1: On most days, how enthusiastic are the students about being at school?

Extremely enthusiastic	5%	1
Quite enthusiastic	20%	4
Somewhat enthusiastic	55%	11
Slightly enthusiastic	10%	2
Not at all enthusiastic	10%	2

Favorable: **25%**

Q.2: When new initiatives to improve teaching are presented at your school, how supportive are your colleagues?

Extremely supportive	5%	1
Quite supportive	50%	10
Somewhat supportive	15%	3
Slightly supportive	30%	6
Not at all supportive	0%	0

Favorable: **55%**

Appendix F
Action Plan

Name, phone, job title, school: Svetlana Nikic 314-489-2219 Academic Instructional Coach
Project Title: Urban Middle School Teachers' Responsiveness to Targeted Engagement Interventions on Their Virtual Instructional Practices: An Action Research Study
Purpose The purpose of this study is to investigate teachers' responsiveness to targeted engagement intervention relevant to their virtual instructional practices in an urban middle school. Explicitly, I seek to understand how specific interventions such as coaching cycles, instructional feedback, intervention length and professional development associate with improvement in instructional practices. In this study, I seek to find most the effective ways to provide useful learning opportunities for changing teachers' instructional practices by a more in-depth look at the extent of implementation and its context as well as teachers' experiences during professional learning.
Main Question: 1. How do urban middle school teachers' instructional practices respond to targeted engagement interventions in a virtual environment?
Sub Question? (if any) 2. How does a specific intervention such as coaching, instructional feedback and professional development improve an instructional practices? 3. Which specific features cognitive, socio-emotional or behavioral of teachers' instructional practices are more or less responsive to intervention?

List Topics to Research in the Literature Review
 	
Problems of Practice in Schools
Teacher Mindset
Instructional Intervention: Coaching, Instructional Feedback, Professional Development
    ● Coaching
        ○ Coaching Cycles
    ● Instructional Feedback

o   High Leverage Action Steps
- Professional Development
  o   Adult Learning Theories

Response to Intervention –Studies
- Teacher Effectiveness and Outcomes
- Engagement Practices

Action Research

Setting & Participants

This research will involve up to six teachers who provide instructions to up to 180 students (one class of up to 30 students for each participating teacher) for approximately 6 weeks during the first semester of the 2020 -2021 school year.
- Setting: Busch Middle School of Character
- Potential Participants: 6 Teachers
  o   3 math teachers
  o   3 science

The research is conducted in a common virtual educational setting, involving normal/everyday educational practices that are not adversely impacting students' opportunity to learn or assessment of educators. There are no anticipated risks associated with this research. Any disclosure of responses outside of the research would not place teachers at risk in terms of employability, educational advancement, or impact their reputation. Study involves teachers' surveys, interviews and observations that do not involve students.

An approval letter to conduct the study was received by the school's principal. Prior to the study, teachers will be recruited by an e-mail invite to participate in an eight-week research study during the fall of the 2020-2021 school year.

Teachers' e-mails are publically available on school's faculty web site:
https://www.slps.org/site/Default.aspx?
PageType=1&SiteID=3277&ChannelID=3291&DirectoryType=6

If more teachers commit to the study, I will base my selection on a balanced representation of grade levels, content areas and teachers who service a wide range of student demographics. All participants in the study will be asked to sign a general consent letters as per Institutional Review Board (IRB) procedures.

The researcher will inform participants of the following utilizing a written or oral script: 1) a statement that the activity involves research, 2) a description of what they will be doing, 3) a statement that participation is voluntary, and 4) inform subjects of your name and contact information

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Interventions

This research will involve up to six teachers for eight weeks during the fall of the 2020-21 school year. Teachers' participation will involve:

a. Up to two interviews lasting up to 30 minutes, one at the beginning of the study and

one at the end of data collection. Interviews will be recorded and conducted via TEAMs (see attached interview protocol).

b. Two online surveys relevant to coaching, instructional feedback and professional development, one at the beginning of the study and one at the end of data collection. (see attached survey)

c. Participation in six hybrids (synchronous in Microsoft TEAMs and asynchronous) professional development sessions on engagement practices relevant to cognitive, behavioral and socio-emotional domains.

d. Participation in six professional development (PD) surveys (at the end of each professional development session) (see attached PD survey).

The investigator will be responsible for providing content for all professional development sessions as part of teachers' district professional development requirements.

e. Teaching during six virtual, synchronous instructional observations lasting up to an hour each (conducted by the investigator) spread over six weeks and scheduled collaboratively with investigator. The focus will be exclusively on teachers' engagement practices. These observations will be audio and video recorded in teacher "stream mode" to disable the recording of students' images.

f. Participation in three coaching cycles spread over six weeks of the study that are scheduled collaboratively with the investigator. During coaching, teachers will set a coaching goal, answer questions relevant to the goal and reflect on their instructional practices. These meetings will be audio-recorded but may not be limited to the following:

 i. Engagement Practices

ii. Observational data (of synchronous instructions)

iii. Lesson Plans

iv. Students' Assignments Coaching sessions will add up to a total of three hours per teacher during the entire duration of the study.

The interventions that will be attempted are focused on targeted on engagement strategies that affect teachers' classroom practices.

The timeline for this study is 8 weeks upon IRB approval (2 weeks for interviews and surveys and 6 for interventions).
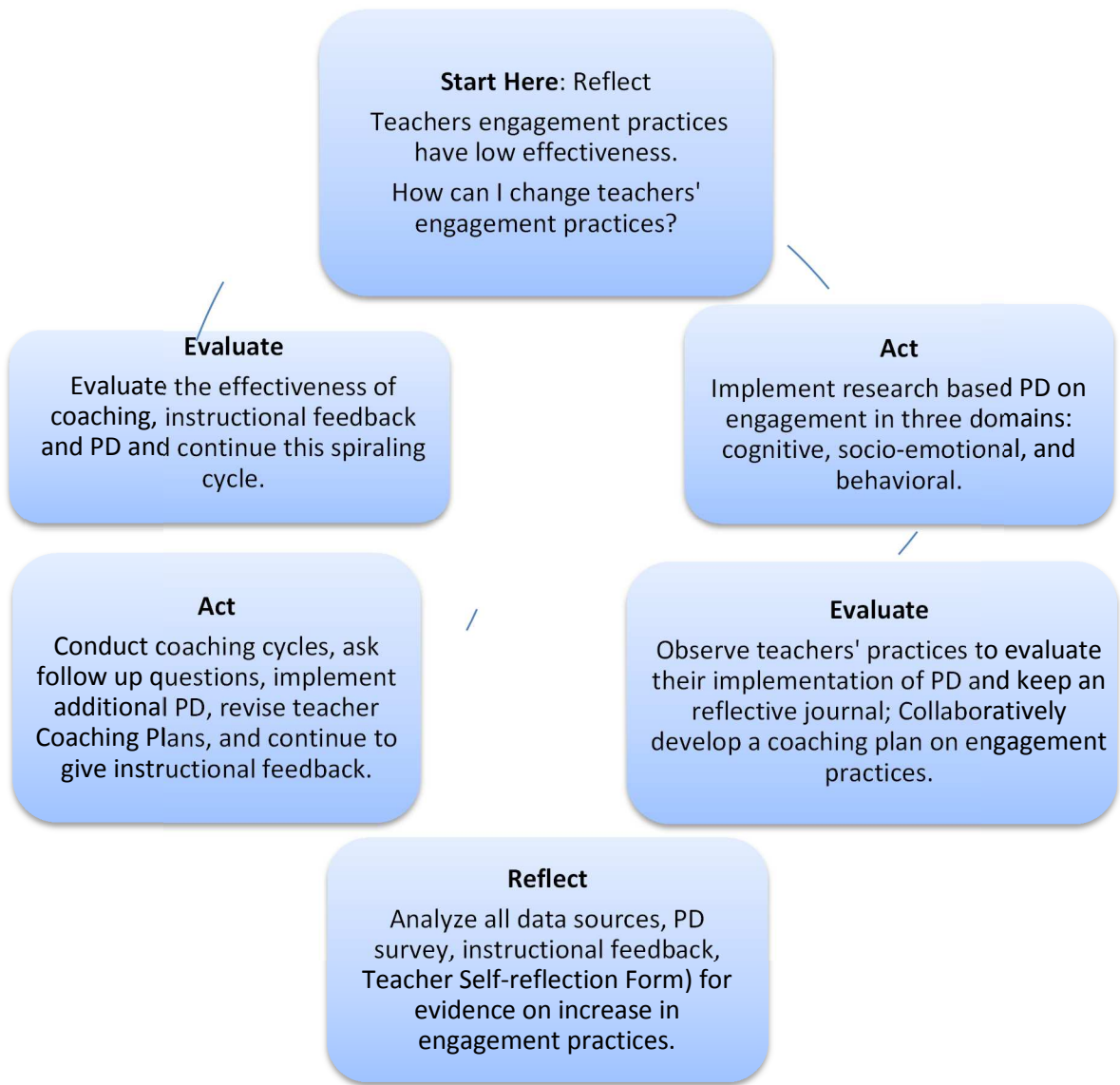
The following interventions will be implemented:

All three interventions: PD, instructional feedback, and coaching will happen concomitantly (each week during the 6 weeks of interventions)

- PD (6 total in 6 consecutive weeks –each PD up to 1 hour long)
- Coaching Cycles (6 per week for 3 consecutive weeks-totaling 3 hours of coaching per teacher)
- Instructional feedback with action steps based on synchronous instructional observations (6 teachers per week for 5 consecutive weeks –up to 45 minutes per observation).

Coaching will help teachers reach their instructional engagement goals by keeping the

focus on optimal performance through teachers' reflections on their instructional practices. These are bi-directional communication between teacher and coach. Contrary, instructional feedback will help teachers understand what prevents them from reaching their goal by reinforcing steps in a specific instructional practice that leads to the optimal performance. Instructional feedback is unidirectional (the coach just gives input –action steps- to teacher).

Below is an illustration of the intervention process:

Start Here: Reflect
Teachers engagement practices have low effectiveness.
How can I change teachers' engagement practices?

Act
Implement research based PD on engagement in three domains: cognitive, socio-emotional, and behavioral.

Evaluate
Observe teachers' practices to evaluate their implementation of PD and keep an reflective journal; Collaboratively develop a coaching plan on engagement practices.

Reflect
Analyze all data sources, PD survey, instructional feedback, Teacher Self-reflection Form) for evidence on increase in engagement practices.

Act
Conduct coaching cycles, ask follow up questions, implement additional PD, revise teacher Coaching Plans, and continue to give instructional feedback.

Evaluate
Evaluate the effectiveness of coaching, instructional feedback and PD and continue this spiraling cycle.

Data Collection (List all data sources and types) and explain how they would answer your RQ:

Quantitative	Qualitative
2020 Teacher Feedback and Coaching Survey (Pre and Post) To compare outcome of intervention RQ1,RQ2 **PD Surveys** To evaluate the effectiveness of professional development RQ1,RQ2 **Engagement Frequency Chart** To measure the fidelity and frequency of implemented interventions in classrooms RQ1 <u>**Note:**</u> RQ= Research Question	**Double Entry Journal with Field Notes and Reflection** To describe teacher enacted engagement practices (patterns in teachers' behaviors and their attitudes) RQ1,RQ3 **Instructional Feedback** To describe the effectiveness of engagement practices (increase and decrease in supports and intervention context) RQ1,RQ2, RQ3 **Coaching Plans** To surface factors of impact on teachers' practices (compare dimension gap between where the teacher is in the targeted practice and his progress towards goal) RQ1, RQ2 **Teacher Interviews (Pre-Post)** To depict teachers' response to intervention and roadblocks to change RQ1,RQ2, RQ3 **Coaching Cycle Questions** To describe indicators of progress between coach and teachers as measures towards achieving an identified goal RQ1,RQ2, RQ3 **Video Files** To describe teachers' perception of practice implementation using Watch Yourself Form and Explore What Happened Form RQ1, RQ3, **Professional Development Construct** To measure the effectiveness of the PD design RQ2

	Classroom Activities To describe how certain tasks change over time as result of intervention RQ1, RQ3 **Photos** To compare how context changes before, during and after the intervention RQ3

Baseline data
Inquiry Data: 2020 Teacher Culture and Climate Pre-Survey as baseline data on feedback, coaching and PD.
Coaching Plans

Intervention Data :
Observational data:
Double Entry Journal with Field Notes and Reflection
Instructional Feedback
Video Files
Professional Development Construct
Inquiry data:
Inquiry Data: 2020 Teacher Culture and Climate Post-Survey data on feedback, coaching and PD
PD Surveys (During interventions after each of the six PD sessions)
Teacher Pre-and Post-Interviews
Engagement Frequency Chart (Checklist)
Coaching Cycle Questions

Artifacts
Classroom Activities
Photos (Screenshots)

Appendix G
Teacher PD Learning Style Survey

2. What type of professional learning format helps you best acquire knowledge
More Details

- Synchronous (online small gro...   1
- Asynchronous (at your own pa...   2
- Hybrid (Synchronous and Asy...   7
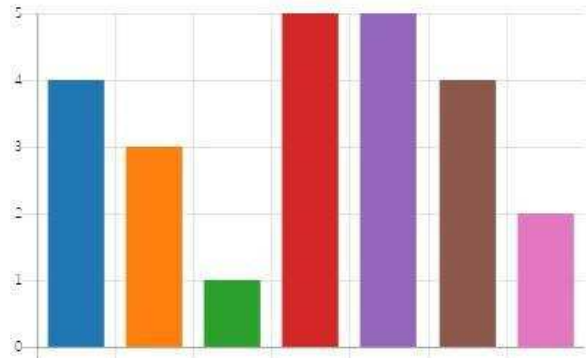- Synchronous -in person   1
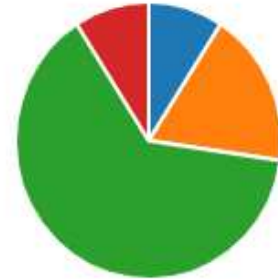
Questions	Responses 11

Responses	Average time to complete	Status
		...

View results   Open in Excel

1. Which adult learning theory fits best your learning style? (you can pick more than one)
More Details

- Humanistic-learning is self-dir...   4
- Transformative-using existing ...   3
- Social-focuses on social intera...   1
- Motivational-implies motivati...   5
- Reflective- focuses on reflection   5
- Constructivist-knowledge is co...   4
- Instrumental-Behavioral, Cogn...   2

Appendix H
Professional Development Construct

Appendix I
Coaching Plan

	Individual Coaching Plan **Teacher: C**	
Date **9/16/20**	Identify the areas of coaching: what's the big picture?	Continuous Students Engagement
	Identify standards and criteria	Engagement Frequency Chart
	Determine a SMARTE goal	During coaching session will identify 3 strategies to help increase student engagement by 16% from 54% to 70% ==Set higher goal-New goal is now 80%==
	Identify high-leverage activities	PD on Nearpod And Engagement Domains
	Break down the learning	Cognitive, Socio-emotional and Behavioral strategies
	Determine indicators of progress	Implement Nearpod Questioning Frequency DOK Levels
	Determine coaching theories of action	Reflective questioning
	Determine coach's goal	Deliver continuous feedback and coaching on engagement strategies and collect data on teacher's instructional engagement practices.
	Compile resources	Teach Like a Pirate (Burgess) Highly Engaged Classrooms (Marzano, Pickering)

	Present and celebrate plan	<mark>81% highest engagement reached</mark>

Reflection Teacher

"Feedback (during coaching) produced the most impact. It gave me a goal –it gave me specifics and it was easy to focus on increase."

Reflection Coach

Teacher was very competitive and determined to increase engagement. There was

evidence of continuous dedication towards questioning and providing feedback to all

students in attendance. Teacher set higher goal to 80% after reaching initial increase in

engagement by 20%. Data driven coaching seemed very helpful as a reflective

practice.

Appendix J
Teacher Self-Reflection Form

Date:

After watching the video of today's class, please rate how close your instruction is to your ideal in the following areas:

Right On	Not Close						
I used practices for high cognitive engagement 90% of the time	1	2	3	4	5	6	7
I used practices for behavioral engaged	1	2	3	4	5	6	7
I used practices for socio-emotional engaged	1	2	3	4	5	6	7
As result of my instructional practices students were interested in learning activities as evidenced by_____	1	2	3	4	5	6	7
The engagement practices used were implemented with fidelity	1	2	3	4	5	6	7
My learning structures were effective	1	2	3	4	5	6	7
My praise to correction ratio was at least 3 to 1	1	2	3	4	5	6	7

Comments/Supports needed:

Reflection Teacher:

Appendix K
Coaching Questions Form

To Drive Teacher Change in Practice and Set Measurable Goals

- On a scale of 1 to 10, how close was the lesson to your ideal in terms of implementing engagement practices?

- What would have to change to make the practice closer to a 10?

- What would your students be doing?

- What would that look like?

- How would we measure that?

- Do you want to refine your coaching goal to meet the desired outcome?

- Would it really matter to you if you hit that goal? Why?

- What teaching strategy will you try to hit that goal?

Additional Context Questions:

- Do you have any curricular constrains? If so, explain.

- Do you need more in depth professional development? If so explain.

- Do you need additional scaffolds in understanding engagement interventions? If so, explain

- Do you have any instructional issues? If so, explain.

Reflections

- Reflect on today's coaching session in terms of "grows" and "glows"

- Coach's Reflections:

Appendix L
Double Entry Observation Journal

Date	Noticings	Reflections
10/12/20 **Obs. 5**	1:00-3:00 T: Asks students what they did over the weekend (<mark>socio-emotional connection</mark>) Individual students are answering (6 Flags, bowling, hunted house, watched games) 4:00-6:00 Students log in Nearpod 7:00 T: Are these figures similar? <mark>DOK2</mark> (Nearpod) 7:00-8:00 Students are independently working on Do Now activity and answer if figures are similar 9:00 T: feedback -1, 2 students C.. I need to see your work, M… you need to set up your proportions, S… –good, I…, E…, I do not see your work, C… –I don't see your proportions, R…- I need to see the math, E… is getting started, 10:00 N… I don't see your work, T…-Tell me how did you got the fractions? ~~11:00 S1 (T…) – from the triangles~~ 11:00 T where did the 4 come from? 12:00 T –giving feedback to students who did not set up proportions (J…) 12:00 T B… we are not solving here for anything 13:00 Are the sites proportional? We are still not solving for anything 14:00 <mark>R… -perfect</mark> 14:00 A…-are the figures similar? 15: S2 gives answer <mark>DOK2</mark> 15:00 T I am going to share my screen 16:00 R… we are going to do this together 16:00 S3 –answers –they are not similar 17:00 are these figures similar? 18:00 S4 A… (checks notes) struggles 19:00 S5 –Proportional is the word <mark>DOK1</mark> 20:00 T: <mark>Thank you!</mark> 20:00 S6: N… –walks thru the problem solving process <mark>DOK2</mark> 21:00 -23:00 S6 N… –walks thru the problem solving	Attendance: 33 students Nearpod used as collaborative engagement platform Feedback is given to all students for Do Now 3 problems including Do Now solved in 45 minutes with constant check/praise and feedback) 1st problem (Do Now) participation 23/33=70% students 2nd problem 27/33=81% students 3rd problem 26/33=79% students <mark>Average25/33=76% student participation</mark> <mark>~18min/45 min=40% of class time</mark> <mark>31/31student feedback and praise=100%</mark> <mark>~15/45 min=33% praise feedback</mark> 3DOK1 5DOK2 **Feedback/Suggestion** Use some of the socio-emotional engagement strategies discussed in PD (inspirational hooks, real life examples, motivational quotes, hands-op activities thru which they can

(answers-because they are proportional)
23:00 T: writes on the board: yes because corresponding sides are proportional and angles are congruent
Transition is made to new problem
24:00-28:00T: highlights the sides for next problem
28:00 T: R…and R…-Yes
28: C…, Yes
T: S…, Yes
28:00 R…, good
T: S…,-very good, it is set up properly
T: J…, T…, I don't see your work
T: N…, good
29:00 Z… –I want to see x=
Silence
30:00 T: A……what is 4x15…
30: 00 A… responds-"I made an error"
31:00 T: J…, I don't see your work
31:00 J… responds: "I figured it out and am doing it"
31:00 T: Ok J…, let's set it up
32:00 S7 (J…) sets up the proportion correctly DOK2
33:00 T: asks scaffolding questions
33:00 S8 We divide DOK1
Transition to activity 3 silence
35:00T: I want you to do this on your own silence
38:00 T: assists a student
38:00 T: B… you did not set up the proportion
39:00 T: D… –yes, R… -yes
39:00 T: S… –good
40:00 T: R… yours is set up good
40:00 T: T…-you can not have small over small
40:00 T: What does 6 corresponds to T…?
No answer
41:00 C… –yes
42:00 T scaffolding questions for R…
42:00 S9 (R…) answers DOK2
42:00 S10 scaffolding questions –
K…(student is confused)
43:00 T leads thru the problem-K…
44:00 T: E… what is wrong with your

demonstrate learning)

Think of the following questions in relevance to the lessons you teach:

How can I show my students why learning this content is important in the real world?

How will they possibly apply this in their life?

Can we increase motivation and engagement by offering reasons to learn that go beyond "because it's on the test?"

Can they create something "real" that will be more than a classroom project but actually allows them to interact with the world in an authentic way?

Thank you very much for all you do to make a difference in the students' lives!

	answer? 45:00 S11 (T leads her with scaffolding questions) <mark>DOK1</mark>	

Appendix M
Engagement Frequency Chart

	Cognitive	Frequency (Minutes)	Behavioral	Frequency (Minutes)	Social Emotional	Frequency (Minutes)
Implementation with fidelity most of the time 60% and above class time minutes						
Implementation of some elements-for a short time <60%-20% of class time minutes						
Inconsistent Implementation <20% of class time minutes						

Appendix N

Coaching Questions Form

- On a scale of 1 to 10, how close was the lesson to your ideal in terms of implementing engagement practices?

  <mark>1</mark>

- What would have to change to make the practice closer to a 10?

<mark>Implement Class Notebook and Forms</mark>

- What would your students be doing?

<mark>Complete work in their notes</mark> –Class Notebook

- What would that look like?

<mark>I could check if they are engaged (complete and solve problems in their online notebook</mark>

  - <mark>How would we measure that?</mark>

<mark>Number of students with attempted work completion or completed work</mark>

- Do you want to refine your coaching goal to meet the desired outcome?

<mark>Keep at 40%</mark>

- Would it really matter to you if you hit that goal? Why?

<mark>It would show me that students are engaged and learn</mark>

- What teaching strategy will you try to hit that goal?

<mark>Microsoft Class Notebook and Forms</mark>
  Additional Context Questions:
- Do you have any curricular constrains? If so, explain.

no

- Do you need more in depth professional development? If so explain.

  <mark>Microsoft Class Notebook and Forms</mark>
- Do you need additional scaffolds in understanding engagement interventions? If so, explain

<mark>PD on implementation of Microsoft Class Notebook</mark>

- Do you have any instructional issues? If so, explain.

<mark>No</mark>

Teacher's Reflections
- Reflect on today's coaching session in terms of "gorws" and "glows"

<mark>Helped</mark> <mark>Visualize engagement</mark>

Need

- <mark>PD on Class Notebook and Forms</mark>

Coach's Reflections:

Teacher A rates engagement at 1, which means he is not happy with students' participation in virtual learning. Teacher A engagement strategies mostly consist of <mark>"cold call"</mark> and students <mark>volunteering answers</mark>. He seems interested to implement Microsoft class notebook to increase student participation so that all students can work simultaneously. His engagement goal is set to 40%. Based on the first observation cognitive engagement is at 24% (9 out of 37 students). Teacher A is asking for more PD on the Microsoft Form platform.

<mark>Coaching helps him visualize engagement</mark>.

Needs more training on Class Notebook and Forms

Reaching the engagement goal for Teacher A would mean that students are learning.

Appendix O
Professional Development Survey

(1=lowest implementation, 10 highest implementation)

1. On a scale of 1 to 10, rate the level in which this PD addressing your learning styles

    ○   ○   ○   ○   ○   ○   ○   ○   ○   ○

2. On a scale from 1 to 10, rate your opportunities to share your previous experiences and resources on this topic?

    ○   ○   ○   ○   ○   ○   ○   ○   ○   ○

3. On a scale from 1 to 10 rate the environment and context of this PD for stimulating new learning?

    ○   ○   ○   ○   ○   ○   ○   ○   ○   ○

4. On a scale from 1 to 10, rate the learning opportunities on engagement practices of this PD based on interest and your own classroom experiences/needs?

    ○   ○   ○   ○   ○   ○   ○   ○   ○   ○

5. On a scale from 1 to 10 rate the opportunities given to you in this PD to express your voice

    ○   ○   ○   ○   ○   ○   ○   ○   ○   ○

6. On a scale from 1 to 10 rate the opportunities given to you in this PD to make

    choices

    ○   ○   ○   ○   ○   ○   ○   ○   ○   ○

7. On a scale from 1 to 10 rate the level of content focus of this PD

    ○   ○   ○   ○   ○   ○   ○   ○   ○   ○

8. On a scale from 1 to 10 rate the level in which this PD incorporated active learning utilizing adult learning theory?

    ○   ○   ○   ○   ○   ○   ○   ○   ○   ○

9. On a scale from 1 to 10 rate the level in which this PD supported collaboration

○   ○   ○   ○   ○   ○   ○   ○   ○   ○

10. On a scale from 1 to 10 rate the level in which this PD made use of models and modeling of effective practice?

○   ○   ○   ○   ○   ○   ○   ○   ○   ○

11. On a scale from 1 to 10 rate the opportunities for follow up coaching and support

○   ○   ○   ○   ○   ○   ○   ○   ○   ○

12. On a scale from 1 to 10 rate the opportunities for feedback and reflection

○   ○   ○   ○   ○   ○   ○   ○   ○   ○

13. On a scale from 1 to 10 rate the opportunities for attending PD sessions over sustained duration of time

○   ○   ○   ○   ○   ○   ○   ○   ○   ○

14. On a scale from 1 to 10 rate your likelihood to implement this strategy in class

○   ○   ○   ○   ○   ○   ○   ○   ○   ○

15. Describe some of your challenges and roadblocks in implementing these engagement strategies in your daily practices

16. Describe possible ways for overcoming challenges and roadblocks in implementing these engagement strategies in your daily practices

Appendix P
Teacher Self-Reflection Form

Teacher C

Date: 10/5

After watching the video of today's class, please rate how close your instruction is to your ideal in the following areas:

Right On		Not Close						
I used practices for high cognitive engagement 90% of the time		1	2	3	4	5	6	7
I used practices for behavioral engaged Some of the methods I used like cold call –it has them on stand by-they never know when I will call on them		1	2	3	4	5	6	7
I used practices for socio-emotional engaged		1	2	3	4	5	6	7
As result of my instructional practices students were interested in learning activities as evidenced by_____ full participation in the graphing activities		1	2	3	4	5	6	7
The engagement practices used were implemented with fidelity Nearpod Platform, I also engaged them verbally		1	2	3	4	5	6	7
My learning structures were effective		1	2	3	4	5	6	7
My praise to correction ratio was at least 3 to 1		1	2	3	4	5	6	7

Comments/Supports needed:

Reflection Teacher:

If they do just a part right –I still try to find something right to tell them about

I think this platform-supports engagement

If students are way off (low students)–I have to work out something else-it is hard to help them out on the spot-this is possible with students in the middle

Interventions are difficult to do with very low students –takes too much time, and because the class is too big (35 in Nearpod)

Appendix R
Pre- and Post-Teacher Culture and Climate Survey

Post -Teacher Survey

A. Feedback and Coaching

1. How often do you receive feedback on your teaching?

- Almost always
- Frequently
- Sometimes
- Once in a while
- Almost never

2. At your school, how thorough is the feedback you receive in covering all aspects of your role as a teacher?

- Extremely thorough
- Quite thorough
- Somewhat thorough
- Slightly thorough
- Not at all thorough

3. How useful do you find the feedback you receive on your teaching?

- Extremely useful
- Quite useful
- Somewhat useful
- Slightly useful
- Not at all useful

4. How much feedback do you receive on your teaching?

- A tremendous amount of feedback
- Quite a bit of feedback
- Some feedback
- A little bit of feedback
- No feedback at all

B. Professional Learning

5. At your school, how valuable are the available professional development opportunities?

- Extremely valuable
- Quite valuable
- Somewhat valuable
- Slightly valuable
- Not at all valuable

6. How helpful are your colleagues' ideas in improving teaching?

- o   Extremely helpful
- o   Quite helpful
- o   Somewhat helpful
- o   Slightly helpful
- o   Not at all helpful

7. How much input do you have into individualizing your own professional development opportunities?
- o   A tremendous amount of input
- o   Quite a bit of input
- o   Some input
- o   A little bit of input
- o   Almost no input

8. Through working at school, how many new teaching strategies have you learned?

- o   A great number of strategies
- o   Many strategies
- o   Some strategies
- o   A few strategies
- o   Almost no strategies

9. Overall, how much do you learn about teaching from the leaders at your school?

- o   Almost all the time
- o   Frequently
- o   Sometimes
- o   Once in a while
- o   Almost never

10. How relevant have your professional development opportunities been to the content that you teach?

- o   Extremely relevant
- o   Quite relevant
- o   Somewhat relevant
- o   Slightly relevant
- o   Not at all relevant

11. Overall, how supportive has the school been of your growth as a teacher?

- o   Extremely supportive
- o   Quite supportive
- o   Somewhat supportive
- o   Slightly supportive
- o   Not at all supportive

12. If you are a first year teacher, how satisfied are you with the coaching and development supports you receive?

- o   Not at all satisfied
- o   Slightly satisfied

- Somewhat satisfied
- Quite satisfied
- Extremely satisfied

School Climate

13. If you are a first year teacher, how satisfied are you with the coaching and development supports you receive?

- Completely understood
- Understand quite a bit
- Understand somewhat
- Understand a little
- Do not understand at all

Appendix S
Teacher Interview Protocol

Interviews: (Volunteer Participant Teachers) (*selection of teachers is based on a balanced representation of grade levels, content areas and teachers who service a wide range of student demographics*).

Research Question: How do urban middle school teachers' classroom practices respond to targeted engagement intervention?

- I am curious to know how effective were your engagement practices? (How do you know that?)

- How did a specific intervention such as coaching impact your practices? Which aspects of coaching did you find most beneficial?

- How did instructional feedback impact your engagement practices?

- How did intervention length in classroom impact the effectiveness students' engagement?

- How did professional development associate with improvement in your classroom practices?

- Which aspects of professional learning helped you most gain understanding of engagement practices?

- Which specific features of classroom practice were more or less responsive to intervention?

- Which dimensions of student engagement (cognitive, socio-emotional, and behavioral) were more or less challenging? Why?

- What mostly impacted the implementation of engagement practices?

- Can you identify which aspects and features of intervention (feedback, coaching, PD) produced specific results?

- What were some effective approaches to professional learning?

Appendix T
PD Construct –Baseline Data

What does the data say? Please reflect in at least two sentences on student engagement. How can you do to captivate students in online learning? How can you motivate them to to participate? What can you do to raise their interest in your content area?
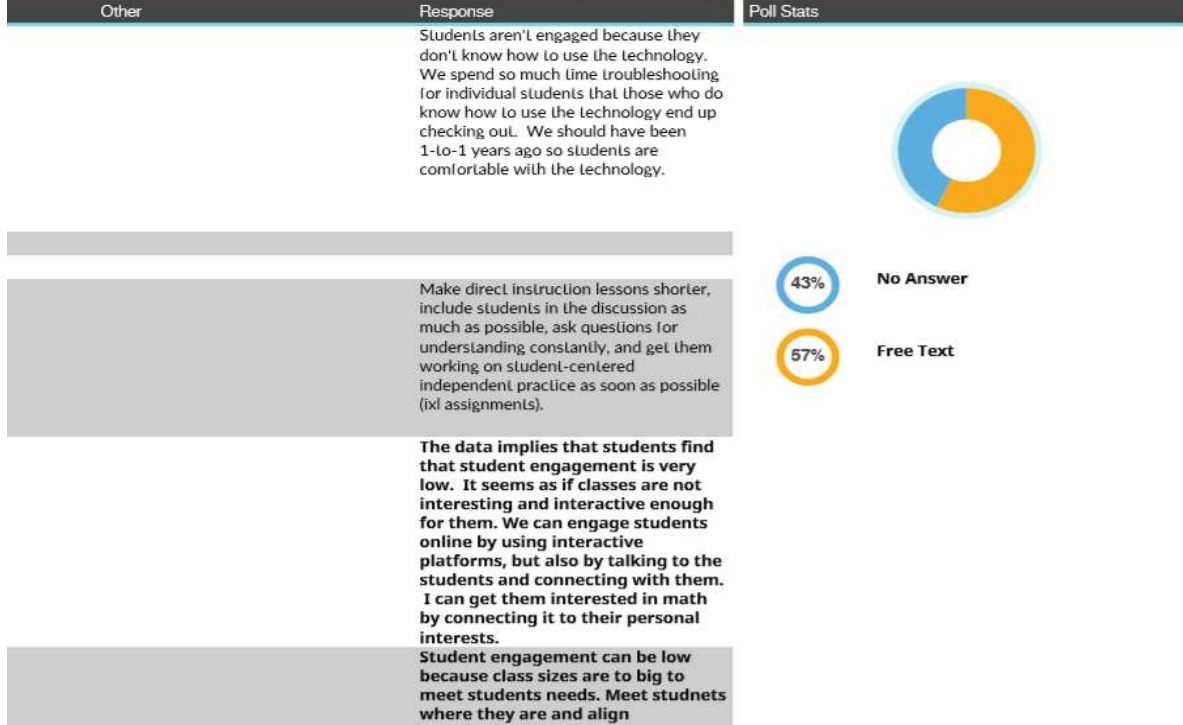
Other	Response	Poll Stats
	The kids are saying they aren't engaged. We are lucky in that I think we have interesting curriculum for the most part. The more real world connections the better to motivate and interest them.	
	Make lessons active to capture student interest. Give students points are small rewards for participating. To keep them interested, I have to be interested.	**25%** No Answer
	The data says, overall, that all measures are low.	**75%** Free Text
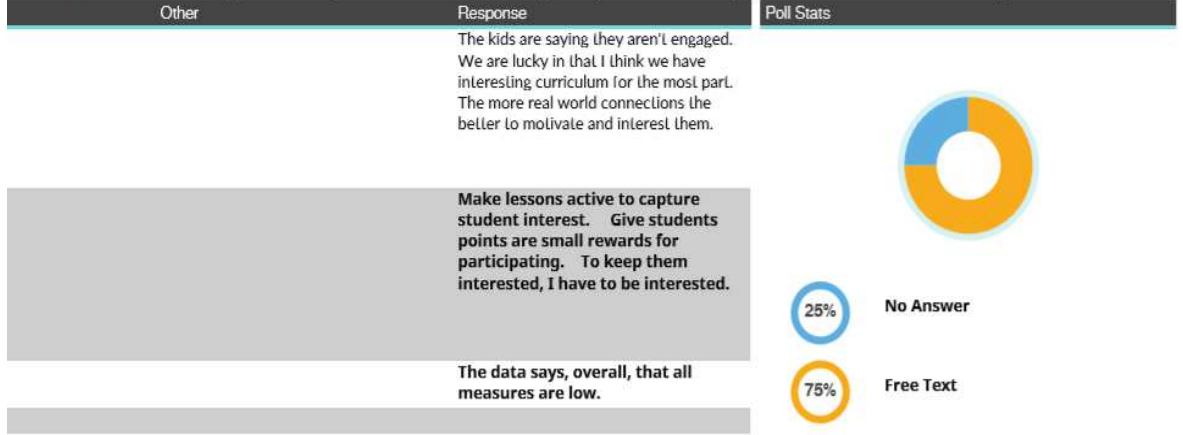
nearpod **Post Session Report**

What does the data say? Please reflect in at least two sentences on student engagement. How can you do to captivate students in online learning? How can you motivate them to to participate? What can you do to raise their interest in your content area?

Other	Response	Poll Stats
	Students aren't engaged because they don't know how to use the technology. We spend so much time troubleshooting for individual students that those who do know how to use the technology end up checking out. We should have been 1-to-1 years ago so students are comfortable with the technology.	
	Make direct instruction lessons shorter, include students in the discussion as much as possible, ask questions for understanding constantly, and get them working on student-centered independent practice as soon as possible (ixl assignments).	**43%** No Answer
	The data implies that students find that student engagement is very low. It seems as if classes are not interesting and interactive enough for them. We can engage students online by using interactive platforms, but also by talking to the students and connecting with them. I can get them interested in math by connecting it to their personal interests.	**57%** Free Text
	Student engagement can be low because class sizes are to big to meet students needs. Meet studnets where they are and align	

Appendix U

Observation	PD	Responsiveness	Evidence	Feedback	Responsiveness	Evidence	Coaching	Responsiveness	Evidence
				Teacher F					
				Responsiveness Yes=1, NO=0					
0	PD1 SE, BE, DOK Nearpod	0	PD 1 Survey=5.2				Coaching Plan	1	Coaching Goal 70% Increased to 80%
1	PD2 Microsoft Notebook &Forms		Nearpod Report PD2 Survey=4.8	feedback -Cognitive strategies -SE (praise)	0	Double Entry Journal – log (no verbal interactions with students)	Coaching Question &Forms	1	- Answers to coaching questions -Teacher Reflection -Forms
2	PD3 Nearpod	1	Nearpod Report PD 3 Survey=8.7	-Cognitive (content)	1	Double Entry Journal –log -SE –praise, positive feedback)	Coaching Question &Forms	1	Double Entry Journal Obs 2 - Answers to coaching questions -Teacher Reflection -Forms

	3	4	5
Average	PD4 Flipgrid Canva SE, BE	PD5 Padlets SE BE	PD6 Integration
5/5		1	1
PE=6.8	-Legends of Learning Screenshot -Forms Screenshot	Nearpod Screenshots PD5 Survey=6.8	Nearpod Report Flipgrid (Lesson Plan PD 6 Survey=7.7
Feedback		Double Entry Journal – feedback -Cognitive -SE (corrective feedback, hooks) -Engagement Platforms	Double Entry Journal – feedback -Engagement Platforms -SE -DOK increase
4/5	1	1	1
	Double Entry Journal Log -SE 21%-words of affirmation, simulation as a hook	Double Entry Journal Log -SE-Video Class Notes Screenshot	SE 81% Video Experiment Essential Question (hook
Coaching	Coaching Question &Forms	---	Double Entry Journal (SE-building relationships)
4/4	1	---	---
Goal Met	- Answers to coaching questions -Teacher Reflection -Forms (Highest Cognitive Engagement Reached 79%, SE 81%)	---	---