Increasing Student Engagement With IPADS

by

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This is a study of one teacher's technology integration journey. This case study will characterize the state of one teacher's understanding and practice before and after receiving coaching that was designed to help the participant learn to use technology integration to increase student engagement. The results of this research led to three findings. The three findings from this research are:

1. The teacher demonstrated an improved understanding of engagement and technology integration.
2. The teacher demonstrated an improved practice of engagement and technology integration.
3. The findings help to determine the impact that coaching had on the understanding of student engagement and how to use iPads for instruction in the classroom.

This study has shown, through professional development and coaching with incorporating technology, we can increase a teacher's skill set for engaging students in the classrooms. By increasing student engagement, we increase the opportunity for students to learn and succeed. Our responsibility as leaders is to find ways to support our teachers and to get educational technologies into the hands of our students.

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Preface

Dedication

This work is dedicated…

...to my wife of 15 years and best friend for over 18 years, Karen Whiteman.

During this process you have taken care of me, our three sons and our new puppy so that I could focus on my research. I could have never completed this without your patience and our partnership. Thank you for supporting me and encouraging me to keep moving forward. All of the times I cried when the struggle reduced me to tears, you were there to pick me up. I love you.

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1.0 Introduction

Despite the rapid increase in the number of iPads and other technological devices in classrooms across the United States (Diemer, Fernandez, & Streepey, 2012), some elementary school teachers struggle with effectively integrating iPads as instructional tools (Lanier, 2016). Research has demonstrated that iPads are a useful tool for increasing student engagement (Burden, 2012). Some research has found that student engagement is a prerequisite for learning (Kearsley & Shneiderman, 1998). The problem of practice involves studying strategies for helping teachers to effectively integrate iPads into the classroom in order to increase student engagement. My hope is that, with coaching and support, teachers will incorporate iPads more appropriately into the classroom. This is a critical problem to resolve because there is limited time for training during the school year, and it is difficult for school districts to provide effective professional development (PD) for personnel. District leaders need guidance on effective PD that can engage teachers and provide them with a pathway to successfully engage students (Abelmann, et al., 1999).

1.1 Problem of Practice

I believe that teachers desire engaging, relevant, and job-embedded professional development (Darling-Hammond, Hyler & Gardner, 2017) in order to successfully integrate technology into their instructional practices. The goal of professional development is to equip teachers with the knowledge, skills and confidence to modify their instructional methods to

increase engagement and improve academic performance. For increased engagement and learning to occur with the help of iPads, school districts should provide the training, support and time for teacher training. Simply purchasing equipment and giving it to the staff is not enough. With sufficient preparation, support and resources, teachers can increase students' engagement and academic success; afterall, teachers are the greatest change agents (Weatherly & Lipsky, 1977).

In addition to the important role that technology plays in society, it is becoming part of the fabric of education. Educators are now using iPads to enhance student engagement and increasing student academic achievement.

Even if everyone agrees that technology integration is a good idea, accomplishing this goal, in practice, is challenging. Hargis, et al., (2013) found faculty members had a difficult time transitioning to a technology-infused teaching style and required professional development. It is important for teachers to be aware of the technological landscape in which their students live because students have been exposed to interactive technologies for most of their lives (Richardson, 2013). It is difficult for educators to stay abreast of the changing technology that is being used by students and innovative educators (Peluso, 2012). Teachers also need to know how to distinguish between applications that are educationally beneficial and those that are simply toys labeled with curricular buzzwords. Educators must help students gain an appreciation for responsible use of technology in the classroom or distractions can occur that will interfere with learning.

1.2 Inquiry Setting

The setting for my research will take place in the Duquesne Elementary School, a low socioeconomic, urban elementary school in southwestern Pennsylvania. The Duquesne

Elementary School is the only school remaining in the Duquesne City School District since the high school was closed in 2007 and middle school was closed in 2012. Both the Duquesne High School and the Duquesne Middle School were closed due to declining performance and the lack of educational opportunities for students. In 2012, when the middle school was closed, the district was placed under state receivership by the Pennsylvania Department of Education and it is currently overseen by a state-appointed receiver, rather than by a school board.

Duquesne Elementary School houses Pre-K through 6th grades, with an enrollment of approximately 370 students. Most regular education classrooms are self-contained, with the exception of fourth and fifth grades, which are departmentalized. The school qualifies as 100 percent Free and Reduced Lunch, which is a proxy for the low socioeconomic status of citizens. Twenty-six percent of the population is identified as qualifying for special education services.

Beginning in August 2013, more than $300,000 of instructional technology has been acquired for the use of students, staff and administration, but a clear and concise professional development plan was never established for the implementation of the technology in instruction. Since the 2013-2014 school year, the district has purchased 425 iPads for teachers and students, but has not established a professional development plan for their implementation. The district has required that all teachers include the iPads into the lesson planning and instruction, but has provided very little training. Some local professional development has occurred, but surveys have shown that both teachers and the administration were not satisfied. Henneck (2013) writes that one can have the best device in the world, but if teachers and students are not prepared to use it, it is worthless.

With an elementary school staff of 39 teachers, the Duquesne City School District has a faculty with varied levels of experience with iPad use. Some teachers have had personal devices for several years and have a high comfort level, while other teachers just use iPads as a gaming device. Even when there is evidence that students will face unforeseen challenges in their lives and careers, there are teachers who do not want to change the way they deliver instruction. This has become evident in conversations with struggling teachers.

The district's administration is cognizant of the value of providing professional development for staff in the areas of english language arts (ELA) and mathematics, but a plan for improving practices with technology has yet to be created because this has not been a priority. If funding was available, the Duquesne City School District could contract with Apple, or another appropriate and capable company, to provide technology professional development to the staff. This development could take place outside of the contracted workday in the school building, but the district would have to compensate employees through the contracted ancillary rate. This type of support, if available, would be beneficial to the growth of the staff and would build resource capacity in the form of human capital (Beaver & Weinbaum, 2012).

1.3 Stakeholders

In this elementary setting, there are 39 teachers who instruct grades PreK-6. While I think that all teachers will benefit from professional development focused on implementing iPads into their classrooms, my research will focus on one teacher in fifth grade.

1.4 Impact

I hope this research will allow me to develop an effective and relevant strategy for improving the knowledge and practice of all educators in our school. Ideally, the protocols developed will be applicable to other cohorts of educators. As graduates become more proficient, they will be able to serve as mentors for future participants and the result will ideally be a self-sustaining professional learning community (PLC). The impact of this research on my school will be a theory of practice that is structured by technology, pedagogy and content knowledge (TPCK) and applied to the area of student engagement.

1.5 Research Questions and Inquiry Approach

Teachers in the school already have iPads and use them daily, but they have not received professional development on how to improve iPad use for engagement. The goal of this study is to help teachers to integrate iPads as a way of increasing student engagement. To do this, I will design and implement a professional development program to change the instructional practices of fourth and fifth grade teachers. This study will explore the following research questions:

- How does this teacher think about technology with respect to how children learn?
- How has the teacher's ideas about technology changed through the professional development?
- How does close attention to teacher understanding of engagement and pedagogy, comfort with technology, and the use of technology integration for engagement lead to critical coaching decisions?

To understand the effectiveness of the professional development program that is employed, I will gather data from interviews, classroom observations and teacher lesson plans. This approach of using teacher interviews and a review of teacher lesson plans has been used in previous research, such as the case study described by Graham (2007). Analyses will focus on understanding how one teacher has incorporated iPads into their lessons in a way that increases student engagement. To provide insight about why the PD worked or did not work and how it could be improved, I will interview a teacher to learn about any challenges or barriers she experienced with integration efforts. Through my research, I will uncover the barriers that lead to teachers not using the devices that they already had in their classrooms. This study will lead to the refinement of a professional development model that can be scaled to the rest of the school. I will serve as a facilitator and coach for an individual participant as she studies best practices and experiments with strategies for increasing engagement.

2.0 Review of the Literature

2.1 Teacher Adoptions and Integration of Technology

Technology use in classrooms has become more prevalent throughout the nation (Puckett, 2013). An increasing number of classrooms are using multiple forms of educational technology, such as document cameras, interactive whiteboards and tablets, but there appear to be vast differences in the level of adoption of technology by teachers (Lanier, 2016). Some teachers are slower to adopt technology than others. Training to use technological resources may build confidence and influence a teacher's willingness to use technology in instruction.

Herold (2014) found that teachers who were the least confident in using educational technology tended to work in high-poverty and urban schools; thus, teachers who were working with some of the most challenged students felt least prepared to use tools that could greatly improve student engagement and on-task behaviors. His research suggests that teachers who lack confidence in using technology end up using it far less in their classrooms than do their more confident peers. Teachers with low confidence only used technology in the classroom 17 percent of the day, whereas teachers in the same school with high confidence used technology during more than 50 percent of the day. Herold's research indicates that teachers differ in their confidence and frequency of technology use in the classroom.

2.2 Frameworks for Teacher Professional Development and the iPad

To help educators gain knowledge and confidence with using technology in classroom instruction, educational thought leaders have developed frameworks for technology integration. The SAMR model was developed in 2006 by Dr. Reuben Puentedura, who was a private consultant at the time (Psiropoulus, et al., 2016). SAMR, which stands for substitution, augmentation, modification and refinement, provides a framework for the strategies teachers should use to incorporate technology in an effective and disciplined way. TPCK, or technological, pedagogical and content knowledge (Koehler, et al., 2007), dictates what content must be covered in professional development for teachers. TPCK and SAMR are important because they form the basis of the professional development to be used in this study.

The SAMR model was designed to help educators incorporate technology into their teaching methods. The SAMR model gives teachers a way of thinking about how to design and improve lessons through the use of technology. Substitution involves replacing a printed worksheet with a digitized version delivered on an iPad without any functional change in the lesson or learning. Augmentation involves a direct substitution of a digital tool for a previous paper and pencil tool that results in a functional change in the lesson: For example, a teacher uses Google Earth to measure distance instead of using a set of calipers on a traditional map. Modification involves an expansion of a traditional assignment by using digital tools that create the opportunity to share and collaborate on assignments in ways that are difficult using paper. Redefinition involves a complete change to the nature of an assignment as a result of using technology. For example, a student could create an iMovie to demonstrate his or her understanding of the problem.

The SAMR model was used during a research study with a small group of faculty at an urban women's college who were preparing to use iPads in their classrooms (Psiropoulos, et al.,

2016). The faculty group experimented with iPads for six months before their first digital class. The faculty reported that it was a difficult challenge using iPads for instruction, but they valued the opportunity to learn together in a professional learning community (PLC).

TPCK originated from an observational study of two groups of university faculty who designed an online course (Koehler, Mishra, & Yahya, 2007). The focus of the research was on the influence of prior knowledge and experience on how faculty constructed and taught an online program. Koehler, Mishra and Yahya concluded that effective technology integration requires knowing the content, technology and pedagogy, and that all three of these knowledge bases work together to influence teaching. TPCK provides a framework for teachers to use all three components, in an integrated manner, as opposed to treating them separately.

The power of TPCK as a framework for designing and delivering professional development in the elementary school setting is demonstrated in a study conducted by Hutchison, Beschorner and Schmidt-Crawford (2012). These researchers observed a fourth grade teacher and 23 of her students for three weeks after iPads were introduced into literacy instruction. The teacher determined literacy goals (content) for each lesson and then made instructional (pedagogy) decisions to determine specific parameters of each learning experience. Furthermore, she selected mobile application (apps) based upon these goals. The TPCK model is useful for designing PD and for interpreting teacher strengths and weaknesses when integrating technology.

The frameworks of TPCK and SAMR provide educators with helpful perspectives about how to incorporate technology into their teaching. Research by Hutchison, et al., (2012) and Psiropoulos, et al., (2014) showed the value of integrating both of these frameworks to achieve better integration of technology in instruction. Adding iPads to the classroom without

understanding effective pedagogical practices appears not to be a successful way to prepare teachers to use the technology.

2.3 The Design of Effective Professional Development

How do adults learn? The field of andragogy emerged in the late 1960's and was heavily influenced by humanistic psychology that takes a holistic approach to thinking about the entire person as a learner and emphasizes self-actualization and self-efficacy. Andragogy embraces the ideal adult learning environment (Merriam, 2001). The first formulation of andragogy as an adult learning theory was proposed by Knowles in 1980. In 2012, an updated version of this classic work was written by Knowles, Holton and Swanson. The current andragogy model (Knowles, Holton & Swanson, 2012) has six principles of adult learning:

- Learners need to know the reason why they are learning new information.
- Learning must promote autonomy and be self-directed.
- Learners must capitalize on their prior knowledge and experience.
- Learning must be job-embedded and developmentally appropriate.
- Learning must be problem-based and contextualized.
- Learning must capture adults' intrinsic interests and be personally relevant.

When designing professional learning for adults, we need to consider the above principles of adult learning. Linda Darling-Hammond and her colleagues from the Learning Policy Institute at Stanford released a report in 2017 that described best practices for designing professional learning (Darling-Hammond, Hyler & Gardner, 2017). According to Darling-Hammond, Hyler and Gardner, effective professional development (PD) must:

- Be content focused
- Be active and utilize adult learning theory (i.e., andragogy)
- Support collaboration in job-embedded contexts
- Use models and modeling of effective practice
- Provide coaching and expert support
- Offer opportunities for feedback and reflection
- Be of a sustained duration

Darling-Hammond, Hyler and Gardner argued that effective professional development must be based on theories of adult learning, such as andragogy. Still, Darling-Hammond, Hyler and Gardner as well as Knowles, Holton and Swanson, highlight that effective PD is job-embedded or contextual and be content focused. One area where these two models differ is in the role of collaboration. Darling-Hammond, Hyler and Gardner's more recent work emphasizes the social nature of learning.

Two additional considerations in designing effective PD are the roles of peer-coaching and the use of time. Psiropoulus, et al., (2016) argues that professional development programs that offer peer mentoring or coaching are the most powerful means of delivering professional development and enhancing the teacher's use of technology. Peer coaches create a safe environment for risk-taking and continuous improvement of practice. Kenny, Banjerjee and Newcombe (2010) argue that time is a critical factor that determines the effectiveness of professional development. When professional development competes with available time, the extra training will be abandoned because teachers have limited time in an already busy schedule. Professional development must be efficient to be adopted.

One popular PD model, the professional learning community (PLC), involves peers learning and improving their practice. PLCs have a profound impact on teacher practice, school culture and student outcomes. PLCs are formed when groups of teachers work together on improving student outcomes in a very structured way (DuFour, DuFour, Eaker & Many, 2010). Hudson, et al., (2013) warns that effective collaboration and highly motivated participants are key to the success of PLCs. It is important to note that PLCs are a powerful way to change teacher practice and they embody many of the characteristics identified by Darling-Hammond, Hyler and Gardner. For example, PLCs support collaboration in job-embedded contexts, opportunities for feedback and reflection, and they are often of sustained duration.

Another model, The Collaborative Apprenticeship (Glazer, Hannafin & Song, 2015), was designed to support teacher learning while they are on the job. Collaborative apprenticeships feature interactions between peer-teachers and teacher-leaders (Glazer, Hannafin & Song, 2015). Novice teachers gradually evolve from the role of peer-teachers into teacher-leaders through their apprenticeship. Collaborative apprenticeships provide an authentic alternative to traditional technology integration workshops or pull-out professional development programs. These apprenticeships give teachers opportunities to learn from more experienced professionals within a cohort of their peers. Successful implementation of the model in a K-5 school setting involves: (a) shared time; (b) teacher commitment; (c) teacher experience; (d) structure; and (e) teacher learning and development (Glazer, Hannafin & Song, 2015). Glazer, Hannafin and Song argue that teachers often need additional motivation to participate in collaborative apprenticeship because of the increased time and effort. The Collaborative Apprenticeship also embodies the characteristics of effective PD as identified by Darling-Hammond, Hyler and Gardner, such as

being job-embedded and collaborative. As a result of these studies and perspectives, this study will be based on these five design principles:

1. It is collaborative (Darling-Hammond, Hyler & Gardner, 2017; DuFour, DuFour, Eaker & Many, 2010; Glazer, Hannafin & Song, 2015)
2. Provides a relevant, compelling rationale that motivates teachers (Knowles, Holton & Swanson, 2012; Hudson, et al., 2013)
3. It is contextualized and job-embedded (Knowles, Holton & Swanson, 2012; Darling-Hammond, Hyler & Gardner, 2017; DuFour, DuFour, Eaker & Many, 2010; Glazer, Hannafin & Song, 2015)
4. Capitalizes on teacher knowledge and experience (Knowles, Holton & Swanson, 2012)
5. Includes coaching (Darling-Hammond, Hyler & Gardner, 2017; Glazer, Hannafin & Song, 2015; Psiropoulus, et al., 2016)

2.4 Relationship of the Current Study to Design Principles

The collaborative design principle will be implemented by placing a teacher in a coaching scenario with the researcher as the facilitator. The participant will be informed that the strategies they will learn will help them become a more effective teacher and will result in higher levels of student engagement. Higher levels of student engagement typically correspond to fewer behavioral problems in the classroom (Flower, 2014), and research shows behavioral problems are faced by 99 percent of teachers (Scholastic and The Bill & Melinda Gates Foundation, 2013). These reasons should be relevant and provide compelling rationale that is motivating for teachers. This PD experience will be contextualized to their specific grade level and content area

and will directly impact the teacher's ability to deliver a compelling lesson that will occur shortly after the PD sessions conclude, making it job embedded.

To capitalize on teacher knowledge and experience, the first PD session will involve asking the participant to share her current understanding of student engagement and strategies they use to promote student engagement. These practices, whether related to technology use or traditional classroom pedagogical strategies, will be made visible and open to inspection by the group so we can establish a foundation for growth. As the lead facilitator, I will serve as a coach and continue to offer suggestions and strategies for specific utilization of iPads and specific applications.

2.5 Perspectives on Student Engagement

What is engagement? There are two ways of framing engagement. The first way focuses on the student experience. For example, The Great Schools Partnership, a nationally-recognized network of cognitive leaders seeking sustainable educational reform in New England, has defined student engagement as "the degree of attention, curiosity, interest, optimism and passion that students show when they are learning or being taught, which extends to the level of motivation they have to learn and progress in their education" (The Great Schools Partnership, 2016). The Great Schools Partnership lists six perspectives on student engagement: intellectual, emotional, behavioral, physical, social and cultural. The problem with The Great Schools Partnership definition of engagement is that it is hard to measure in an empirical study. Another example of a student-focused perspective on engagement is Haydon, et al. (2012), who defined engagement as "students working on academic tasks as demonstrated through writing, raising his or her hand, choral responding, reading aloud, talking to the teacher or peers about the assignment and placing

and/or scrolling finger(s) on the iPad" (p. 235). Haydon, et al.'s operational definition is closer to what we might typically think of as being "on-task" and can be easily measured. This definition is too focused on compliance and student behavior and missed the emotional component of engagement, but the former definition is hard to operationalize within an empirical study.

The second way of framing engagement is based on the pedagogical strategies that educators use to promote student engagement. Engagement Theory (Kearsley & Shneiderman, 1998) suggests that there are three primary strategies that educators can use to promote student engagement. These strategies are collaboration, creative project-based tasks and worthwhile goals that extend beyond the classroom. The Marzano Center has developed a teacher observation protocol (Marzano, Carbaugh, Rutherford & Toth, 2014) that lists a set of strategies to increase student engagement for educators. These strategies include:

- Noticing when students are not engaged
- Using academic games
- Managing response rates
- Using physical movement
- Maintaining a lively pace
- Demonstrating intensity and enthusiasm
- Using friendly controversy
- Providing opportunities for students to talk about themselves
- Presenting unusual or intriguing information

Both the Engagement Theory and the Marzano approaches are easy to measure, but they do not relate to the use of iPads in this study. As a result, this study will use a modified version of Marzano's teacher observation protocol that is adapted to the use of iPads and the critical role of student choice in promoting student engagement (Hutchison, Beschorner & Schmidt-Crawford, 2012) and (Flower, 2014).

2.6 Influence of iPad Use on Engagement

Mango (2015) argued that student engagement with technology in the classroom takes many forms, including behavioral, cognitive and emotional. Mango argued that active learning is closely related to student engagement. When students use iPads in the classroom, they feel empowered because they are personalizing their learning (2015). Furthermore, students are excited about using digital resources when they are substituted for textbooks (Hutchison, Beschorner & Schmidt-Crawford, 2012). Digital tools increase opportunity for students to have a choice in the delivery method of their instruction and increase the level of interactivity that is possible with a technological device.

Raths (2014) interviewed teachers and principals in multiple school districts across the United States to determine the effect that technology integration was having in their schools. In every interview that Raths conducted, he found a similar result. Technology, while changing how teachers instruct, increased the collaboration and engagement of the students. As the usage of iPads in the classroom increases, students become more engaged with their individual learning (Burden, 2012). Levels of engagement and on-task behavior increase as students find new ways to connect with their own learning.

In the area of mathematics, research by Haydon, et al., (2012) found that substituting worksheets for iPads led students to be more engaged. Not only was engagement increased by nearly 31 percent, but students were also able to complete many more answers correctly. iPads and other digital technologies are engaging because they provide immediate feedback to users. If a user answers a question incorrectly, the question can be presented again, providing an opportunity for additional practice. If a user answers a question correctly, the application

immediately informs the user that the response was correct, and this leads to increased confidence and reinforcement of learning (2012).

Two different case studies of teachers suggest that iPad usage in the classroom may lead to shifts in student engagement. Hargis, et al., (2013) found that in a post-secondary setting, iPad usage led to increased student engagement and that students became self-empowered. Similarly, Mango (2015) observed that students who used iPads experienced increased confidence as a result of increased ownership over their learning. As a result, teachers assumed the role of facilitators allowing students to drive their own learning.

2.7 Engagement of Students with Disabilities

Engagement of students with disabilities may be increased through the use of instructional technology, such as an iPad. Given the high proportion of students who receive special education services at Duquesne Elementary School (26%), it is important to understand how iPad use may impact their engagement. O'Malley, Lewis and Stone (2013) examined the integration of iPads into a classroom of students with autism, increasing their ability to differentiate individual lessons, serving as an effective tool for students with severe to moderate disabilities and helping to decrease classroom disturbances. For students with disabilities, the use of iPads was shown to "enhance academics, maximize independence and prepare them for post-secondary education or employment" (p. 94). Similarly, Flower (2014) performed research at a residential treatment facility in suburban central Texas with three students who had severe behavior and educational needs. There were increased on-task behaviors for students who were given a choice about how to use the iPad for the assignment versus students who were told to complete the assignment in a

particular way. This finding is a powerful argument for the critical role of student choice that iPads provide.

2.8 Qualifications about the Timescale of Changes in Teacher Practice

Ferguson (2016) argues that student engagement with iPads cannot be accomplished in a short time, but, rather, a "consistent adjustment" is required. It may take several years for a teacher to learn how to most effectively increase student engagement. This study will last one month and is only a first step towards changing teacher practice. This will lay a foundation for future success and serve as a model for others.

2.9 Summary

Through this literature review, I have established that teachers differ in their confidence and rate of technology adoption (Herold, 2014) and that professional development is required (Hargis, et al., 2013) to boost teacher confidence and increase integration of iPads into the classroom. Andragogy theory (Knowles, Holton & Swanson, 2012) and research by Darling-Hammond, et al. ,(Darling-Hammond, Hyler & Gardner, 2017) provides guidance about how to design effective professional development for adults. Five design principles that are based on this literature provide the basis of the structure of the PD that will be provided to a teacher from the Duquesne Elementary School. Two models, TPCK (Koehler, Mishra, & Yahya, 2007) and SAMR (Psiropoulus, et al., 2016), provide conceptual frameworks that guide the content of PD that will

be employed in this study and that will be explained in Chapter 3. This study defines student engagement in terms of teacher strategies for promoting student engagement based on a modified version of Marzano's Observation Protocol (Marzano, Carbaugh, Rutherford & Toth, 2014).

Finally, a review of the research shows that a tangible outcome of increased, purposeful use of technology in the classroom will be increased student engagement (Hargis, et al., 2013; Raths, 2014; Haydon, et al., 2012; Hutchison, Beschorner & Schmidt-Crawford, 2012; and Flower, 2014).

3.0 Methodology

This study will use qualitative research methods, including lesson plan analyses, interviews and classroom observations. The intent of these methods is to identify the results that coaching for iPad utilization by the teacher will have on student engagement in ELA and math class.

3.1 Participants

The participant in this study is a fifth grade teacher at Duquesne Elementary School. This teacher instructs within a departmentalized classroom for ELA. This teacher received a teacher iPad in 2016.

3.2 Ethical Considerations

The teacher will be asked to volunteer to participate in the study and will not be evaluated based on their performance in the study (see Appendix A: Participant Consent). The principal investigator has completed human subjects training through the Collaborative Institutional Training Institute (CITI) in 2015, and this study has been approved as exempt by the University of Pittsburgh Institutional Review Board (IRB) (see Appendix B: IRB Approval).

3.3 Operational Definition of Student Engagement

The goal of this study is to increase the level of student engagement within each classroom through enhanced pedagogical practices. The Marzano Center has developed a teacher observation protocol (Marzano, Carbaugh, Rutherford & Toth, 2014) that lists a set of strategies to increase student engagement. These strategies are easy to measure, but they focus on general engagement, not specific to the use of iPads in this study. As a result, a modified version of Marzano's teacher observation protocol that is adapted to the use of iPads and the critical role of student choice in promoting student engagement (Hutchison, Beschorner & Schmidt-Crawford, 2012) and (Flower, 2014). See Table 1 for a full justification of the modifications that were made to the original list of strategies.

Table 1. Justification for Modified Engagement Strategies

Original Strategies from Marzano, Carbaugh, Rutherford & Toth, 2014	Engagement Strategies Used in this Study	Justification for modifications
Noticing when students are not engaged.	Noticing when students are not engaged	
Using academic games	Using re-engagement strategies	The way Marazano talks about academic games is in terms of re-engagement and this is more general for the teachers in this study.
Managing response rates	Not applicable	This description from Marzano overlaps with noticing when students are not engaged.
Using physical movement	Using physical movement or brain breaks	

Maintaining a lively pace	Maintaining a lively pace	
Demonstrating intensity and enthusiasm	Demonstrating intensity and enthusiasm	
Using friendly controversy	Not applicable	This seemed to be least relevant to the observation.
Providing opportunities for students to talk about themselves	Making material relevant	The way Marazano described this strategy was in terms of helping students see the relevance of material to their lives and this is a more relevant term for the teachers in this study.
Presenting unusual or intriguing information	Not applicable	This seemed to be least relevant to the observation.
Student choice	Providing more opportunities for student choice	Research has shown that this is a critical component of what makes technology engaging (Flowers, 2014).

3.4 Dependent Measures

To assess the impact of the coaching intervention on teacher practices, I collected data from three sources and looked for clear and obvious patterns emerging from data sources. The three sources of data are: interview responses, observation notes, and submitted lesson plans. See Table 2 for an overview of my research questions and how they relate to the design of the study and the evidence I collected.

Table 2. Research Questions, Methods, and Evidence

Inquiry Questions	Methods	Evidence Process
How do teachers think about technology with respect to how children are engaged in learning?	I conducted a pre-treatment and post-treatment interview of a participating staff member. Interviews and lesson plan inspection will occur before and after the PD.	From learning about factors that influence student engagement and how to integrate technology into the lesson, the participant will modify the lesson design to meet the needs of the students.
How have the teacher's ideas about technology changed through the professional development?	I conducted a pre-treatment and post-treatment interview of a participating staff member. Classroom observations will be performed to check for engagement.	Changes in teacher understanding of engagement and role of technology; The participant talked about how she benefited from the professional development.
How does close attention to teacher understanding of engagement and pedagogy, comfort with technology, and the use of technology integration for engagement lead to critical coaching decisions?	I conducted a pre-treatment and post-treatment interview of a participating staff member. Classroom observations will be performed to check for engagement.	After the coaching sessions, the participant will have experimented with technology integration in a safe environment and will be able to transfer those skills to improve lesson design.

3.4.1 Interview Responses

I conducted structured interviews of a teacher about her approach to using technology for teaching a self-selected lesson (Kenny, J., Banjeree, P., & Newcombe, E. 2010). The pre-

treatment interview (see Appendix C: Pre-treatment Interview Questions) and post-treatment interview (see Appendix D: Post-Treatment Interview Questions) were tape-recorded and verbatim transcription was conducted.

3.4.2 Observation Notes

I observed the teacher twice to document student engagement. The pre-treatment observation occurred after the initial interview and before any coaching began (Haydon, et al., 2012). The post-treatment observation occurred immediately following the coaching and before the post-treatment interview. An observation tool (see Appendix G: Observation Tool) was used to capture notes during observations.

3.4.3 Submitted Lesson Plans

Lesson plans are typically developed by individual teachers with input from grade-level special education teachers based on the approved curriculum for the Duquesne City School District. In this study, the teacher was guided to select an appropriate lesson plan for her redesign effort. An appropriate lesson in this context means the experience could be enhanced through the use of digital tools according to the SAMR model. For example, a lesson could involve students writing a personal reflection in their journals. This paper-and pencil journal activity could be substituted for an online blog. According to the SAMR model, this would be described as redefinition. I collected the initial version of the lesson plan during the Pre-Treatment interview and all revised lesson plans will need to be submitted and approved before implementation. Part of the goal of my dissertation is to improve how teachers will integrate technology into the

classroom. Lesson plans are an indicator of a teacher's understanding of how instructional strategies should be applied and a connection to technology integration is important.

3.5 Methods

This study was designed to investigate the impact of intensive PD sessions on teacher use of iPads and their thinking about how to use iPads in the classroom to support increased student engagement. The pre-treatment interview of the teacher occurred prior to the pre-Treatment classroom observations and the post-Treatment interview occurred after the post-Treatment classroom observation. The PD sessions were designed so there is ample time for the teacher to revise her target lesson plans (Psiropoulos, D.; Barr, S.; Eriksson, C.; Fletcher, S.; Hargis, J. & Cavanaugh, C.; 2016, January).

We met four times over a two-week period, in 90-minute sessions, allowing adequate time for job-embedded and on-the-spot coaching. The specific steps of the method are listed and described in Table 3.

Table 3. List and Description of the Steps of the Methods

Steps of the Methods	Description	Explanation
Pre-Treatment Interview (45 min)	Informed consent was obtained and pre-interview questions were asked (see Appendix C: Pre-Treatment Interview Questions); pre-treatment observations were scheduled.	The participant read and signed the consent form. The interview questions were asked of the participant (Flower, 2014).

Pre-Treatment Classroom Observation (20 min)	See Appendix K: Observation Form. A classroom form was developed to document student engagement strategies.	I used this form to record anecdotal notes of behavior that was observed. (Marzano, Carbaugh, Rutherford & Toth, 2014)
Coaching Session I (90 min)	Provide rationale for the PD; explain SAMR model; explain and present strategies for engagement (see Appendix J: Rubric for the 8 Teacher Strategies for Student Engagement); the teacher shared current practices in relation to the SAMR model; teachers select target lesson.	The participant needs to understand the importance of this study. The SAMR model was introduced and an explanation of the engagement strategies was given (Psiropoulus, et al., 2016).
Coaching Session II (60 - 90 min)	Teacher plans and research strategies for modifying their lesson, then begin revision.	The participant had an opportunity to collaborate with the researcher and modify her lessons for iPad usage. (Darling-Hammond, Hyler & Gardner, 2017).
Coaching Session III (60 - 90 min)	Coach feedback on modified lesson.	As the lead coach, I provided feedback and recommended improvements for iPad integration to support engagement (Darling-Hammond, Hyler & Gardner, 2017).
Coaching Session IV (60 - 90 min)	Final revisions to lesson plan and submission for approval.	The participant reviewed completed lesson plans before submission to the principal investigator.
Post-Treatment Classroom Observation (20 min)	See Appendix L: Observation Form. A classroom form was developed to look at student engagement strategies.	I used this form to record anecdotal notes of behavior that was observed (Marzano, Carbaugh, Rutherford & Toth, 2014).

Post-Treatment Interview (45 min)	See Appendix D: Post-Treatment Interview Questions.	I conducted a Post-Treatment interview with the participant to measure the growth of their personal philosophy of what student engagement is (Flower, 2014).

3.6 Analysis and Interpretation

The goal of the analysis and interpretation of the results of this study was to improve a teacher's ability to integrate technology for the purpose of increasing student engagement. Interview recordings were completed using an audio device recorder and an app called Clear Record. The transcriptions of the pre-treatment and the post-treatment interviews were coded to identify similar patterns and differences. Observation notes for the pre-treatment observation and the intended lesson observation were coded to identify similar patterns and differences. Anecdotal notes from the classroom observations were recorded on observation forms and patterns were identified. Teacher lesson plans were reviewed for specific evidence of technology integration and patterns were identified. The results from all three methods suggest how student engagement can be improved through the use of iPads in instruction.

4.0 Data and Findings

This is a study of one teacher's technology integration journey. This case study will characterize the state of one teacher's understanding and practice before and after coaching that was designed to help the teacher, Mrs. M (name redacted for privacy purposes), learn to use technology integration to increase student engagement. The research led to three major findings.

This chapter will summarize the results of the teacher's interviews, observations and coaching sessions. The examination of the results allows for discussion on the three inquiry questions:

1. How do teachers think about technology with respect to how children learn?
2. How have the teacher's ideas about technology changed through the professional development?
3. How does close attention to teacher understanding of engagement and pedagogy, comfort with technology, and the use of technology integration for engagement lead to critical coaching decisions?

The findings help to determine the impact that coaching had on the understanding of student engagement and how to use iPads for instruction in the classroom.

4.1 Data

The story of this case study is about the use of coaching to develop Mrs. M's understanding and practice of integrating technology to increase student engagement. More specifically, this case study will be explained by integrating data from:

- Application of the Modified Marzano Engagement Rubric to pre-treatment and post-treatment interview transcripts yielded Teacher Engagement Scores for several of the indicators based on selected questions (Appendix G);
- Application of the Modified Marzano Engagement Rubric to minute-by-minute summary observations of teachers and students yielded teacher engagement scores for each indicator at the pre-treatment (Appendix K) and post-treatment (Appendix L);
- Application of the Modified Marzano Engagement Rubric to the initial (Appendix O) and post-treatment, revised (Appendix P) lesson plans yielded a teacher engagement scores for each indicator for each lesson plan (Appendix Q);
- Application of the Modified Marzano Engagement Rubric to the coaching session reflections (Appendix Q);
- Application of the Modified Marzano Engagement Rubric to the participant reflections (Appendix P).

Table 4. Descriptions of the Content, Preparation, and Informativeness of Data Sources

DATA SOURCE	DATA PREPARATION	INFORMATIVE ABOUT
Interviews were recorded pre-treatment (see Appendix C for the questions) and post-treatment	Pre/post-interview audio was transcribed and placed in question/answer order (see Appendices E & F).	Inferences about teacher understanding of student engagement and technology integration were based on

(see Appendix D)		responses to selected questions from the pre- and post- interviews (see Appendix L).
Classroom observations were videotaped to generate minute-by-minute observation summaries with pre-treatment (Appendix G) and post-treatment (Appendix H) lessons	Pre/Post minute-by-minute observation summaries (Appendices G & H) were reorganized focusing on the teacher and student behaviors, actions, and verbalizations within each minute window (see Appendix I).	Inferences about teacher understanding and practice of engagement were based on the application of The Modified Marzano's Engagement Rubric (Appendix J) to the reorganized observation summaries (Appendix I) that yielded teacher engagement scores for each indicator for the pretreatment (Appendix K) and post-treatment (Appendix L).
Lesson Plans were obtained for the initial, pre-treatment (Appendix M) and post-treatment (Appendix N)	Application of the Modified Marzano Engagement Rubric to the initial and revised lesson plans to yield teacher engagement scores for each indicator on each lesson plan (Appendix P).	Inferences about teacher understanding and practice of engagement were based on the teacher engagement scores for the lesson plans (Appendix P).
Coaching Session Reflections - captured after each session	After each coaching session, the researcher documented his reflections (Appendix Q).	Inferences about teacher understanding of engagement and technology integration (Appendix R).
Teacher Reflections - captured after each session	After each coaching session, the participant documented her reflections (Appendix P).	Inferences about teacher understanding of engagement and technology integration (Appendix R).

Throughout this section we will focus on what each data source has to say about:

1. Teacher understanding of engagement and pedagogy
2. Teacher comfort with technology
3. Use of technology integration for engagement

4.1.1 Interviews

The researcher conducted one interview with Mrs. M (26 questions) before any treatment and conducted a second interview (13 questions) after the treatment and observations were completed. Interview audio was transcribed and placed in a question/answer format. In Appendices C and D, there were five color-coded question topics across both interviews. These question topics included:

1. Background information (pre only)
2. Understanding of engagement and pedagogy (pre and post)
3. Comfort with technology (pre and post)
4. Use of technology integration for engagement (pre and post)
5. About the coaching experience (post only)

For ease of navigation, I applied this color-coding scheme to the transcribed interviews (see Appendix E & F).

I applied the Modified Marzano Engagement Rubric to the pre-treatment and post-treatment interview transcripts to yield teacher engagement scores for several of the indicators based on selected questions (Appendix G).

The participant demonstrated growth in the indicators of noticing when students are not engaged and using re-engagement strategies. I was unable to make conclusions about growth on the other indicators from this because the post-treatment interview questions did not cover these indicators. As an oversight, these questions were not asked during the post-treatment interview.

4.1.2 Observation Notes

The researcher observed classroom lessons, one pre-treatment and one post-treatment. In Appendices H & I, minute-by-minute notes were generated to describe the actions with each minute window of the video. Appendix J presents the observations by each minute, from each observation. This data highlights the change in engagement from the pre-treatment lesson to the post-treatment lesson.

The researcher applied the Modified Marzano Engagement Rubric to the pre-treatment and post-treatment observations to yield teacher engagement scores for several of the indicators (Appendices L & M). Appendix L uses the Modified Marzano Engagement Rubric to summarize the pre-treatment observation, and Appendix M uses the Modified Marzano Engagement Rubric to summarize the post-treatment observation. By using the Modified Marzano Engagement Rubric, growth was shown in the categories of noticing when students are not engaged, maintaining a lively pace and presenting unusual or intriguing information.

4.1.3 Submitted Lesson Plans

The participant submitted her lesson plans for the pre-treatment lesson and the post-treatment lesson. Through coaching, the participant learned about SAMR, TPACK, and how to incorporate technology into her lesson plans.

The researcher applied the Modified Marzano Engagement Rubric to the initial and revised lesson plans to yield Teacher Engagement Scores for each indicator on each lesson plan (Appendix R). By using the Modified Marzano Engagement Rubric, growth was shown in the indicator of maintaining a lively pace.

4.1.4 Coaching Session Reflections

After each of the four coaching sessions, as well as after the post-treatment interview, the researcher recorded summaries of each session. The researcher applied the Modified Marzano Engagement Rubric to the coach's reflections (Appendix R) to yield teacher engagement scores for several of the indicators. The teacher exceeded expectations in the indicators by noticing when students are not engaged, using student engagement strategies and by presenting unusual or intriguing information.

4.1.5 Teacher Reflections

After each of the four coaching sessions, Mrs. M wrote a reflection about her perspective of the coaching experience, using a Google Form (Appendix Q) that was created by the researcher. On the Google Form (Appendix Q), the participant answered the following questions:

- What new knowledge did you gain from this coaching session?
- Do you feel that this session was valuable?
- What do you hope to gain from our next coaching session?

The researcher applied the Modified Marzano Engagement Rubric to Mrs. M's reflections (Appendix R) to yield Teacher Engagement Scores for several of the indicators. The teacher exceeded expectations in the indicators of noticing when students are not engaged, using-engagement strategies and presenting unusual or intriguing information.

4.2 Summary of Findings Before and After Treatment

4.2.1 Summary of Findings Before Coaching

4.2.1.1 Pre-Treatment Interview

Teacher Understanding of Student Engagement.

During the pre-treatment interview, I learned that Mrs. M's understanding of student engagement did not align with what is defined by Marzano, Carbaugh, Rutherford & Toth, (2014). She believed that students were engaged if they were having fun and they were receiving good grades on assessments. If students were spending more time on the assignment and less time on off-task conversation with their peers, then she believed that her students were engaged.

Teacher Understanding of Technology Integration

Mrs. M had used iPads in her class previously, but fell short of her expectations. Often, students used iPads to play games but all solutions were prepackaged, not a specific solution to her student's needs crafted by her. She really wanted the students to utilize the iPads as tools, but her limited experience and training left her with limited control over basic functions of the iPad. With her limited training, the participant did not feel she could help a colleague get started using iPads in their classroom.

4.2.1.2 Observations

At the beginning of the lesson, many students were out of their seats and not listening to the instructions of the teacher. Mrs. M attempted to re-engage the students by giving a command,

"eyes on me." As the lesson progressed, students were active in the classroom as they searched around the room for clues to a scavenger hunt. While most students worked on the assignment, one student slept on the floor. Mrs. M encouraged students to work hard and to stay on-task, but she lacked enthusiasm in her delivery and the students did not respond.

Based upon the Modified Marzano Engagement Rubric, she met the expectations in five of the categories: noticing when students are not engaged, using re-engagement strategies, maintaining a lively pace, relevance, and presenting unusual or intriguing information. The teacher exceeded expectations in the area of using physical movement or brain breaks and she failed to meet the expectation in the area of demonstrating intensity and enthusiasm.

4.2.1.3 Lesson Plans

The lesson plan that was submitted prior to the treatment lacked substantial evidence that the teacher used any re-engagement strategies when she noticed that students were not engaged. The only use of technology in this lesson was an introductory video on figurative language. The lesson plan format included the standards, eligible content, procedures and materials.

4.2.2 Summary of Findings After Coaching

4.2.2.1 Post-Treatment Interview

Teacher Understanding of Student Engagement and Pedagogy

In the post-treatment interview, Mrs. M now spoke of student engagement looking like completion of task and students staying focused on their work. She also commented that, when

students are engaged, she doesn't need a lot of redirecting. Students stay in their seats and, when they have a question, they raise their hand. She also noticed that students weren't sleeping or ignoring her lesson.

Teacher Understanding of Technology Integration and Teacher Comfort

Learning about SAMR and TPCK made a difference in the design of her lesson. Through coaching, Mrs. M learned how to create a Google Form and design her lesson using this tool. After practicing her lesson, before she taught it, she realized the benefit of iPads and preferred this method. Mrs. M noted that she found the coaching sessions to be "powerful" because she received consistent feedback during the sessions. She felt "supported" to try new things. As a result of the coaching, she indicated that she would be confident to help a colleague to use an iPad for instruction.

4.2.2.2 Observation

During the post-treatment observation, the beginning of the lesson started with all students in their seats, listening to the teacher and engaged with the teacher. Mrs. M moved around the room and used proximity with the students. The students stayed in their seats and did not deviate from the lesson or go to a different app on the iPad. As also observed in the pre-treatment observation, Mrs. M's voice was monotone and lacked enthusiasm in her delivery. The lesson that the students completed was on the iPad and they used a Google Form. Students also used the camera function of the iPad to scan QR codes that gave them additional clues.

Based upon Marzano's rubric, she met the expectations in three of the categories:using re-engagement strategies, using physical movement or brain breaks, and relevance. The participant exceeded expectations in three of the categories: noticing when students are not

engaged, maintaining a lively pace, and presenting unusual or intriguing information. She failed to meet expectations in the area of demonstrating intensity and enthusiasm.

4.2.2.3 Lesson Plans

The lesson plan that was submitted after coaching added little value to determining whether or not the lesson would help to increase student engagement in her class. The lesson did not address any re-engagement strategies or specifically address any of the eight indicators of student engagement based upon Marzano. Her lesson plan included the use of a learning management system (LMS), Schoology, where she linked the Google Form under the Classroom Procedures section.

4.3 Findings as They Relate to the Inquiry Questions

4.3.1 How have the teacher's ideas about technology and engagement changed through the professional development?

I prioritized the most meaningful changes that I observed in the teachers' thoughts, actions and classroom. The major findings are listed in the left-most column below in table 5.

Table 5. Major Findings and Supportive Evidence from Pre/Post Interviews with Potential Influences of Coaching

Major Finding	Evidence from Pre-Treatment	Evidence from Post-Treatment	Potential Influences of Coaching
Reduction of teacher fear and increase in	In the pre-treatment interview, the teacher	In the post-treatment interview, the teacher	During the coaching sessions, the teacher

confidence around using technology in the classroom.	indicated that she often felt uncomfortable using technology because she did not have enough time to prepare. She uses the iPads as a free time activity at times, as a toy. This is a challenge for me and for my peers.	indicated that she now feels more comfortable with using iPads in the classroom for her own lesson design. She is confident in helping peers design a lesson. She also indicated that it was easy to create a Google Form.	was exposed to SAMR and TPCK and was able to experiment and move beyond her comfort zone through the coaching relationship. In the coaching session, the participant experimented with developing Google Forms and was able to do this in a safe place.
Change in teacher approach to the design process from technology-driven to pedagogy-driven.	In the pre-treatment interview, the teacher indicated that she usually integrates technology through a canned technology lesson. She has limited experience in lesson design with technology	In the post-treatment interview, the teacher indicated that after learning about TPCK, she realizes that she should be choosing technology to match the design of her lesson and not design her lesson to meet the technology. She wants the students to value the iPad as a learning tool and not a toy. The teacher enjoyed creating the Google Form. Based upon the feedback from the coaching, the participant now had an understanding of SAMR and why device choice is important.	In the pre-treatment interview, it was discovered that the teacher was not familiar with Google Forms and this was an opportunity to coach her on this platform.
There was an evolution in the educator's understanding of engagement.	In the pre-treatment interview, the teacher indicated she knows that students are engaged because of the grades that they	In the post-treatment interview, the teacher indicated that she now has a different understanding of engagement that it is staying focused,	Through the coaching sessions, the teacher learned about Marzano's eight indicators that have an effect on student engagement.

	receive on their assignments.	completing tasks and participating.	
The nature and the level of student engagement changed dramatically.	In the pre-treatment observation, students worked in groups and off-task conversations happened. One student went to sleep. In the group lesson, students had the freedom to choose what they wanted to complete within their group which led to some students not doing any work. Multiple checks throughout the lesson showed 9/12 students being engaged.	In the post-treatment observation, 12/12 students remained at their desks and were actively engaged (working on the task at hand without off-task comments and behaviors) in the lesson that was developed on the iPad. Teacher did not have to redirect students. Because each student had their own iPad, 12/12 students were engaged.	Through the coaching sessions, the teacher learned about Marzano's eight indicators that have an effect on student engagement.

4.3.2 How Do Teachers Think about Student Learning and Engagement with Technology?

Mrs. M indicated during the pre-treatment interview that she believed that students would be excited about using technology because they are very comfortable using devices. During the post-treatment observation, it was clear that 12/12 students were comfortable using iPads in the classroom. This was evident in the engagement level of the students. Mrs. M indicated, in both the pre-treatment interview and during the post-treatment interview, that she believes that most students view iPads as gaming devices, but she wants her students to view them as learning tools.

4.3.3 How Does Close Attention to Teacher Understanding of Engagement and Pedagogy, Comfort with Technology, and The Use of Technology Integration for Engagement Lead to Critical Coaching Decisions?

Throughout this research, I realized that coaching decisions needed to be made based upon progress and feedback from the participant. The specific coaching changes that were made were:

1. Having the participant develop a Google Form
2. Change in pace of the conceptual coaching
3. Utilizing the release from responsibility model
4. Decision to show Modified Marzano Engagement Rubric to participant

4.3.3.1 Google Form

During the pre-treatment interview, the researcher learned that Mrs. M was not familiar with creating Google Forms. The participant commented, “I think sometimes technology can be intimidating, especially if you are not very familiar with how you can incorporate it." Most times, the technology that Mrs. M used in her classroom came from a pre-packaged program that required little teacher preparation. By learning and creating her own Google Form, the participant is able to adapt technology to her lesson.

4.3.3.2 Change in Pace

The original coaching plan was to include a discussion about SAMR, TPCK and student engagement, but the conversation and coaching experience around SAMR and TPCK occupied our allotted time. The student engagement coaching was moved to the second coaching session.

4.3.3.3 Gradual Release of Responsibility Model

As the researcher introduced Mrs. M to Google Forms, the researcher utilized the "I do, we do, you do" method for modeling this Google Form. During our coaching sessions, we watched a video about how to create a Google Form. After watching the video, the researcher created a sample Google Form to model the creation (I do) of the Google Form. Next, the researcher assisted Mrs. M (We do) as she developed an additional Google Form. And finally, the participant demonstrated her understanding (You do) of how to develop this digital tool.

4.3.3.4 Show Modified Marzano Engagement Rubric

Based on the answers that were given by Mrs. M in the pre-treatment interview, I decided to expose Mrs. M to the Modified Marzano Engagement Rubric. Her pre-treatment responses to knowing that students were engaged included:

- Having fun while learning
- Spending more time on-task rather than off-task
- Grades on assessments

Her post-treatment responses to knowing that students were engaged included:

- Staying focused on completing the task and participating
- Not having to constantly redirect off-task behaviors
- Students following classroom rules, like raising their hand when they had a question

The changes indicated growth in her understanding of engagement and pedagogy because she moved from having indirect indicator of engagement (grades on assessment) to having more direct indicators of engagement (i.e., fewer redirection strategies and students raising their hands when they have a question).

4.4 Summary

Table 6. Growth from Pre-treatment to Post-treatment as measured by the Modified Marzano Engagement Rubric

DATA SOURCE	APPENDIX	TEACHER ENGAGEMENT SCORE
Interviews	Appendix G	-5 (six questions were not asked on the post-treatment interview which did not allow for growth to be calculated)
Classroom Observations	Appendices L & M	+2
Lesson Plans	Appendix P	0
Coaching Session Reflections	Appendix S	+3
Teacher Reflections	Appendix S	+3

Data was collected from the five sources using the Modified Marzano Engagement Rubric. Growth is indicated in three of the data sources, including classroom observations, coaching session reflections and teacher reflections. The data collected from the lesson plans showed that the rubric score was the same from the pre-treatment to the post-treatment. The data collected from the pre-treatment interview to the post-treatment interview indicated that there was negative growth because interview questions were not designed for six of the indicators. This will be identified as an implication to this research study in Chapter 5.

5.0 Inspiration, Study Limitations, Implications, Recommendations

5.1 Inspiration

In the spring of 2013, I was monitoring in-school suspension (ISS) and I noticed that a SMARTBoard was being used to divide students from one another. I thought to myself, "There has to be a better way to use this interactive technology than to isolate students within the ISS classroom." As I searched the building, I was able to find a total of seven SMARTBoards, none of which were being used for their intended purpose. A few of the boards had permanent marker or pen marks on them that I used a Magic Eraser to clean off. I was unable to locate any software or connection cables, but the Allegheny Intermediate Unit (AIU) provided me with the support that I needed to experiment with this technology at Duquesne Elementary School. After downloading the software and connecting some cables, I was able to bring this technology to life.

After successfully demonstrating the capabilities of this interactive technology to my Superintendent, she supported the installation of the seven SMARTBoards, with high-definition (HD) projectors, into seven classrooms in the Duquesne Elementary School. This $7,000 project would be the first of many technology upgrades for our school. In the fall of 2014, every classroom at Duquesne was outfitted with an interactive whiteboard and an HD projector. We also purchased an iPad cart with 20 iPads that traveled between classes, mainly used as a gaming incentive.

In 2015, our school added 1:1 iPads for all teachers and added Apple TV's to the HD projectors in each classroom so that the teacher could move freely around the room and have the ability to stay connected to the classroom projector. For the 2016-17 school year, Duquesne invested in MacBooks for all of the teachers and 120 iPads were purchased, enough for five in

each classroom. iPads were mostly used to support eSpark, a curricular program for English language arts and math that individualized remediation for each student through the use of apps on the iPad. Noticeable gains were made by students within the eSpark program, but building administration noticed there were limitations with only having five devices per classroom. In the summer of 2017, an additional 250 iPads were ordered so all students could have their own device to use throughout the school day. The technological landscape of Duquesne Elementary School has grown considerably since that spring day in 2013.

5.2 Study Implications

Through this single case study, I determined that effective professional development must:

- Be content focused
- Be active and utilize adult learning theory (i.e., andragogy)
- Support collaboration in job-embedded contexts
- Use models and modeling of effective practice
- Provide coaching and expert support
- Offer opportunities for feedback and reflection
- Be of a sustained duration

This study relied upon the research of Darling-Hammond, Hyler & Gardner (2017. The coaching model replicated the elements listed above. I found that there was value in a study where multiple coaching sessions occurred as this wasn't a "one and done" professional development activity. This was sustained coaching where modeling from the coach happened and the

participant was able to experiment with technology in a safe place. Both the participant and the researcher reflected after each session to adjust the coaching for the following session.

The coaching was centered around a standards-based ELA lesson for fifth grade students. The participant learned about SAMR and, through modeling and coaching, she delivered a technology-rich lesson to her students. Through feedback, reflection, and experimentation, the participant integrated new knowledge into her lesson, resulting in an impact on student engagement from a lesson using iPads.

Interviews, observations and reflections informed the researcher regarding teacher understanding and practice. Interviews, observations, and reflections yielded results when measured by the Modified Marzano Engagement Rubric. These three methods of understanding teaching preparation and practice allowed the researcher to gain an understanding of whether or not this type of coaching was effective. The data displayed in table 6 identifies the effect that coaching produces.

5.3 Limitations

Both the researcher and the participant knew their roles within this research study. Because the participant knew her role, she is more likely to apply the coaching to her practice because she knew the purpose of the research study. The researcher attempted to stay as objective as possible and stay close to the data recorded through the Modified Marzano Engagement Rubric; However, the data could be skewed because the researcher wanted to make a positive claim about his theory.

5.4 Recommendations

This study has resulted in several recommendations for future research. Interviews should occur before the post-treatment lessons as well as after the post-treatment. By adding an additional interview, researchers will be better able to determine the immediate impact of the coaching on the teacher's development. The teacher may be better able to talk through the knowledge that she gained from the coaching sessions, then apply this knowledge to the lesson, and, finally, discuss it again during the final interview.

Coaching could be successful with a group of staff members. The original design of this research study included four teachers, working together as a cohort. A group of teachers would have the opportunity to plan together and learn from each other, as opposed to just the researcher and subject. This approach could have developed leadership qualities in a group of teachers. I believe that this approach to professional development may work well with a group of teachers being led by a teacher. Regardless, this study was limited to working with a single participant.

Building capacity within our teaching staff is crucial to their impact as educators on student learning. Teachers must have the opportunity to gain new knowledge, apply their new knowledge to their practice, reflect on their experiences and share this experience with others. Professional development for teachers will benefit from this coaching model. This model of coaching can be scaled to the entire faculty with just a few lead teachers. Lead teachers can work with small groups of teachers and, through this collaborative work, teachers may increase their skills.

5.5 Summary

Technology is a powerful tool that can have an effect on student engagement. School districts are aware of the benefits and power of technology to differentiate instruction and meet the needs of different styles of learners . Technology is also a huge investment for school districts. As a result, it is necessary for educators to receive professional development in the use and deployment of technology, incorporating it into their teaching so as to impact teaching and learning. School districts must realize that new technology is being released continuously, so current professional development is essential. Professional development needs to occur on a continuing basis so that teachers have an up-to-date skill set. Ongoing professional development, not just a "one-and-done" training, is required.

This study allowed the researcher to gain an understanding of the participant's current skill set through interviews, observations and reflections. These methods allowed the coach to understand the learning gaps of the participant with respect to understanding how to incorporate technology for the benefit of increasing student engagement. Understanding these gaps allowed the coach to provide prescriptive coaching to benefit learners. By developing and delivering an interactive lesson in her classroom with the use of iPads, Mrs. M was able to increase student engagement significantly, based upon the Modified Marzano Engagement Rubric.

This study shows that through coaching on the use of technology, a teacher's ability to engage students in the classrooms can be developed. By increasing student engagement, we increase the opportunity for students to learn.

It is important for educators to be reflective about their practice. The feedback that was gained from the teacher's reflections drove the coaching sessions. Supervisors need to provide opportunities for teachers to reflect upon their practice.

School and district leaders need to pay mindful attention to professional development programing. Oftentimes, there are many mandatory trainings and programs that need to be covered each year, consuming all available P.D. time and leaving little time for innovation. The research from Darling-Hammond, Hyler & Gardner (2017) indicates that for adults to experience effective professional development, P.D. needs to be sustained in duration and provide opportunities to be reflective. Leaders need to pay greater attention to their design of professional development because time for professional development is limited by contractual obligations, cost and competing priorities.

5.6 Impact

The major outcome achieved by this study was that the teacher, Mrs. M, has changed her instruction routine to incorporate technology into her practice. This teacher's newfound knowledge and attitude towards incorporating technology has reduced her fear of using iPads in the classroom. Before the treatment, Mrs. M was "intimidated at times by technology" because she was unfamiliar with how to effectively use iPads into her lessons. During the post-treatment interview, Mrs. M replied that now she "is comfortable using iPads in the classroom and is confident that she could assist her peers as well."

As a result of this improved confidence, Mrs. M has become a teacher leader at Duquesne Elementary School and is sought after by other staff members when they have technology questions. She has volunteered to accept a teaching assignment in the most challenging classroom at the school. She is confident that she will make a difference, using her new engagement strategies. Mrs. M is seeking external professional development opportunities and is looking for

ways to help other staff members in the building. She has now begun to share some of her success stories through social media and is planning to volunteer her services to help others, not only at Duquesne Elementary School, but in other schools as well.

This research has been impactful to me in two ways. As a coach, my research shows that through supportive coaching and the use of iPads in the classroom, teachers can increase student engagement. As a supervisor and someone who is in charge of creating the professional development schedule for a district, I learned through practice and experience that professional development is not just a "one and done" thing. It is a process. A process that requires careful planning, preparation and follow-though to be effective.

Appendix A : Consent to Participate in a Research Study University of Pittsburgh

APPENDIX F

Consent to Participate in a Research Study
University of Pittsburgh

Title of Study: INCREASING STUDENT ENGAGEMENT USING IPADS

Principle Investigator: Stanley B. Whiteman III

Introduction

You are being asked to be in a research study about increasing student engagement using iPads.

You were selected as a possible participant because you teach in a school in which teachers and students both have 1:1 iPads.

We ask that you read this form and ask any questions that you may have before agreeing to be in the study.

Purpose of Study

The purpose of the study is to answer these questions:

1. How do teachers benefit from a professional development focused on incorporating iPads to engage students?
2. What are the challenges that teachers face as they learn to utilize iPads as instructional tools in the classroom?

Ultimately, this research will be included in my dissertation.

Description of the Study Procedures

If you agree to be in this study, you will be asked to do the following things: meet individually and as a group with the researcher, provide lesson plans,

Risks/Discomforts of Being in this Study

The risk is that someone could perceive that they may be evaluated unfairly through this study. It has been explained to the participants that their participation in this research will not have an affect on their teacher evaluation.

Benefits of Being in the Study

There are no expected benefits.

Confidentiality

This study is anonymous. We will not be collecting or retaining any information about your identity.

Payments

The subjects of this study will not be paid.

Right to Refuse or Withdraw

The decision to participate in this study is entirely up to you. You may refuse to take part in the study at anytime without affecting your relationship with the investigators of this study or The University of Pittsburgh. Your decision will not result in any loss or benefits to which you are otherwise entitled. You have the right not to answer any single question, as well as to withdraw completely from the interview at any point during the process; additionally, you have the right to request that the interviewer not use any of your interview material.

Right to Ask Questions

You have the right to ask questions about this research study and to have those questions answered by me before, during or after the research. If you have any further questions about the study, at anytime feel free to contact me, Stanley B. Whiteman III at sbw23@pitt.edu or by telephone at 412-969-3038. You can reach Dr. Longo at longoj@pitt.edu or 412-648-1937. If you have any questions about your rights as a research subject or wish to talk to someone other the research team, please call the University of Pittsburgh Human Subjects Protection Advocate toll-free at 866-212-2668.

Consent

Your signature below indicates that you have decided to volunteer as a research participant for this study, and that you have read and understood the information provided above. You will be given a signed and dated copy of this form to keep, along with any other printed materials deemed necessary by the study investigators.

Subjects Name: Bianca McLellan

Signature: McLellan Date: 6/1/18

Principal Investigator: Stanley B Whiteman III Date: 6/1/18

Appendix B : IRB Approval

University of Pittsburgh
Institutional Review Board

3500 Fifth Avenue
Suite 106
Pittsburgh, PA 15213
(412) 383-1480
(412) 383-1508 (fax)

MEMORANDUM

TO: Stan B. Whiteman III

FROM: Human Research Protection Office (HRPO

DATE: December 14, 2017

SUBJECT: IRB# 1712002: Applied Inquiry Plan

The above-referenced project has been reviewed by the Institutional Review Board. Based on the information provided, this project has been characterized as being an activity that does not meet the formal definition of research, according to the federal regulations at 45 CFR 46.102(d)

That is, the proposed activity is not a systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalizable knowledge. Should the scope of this project change such that the definition of research is subsequently met, the investigator must notify the IRB immediately.

Given this determination, you may now begin your project.

Appendix C : Pre-Treatment Interview Questions

Background Information

- How long have you been teaching and has all of that time been spent in the Duquesne City School District?
- What do you currently teach - is it your favorite?
- Do you feel that technology changes the way that students learn? Please explain.
- What is their comfort level?

Understanding of Teaching Strategies for Engagement

- How do you define student engagement?
- How do you know when students are engaged?
- If a student is not engaged, what strategies do you use to engage them?
- What are some things that you do to differentiate your lessons to meet the needs of all of your learners? Please explain how you do this.
- How do you incorporate formative assessment into your daily lessons?
- How did you use flexibility in your lesson to help a student who was struggling?
- How do you make learning relevant for your students?
- How do you allow for student choice within your classroom?
- How do you maintain a lively pace to your lessons?
- How do you demonstrate enthusiasm in your teaching?
- Do you use physical movement or brain breaks? When?
- How do you present unusual or intriguing information?

Comfort with Technology

- How comfortable are you using your smartphone? Please explain.
- How often do you use a computer or smartphone?
- What do you use your smartphone for?
- How comfortable are you helping a colleague to utilize an iPad for instruction? Please explain.
- How comfortable are you with using the functions of an iPad? Please explain.
- What challenges does our school face when attempting to use technology?
- Do you feel that you have had enough training to use an iPad on a consistent basis within your classroom? Where the previous iPad trainings effective and why?
- How do you feel about the level of technology support and PD that you have received?

Use of Technology Integration for Engagement

- In what ways do you use technology to engage students?
- Tell me about a lesson in which you used technology and your student engagement increased. Can you tell me about a time when you used technology in a class and things didn't go well? What happened?

Appendix D : Post-Treatment Interview Questions

Understanding of Teaching Strategies for Engagement

- How do you define student engagement?
- How do you know when students are engaged?
- If a student is not engaged, what strategies would you use to engage them?
- What are some things that you do to differentiate your lessons to meet the needs of all of your learners? Please explain how you do this.
- How did you use flexibility in your lesson to help a student who was struggling?

Comfort with Technology

- How comfortable are you helping a colleague to utilize an iPad for instruction? Please explain.
- How comfortable are you with using the functions of an iPad? Please explain.

Use of Technology Integration for Engagement

- In what ways did you use technology to engage students?
- **What obstacles did you face bringing technology into your classroom? How did you overcome these obstacles?**

About the Coaching Experience

- **What did you learn from this research study?**
- **What aspects of coaching were most beneficial and why?**
- **What aspects of the coaching would you change and why?**

Appendix E : Pre-Treatment Interview

Q1. Okay. Today is May 18th, at 3:40 p.m. We are going to begin our interview, so I just want to say thank you very much for participating to be in this study and answer my interview questions.

A1. You're welcome.

Q2. So question one, how long have you been teaching and has all of that time been spent in the Duquesne City School District?

A2. I have been teaching for about five years, and three of those years have been at Duquesne.

Q3. Okay. What do you currently teach?

A3. I teach fifth grade ELA.

Q4. And what is your favorite thing to teach?

A4. I like to teach various concepts related to ELA but utilizing novels. So I like to teach them how to identify main ideas, supporting details, characters, how the characters grow throughout the novel; that's basically my favorite part of teaching.

Q5. How do you define student engagement?

A5. How much fun they have while they still learn, and how much they actually spend in the activity that I create versus talking to their friends and trying to avoid completing an assignment.

Q6. Okay. As a follow—up, how do you know when students are engaged?

A6. Based on their grade on an assessment; that will tell me if they truly were focused on what they were learning or if they wasted precious instructional time on socializing.

Q7. Okay. So if a student is not engaged, what strategies do you use to re—engage them?

A7. I try to look at what could be a cause for that student not to be engaged, try to redirect the student. Sometimes I even go on and ask why aren't they very engaged in what they are doing and try to adjust the instruction, or whatever they are working on, based on their response and feedback.

Q8. Okay. How often do you use a computer or smartphone?

A8. Daily.

Q9. Daily, okay. So specifically your smartphone, how comfortable are you using your smartphone?

A9. I'm very comfortable.

Q10. Okay. What do you use your smartphone for?

A10. In the classroom to reward the students based on behaviors and following the expectations: personally, social media, browsing the Internet, texting, talking.

Q11. Okay. How comfortable are you using the functions of an iPad?

A11. Quite comfortable.

Q12. So talk to me about specific apps or functions on the iPad that you like to use.

A12. Currently I utilize the iPad more as a substitute for a computer in the sense that, oftentimes, in the classroom I try to incorporate the iPad in the way my students complete assignments. For writing we utilize Storybird. I also have a couple of sites that they can go and work on grammar skills, reading, they also use eSpark, Kandloo, to name a few.

Q13. Okay. What challenges does our school face when attempting to use technology?

A13. I think the students are very used to being consumers, and that is a problem because they don't know how to utilize more of a tool. Sometimes it is a little bit more of a free time, kind of, that's how it is viewed. I'm trying to teach them not to just be pure consumers, I want them to also be producers.

Q14. What do you think about the adults in our building, what challenges do they face?

A14. I think sometimes technology can be intimidating, especially if you are not very familiar to how you can incorporate it. I know at times it is challenging for me because I always try to think of "How could I utilize it to engage my students more and help them understand that it is a tool, not a toy," and that, for me, is a challenge. And I think, oftentimes, that's a challenge for a lot of my peers.

Q15. Okay. How do you feel about the level of technology support and professional development that you receive?

A15. I feel that I received a lot, and I think everything that I have received so far has been very helpful in showing me ways I could incorporate technology into instruction.

Q16. Do you feel that you have had enough training to use an iPad specifically on a consistent basis?

A16. I think I need to take more time on my own and kind of apply the things that were taught to me, because I feel there's a lot more I could do, it is just that I need kind of time to digest what I learn, and any time there's a lot of information given to me, it takes me a while to actually process and really think of how I'm going to include it. So, personally, I feel like I need more time to feel more confident in utilizing it.

Q17. Were the previous iPad trainings effective?

A17. Yes, but I think more effective was going through the Apple Teacher training, because it was more of my pace and I was able to actually do things step by step based on the instruction.

Q18. All right. What are some things that you do to differentiate your lessons to meet the needs of all of your learners?

A18. One of the tools that I use, if I have to include technology, I like eSpark because you can tailor it to the specific needs of the students. Some of the other apps that I have used, or websites, allowed me to do the same thing because they have to take a pretest and, based on that, that has kind of helped them with the level.

When it comes to not including technology, I try to include my students diversity in the sense that I always try to have a stronger student helping a student who struggles, because if I have a group of students that are struggling, basically readers are going to get lost in translation trying to read whatever the assignment is.

When we do task cards, that's kind of how my grouping was: I always have a stronger student with each group that usually, from what I can tell, take the leadership role in the group and the other kids really just work and get the help, like if they have any questions, they can always go to a peer before they come to me.

Q19. Okay. How do you incorporate formative assessment into your daily lessons?

A19. Sometimes I like to do a pretest before, just to see kind of where everybody is, because if I have a group that needs more time, that way I can work in smaller groups with them. So a lot of times I do that.

The other thing is just questioning and kind of trying to read my students. And at this point in time, I kind of know how each group is and their level of need.

So my first group is a group that will take longer to complete anything that I have on the schedule for the day, where my other two groups in the rotation are a lot faster at completing everything, so I always have to have more challenging stuff for them because they are just done so much faster than the first group.

Q20. How do you use flexibility in your lessons to help a student who is struggling?

A20. The way my lesson plans are designed with the small groups, that allows them for extra practice. I do a lot of reviews, so I utilize a lot of task cards because I —— the kids really like using them. Let's say if we are focusing on main idea, the text is a lot shorter than article, so they are able to pick up the information a lot faster.

At the teacher table, I also have a different set of task cards that I utilize with them that those seem to work really, really well for them. And, like I said, if I try to use the technology, I have to look at the data like through the IRIs, through the benchmarks, through the information that I gather from eSpark and kind of help them. If they struggle, for example, on eSpark I can adjust the level they can be on so give them more practice at a lower level and get them more confident before they move on to a harder level.

Q21. Okay. How comfortable are you helping a colleague to utilize an iPad for instruction?

A21. Pretty confident if anybody would just come and ask me.

Q22. Tell me what you would do.

A22. Depending on what the situation was, I usually try to show them what I use it for and how I utilize it, or just ask questions and see what their project is and how they were thinking about utilizing it, and I kind of try to collaborate and come up with a way of including the iPad in instruction.

Q23. In what ways do you use technology to engage students?

A23. As I said, we use it, a lot of times, for review, playing Kahoot. I use it for assessment via Kandloo because the tests are a little bit more challenging and then they are very similar to standardized testing.

I try to utilize it in where they would use QR codes to either go to a specific website and look for information or just, you know, escape room format where they would just gather information they need.

Q24. Okay. Tell me about a lesson in which you used technology and your student engagement increased.

A24. I conducted a small group lesson. I like to do a lot of small groups. We were doing reviews for the PSSA, and I had them working on eSpark and I had about five of them that were working on eSpark, the other ones were working with task cards and other tools, like read to self via using task cards and the others were on Storybird. They were waiting for the timer to go so they could get on the iPad, so that is a huge motivator for them, they want to be on the iPads. So that's one way.

Q25. Okay.

A25. I also did an escape room where they use QR codes, so each group had one iPad. And they really like using the QR codes. We are reading "Number the Stars" currently, and I have, actually, four options for them to do a little bit more research on the topic, and they are also QR code related, so they would scan the QR code and then they get taken to website and they can learn more about the author, more about Anne Frank, and holocaust museum and like the awards that some books receive.

Q26. Can you tell me about a time when you used technology in class and things didn't go well?

A26. Yes. I tried to do smart lesson, and on my end it worked perfectly and when the kids were on the iPads it did not look on their end the way it looked on my computer. And then another time we tried to do coding, and on my Mac it worked perfectly, and when they were on the iPads they could not utilize Scratch, so we had to stop and change and do other things.

Q27. Okay. When you are teaching, do you use physical movement or brain breaks?

A27. Not as much as I would like, because I feel that my students are a little bit older. The only time I do the brain breaks is when I do the rotation, so I try to keep the rotations not extremely long. But that's about the only time that we do that.

Q28. Okay. How do you maintain a lively pace through your lesson?

A28. I usually look at my students and try to pick up the social cues, like body language, and based on that sometimes we will just get up and move somewhere else, if it seems like there's dragging. I try to present information in a variety of ways to make sure that I reach all of my diverse learners. If it doesn't work —— because I teach the same subject —— I kind of tweak it for the next group so it is a little bit better. So usually, unfortunately, my first group is the group that is kind of my guinea pigs, and, you know, then they are okay.

Q29. How do you demonstrate enthusiasm in your teaching?

A29. I try to joke around with them. I am a very sarcastic person; they do get me at this point, so that's why I like to work with older kids because it works both ways.

I usually try to joke around if I see that there's a little bit of like tension; I try to break the tension. I move a lot. Like I said, I try to use songs and a couple of other things just to try to get them excited about it.

Q30. How do you make learning relevant for your students?

A30. For example, the novels that we read, I try to pick stories that make sense to them. We read "Wonder." We talked about bullying, tried to give them concrete examples, because when they read the novel, they get very upset about what happens in the story and they get angry because the character is bullied. In "Number the Stars," we were actually comparing the Nazis to a group of bullies, and one of my students actually made the connection between the numbers that were tattooed to the branding of slaves, which I thought was very, very interesting, because I was not expecting that from fifth grade, and, honestly, it was one student out of fifty—seven that made that connection.

Q31. So how do you present unusual or intriguing information to your students?

A31. We read a lot of articles, so I try to find current events that sometimes are not very easy to talk about and just have a lot of discussion about what the article is trying to convey, what that means for their life, how is that impacting them. So we do a lot of discussions based on what we read.

Q32. How do you allow for student choice within your classroom?

A32. I started, for the rotations, in small groups. They have a choice right now because we are towards the end of the year. Everything in my room, when it comes to grouping, is student choice, and I actually label that on my board. So usually they have four choices. Right now, because I'm trying to include technology a little bit more and teach them to be producers, we started coding. So they have a choice to go to Code.org, they have a choice between using Storybird for writing and eSpark or just plain reading. They do gravitate toward Storybird; they love to write because they have the pictures. So they have the illustration, they just have to come up with a story. And their stories are very interesting, and sometimes it is almost like you can tell how their mood is based on their story or what's going on in their life.

Q33. Do you feel that technology has changed the way students learn?

A33. I think it makes it more engaging for them. It is a little bit difficult to teach, because I was taught where you have the teacher in front of you kind of lecturing and then you had to like memorize a lot and then regurgitate the information. Now it is a little bit different because it depends on what they are working on and what they are using the technology for, they actually have to think and they have to come up with their own conclusion. I try not to give them all the information that I want to receive from them because I think it is more important for them to discover that information and find that information themselves.

So I view myself currently more as a facilitator than —— how should I put it —— than somebody who just gives them everything.

Q34. And my final question here is what do you think the students' comfort level is using technology?

A34. Some are very comfortable. Like I said, they are very technology savvy, but the problem is that I view them too much as consumers, not as much as seeing technology as a tool; they see technology as an entertainment. So I think that's a big, big problem for them. But they are, to some extent, more knowledgeable than I am, and I think they are always going to be more knowledgeable than I am because they were exposed to technology a lot younger than I was.

Q35. Okay. So as a follow—up to that: Talk to me about your personal experiences with technology, and when did you start using technology?

A35. Okay. So I did not have a cell phone until I was 23. I did not have a personal computer until around the same age. I had access to computers, but more by going to like a library or Internet cafe. My Godparents had computers; my family did not.

So I was a big consumer in the sense that we had the TV, we had the radio; that was like the big extent of my technology knowledge.

So I am pretty sure it was probably high school when I started using technology more. When I came into the states, that's when technology took off for me, because in college I had to take a lot of classes and everything was submitted electronically, and I am very paranoid, so I always had paper copies, too. So I used to like turn in paper copies as well as electronically because of that fear that they didn't get it, they didn't get my assignments.

Q36. That is all the questions that I have, and I thank you for your participation in the pre—intervention interview.

A36.You're welcome.

Appendix F : Post-Treatment Interview

Q1. Okay, thank you again for completing this research assignment with me. I have 12 post—intervention interview questions for you. We will go ahead and get started.

A1. Okay.

Q2. So how do you define "student engagement"?

A2. Staying focused, completing the task, participating.

Q3. How do you know when students are engaged?

A3. I don't have to do a lot of redirecting. I can tell them to move along through the assignment. If they have any questions, they will raise their hand and ask those questions, instead of just putting their heads down or getting out of their seats, or need to remind them what their expectations are.

Q4. You kind of answered what strategies you used to engage them. So in what ways do you use technology to engage students?

A4. For this particular lesson, I created a Google doc. It was a more of a one—on—one situation. I've utilized technology where they have to record an answer, but for this particular lesson, as I said, it was more of a one or one, they have to answer the questions and [log through?] with Google doc.

Q5. Why did you have them scan the QR codes?

A5. I just wanted them to make sure that the clue they found was the right clue, and it was more of a way for me to keep track of if anybody misread the previous clues and needed more help.

Q6. What are some things that you do to differentiate your lessons to meet the needs of all of your learners?

A6. The way I present information, I try to reach all of the learners in the classroom. I, for example, am a visual learner, so I always try to have colorful charts and such for visual learners. I read the information to them and, if they are more of an auditory learner, look at their IEPs, base it on that. With the group that we did lesson, I actually had no students with IEPs with that group, so it was a little bit different. And some of them still needed a little bit more scaffolding before they moved on.

Q7. You talked about presenting like colorful charts to your students.

A7. Mm—hmm.

Q8. Is that something that you print out or is that something that you project in your

classroom?

A8. It depends on the situation. I have made them myself or I project them or we do —— like in the past we have had the interactive journals where it is kind of a combination, I kind of show them what I want —— how I want them to put them, you know, in notebook, but then they have the freedom of making them more colorful or adapting them to how it would be easier for them to remember the information.

Q9. Okay. I know it is an important aspect of your lesson that students learn how to use the function of the camera of an iPad, but how comfortable are you with using different functions on the iPad?

A9. After this lesson, a lot more comfortable because I had to learn a little bit more about how to incorporate the iPads in my lesson.

Q10. Can you talk a little bit about maybe something specific on the iPad that you learned.

A10. For this specific lesson, or just in general?

Q11. In general.

A11. I have used the camera to create an iMovie, but I did not include that in a lesson with the students; we never got that far.

Q12. Okay.

A12. That was something that was a goal for the future, for me to have them to do some of the book report on, you know, using the iMovie or even creating like a short clip to get their peers to read that particular book.

Q13. What have you learned from this research study?

A13. That I can present a lesson in a variety of ways. It was interesting to listen to my students when I asked them about the two lessons: some preferred the iPad version, some liked the non—iPad version because they like to interact with their peers, I have also had a couple that told me that they felt the questions were a little bit more difficult than when it was on paper, even though the format was similar. But, overall, they liked it, they liked the technology lesson.

Q14. What aspects of coaching did you find were beneficial?

A14. Just getting the feedback on student engagement, learning about the [spg] Google doc, that was very helpful and very interesting, because I learned something new and I realized that there's other ways that I can introduce a lesson to my students. And, in my current position, I think that will be very helpful, especially when I have to teach one lesson to three different grade levels.

Q15. What aspect of coaching would you change?

A15. I don't think I would change anything.

Q16. What obstacles did you face bringing technology into your classroom? And that can be for the entire school year.

A16. In general —— not for this particular lesson —— the problem is with keeping them on task, because they want to use it as a fun tool and not as a learning tool; that was little bit challenging.

Q17. So you find that it is challenging sometimes students go out of their intended app or their intended lesson on the iPad?

A17. Yes.

Q18. Did you have any issues with Wi-Fi in your classroom?

A18. No, that was never an issue.

Maybe the fact that sometimes they didn't charge their iPads, but that was an instant fix because we had the charger, so that really wasn't a problem.

Q19. As a follow—up, how do you overcome the obstacle of students wandering off of their intend app?

A19. Probably having them appreciate the iPad as a tool and not necessarily as a toy. Maybe using it as a reward if their assignment is complete and if there is time while their peers finish, giving them that choice, "Okay, you can have five minutes on the iPad as a reward for finishing and doing a good job." Probably going over the expectations, again, with them.

Q20. Have you used tools like Apple Classroom to ——

A20. I have. Unfortunately, some of my students somehow fell off —— like I couldn't connect them at all; that was an issue.

They were able to figure out that, if they turned the iPads off, I would lose them, or they would go into airplane mode and then they could still play on the games but I could not see what they were doing. So that was a fun thing.

Q21. How did you use flexibility in your lesson to help a student who might be struggling?

A21. During the first lesson, because they had a little bit of a different approach because they each could have a job, I tried to match the job to their strength so they would stay engaged and feel confident enough.

With the second lesson, I think, because they had to work independently, it kind of kept everybody engaged, even the kids that struggle, you know, they were asking questions and they were still able to continue with the lesson.

Q22. And, finally, how comfortable are you helping a colleague to utilize an iPad for instruction?

A22. I'm very confident now.

Q23. Explain why.

A23. I feel that I know how to use it a lot better. Like I said, I liked using the Google Form and I think that was a pretty —— once I figured out how to use it, it was a pretty easy thing to do. I think practice makes perfect. So it allowed me to practice a little bit more utilizing it, so I'm pretty confident that I could help somebody.

Q24. Thank you for your time.

A24. You're welcome.

Appendix G : Application of Modified Marzano Engagement Rubric to Interview Questions

Indicator	Pre-Treatment Interview	Meets or Exceeds Expectations	Post-Treatment Interview	Meets or Exceeds Expectations
1. Noticing When Students are Not Engaged	#6	Does not meet expectations	#3	Meets expectations
2. Using re-engagement strategies	#7	Meets expectations	#4, #14	Exceeds expectations
3. Using Physical Movement or brain brakes	#27	Does not meet expectations	Not applicable	Not applicable
4. Maintaining a Lively Pace	#28	Meets expectations	Not applicable	Not applicable
5. Demonstrating Intensity and Enthusiasm	#29	Meets expectations	Not applicable	Not applicable
6. Relevance	#30	Meets expectations	Not applicable	Not applicable
7. Presenting Unusual or Intriguing Information	#31	Meets expectations	Not applicable	Not applicable
8. Student choice	#32	Exceeds expectations	Not applicable	Not applicable

Appendix H : Minute-by-Minute Summaries for Observation 1

Minute	Observation Summary
1	• Teacher asked students to have a seat • Students danced around • Casual conversation happened • Took role
2	• Teacher waited for students to get quiet • Teacher sat in her chair at the front of the room • Student groups were posted on the white board
3	• Four students came into the classroom from another class and sat in their seats • Teacher began to give instructions for assignment in a monotone voice • Teacher asked students for eyes on her, student put her head down
4	• Teacher distributed materials for group work, • Student turned around and talked to a classmate
5	• Teacher separated students into groups and began to walk around to the different groups to make sure that students began their lesson
6	• Students opened materials and began to read instructions to their teammates • Teacher announced for students to raise their hand if they had any questions • "Eyes on me before you get started"
7	• Teacher distributed additional materials to each group, had personal conversations with group one, • While the teacher had her back turned, a student in group 4 was laying on the floor not participating
8	• Off-task conversation was happening in group 2 when teacher was assisting other groups • Student had her hand raised for 40 seconds, teacher came to the their group and helped them with a clue
9	• Teacher prompted students to go back to the clue and discuss as a team • Teacher announced pacing (you should be on your 2nd clue) with students and how far they should be
10	• Teacher collected envelopes from students that contained previously used clues
11	• Teacher stayed with a specific group of students until another group called her
12	• Teacher read clues to the students to help clarify • Teacher asked clarifying questions • Student continued to lay down in group 4
13	• Students had off-task conversations in group 3 • Students began to get mobile in the classroom as they searched for clues
14	• Student in group 2 put her head down and went to sleep • Teacher encouraged her to wake up and participate

15	• Students in group 3 were arguing about the answer and began to ask loudly for the teacher as she assisted another group
16	• Teacher moved to the 4th group to answer questions
17	• Students in group 3 got up and ran around the room looking for clues
18	• Teacher moved to group 1 to answer a question • Students in group 3 were throwing their clues into the air to see how the paper floated
19	• Students argues about whose turn it was to answer the clue • Teacher was helping students in group 1
20	• Students in group 3 gave each other a high-five after they answered a question • Teacher praised them (good job!)

Appendix I : Minute-by-Minute Summaries for Observation 2

Minute	Notes
1	• Teacher told students to get out of their seats and get their iPads • Teacher told students that no hall passes will be issued • Go to your Schoology page and look at the Google Form
2	• All students stayed at their seats • Teacher gave instructions • Teacher had to answer the class phone quickly • Students sat at their seats quietly while the teacher was on the phone
3	• Teacher instructed students to read the prompt on the iPad silently • 12/12 students were on-task
4	• Teacher asked students if they had any questions • Teacher distributed QR codes for students to scan with their iPad
5	• Teacher circulated the classroom to answer questions from students • One students was confused on how to access the iPad camera • Students raise their hand when they completed a task so that they can move on
6	• Students worked individually and weren't permitted to ask other students for help
7	• Teacher continues to move around the room answering individual questions • A student got up and got a pencil from the front of the room
8	• One student got up and distributed paper for the rest of the class • Teacher responded to a student, "You know the answer, keep working"
9	• "Raise your hand if you are ready for the next QR code." • minimal class instruction, students followed the prompts on the iPad
10	• "Which one is compare and which one is contrast?", look at the instructions • 12/12 students were working on their iPad
11	• Students used paper and pencil as scratch paper when needed • Teacher noticed that a student was becoming idle and she asked if they were stuck

12	• Students continue to raise their hand when they need additional materials • Teacher moves from student to student answering questions and distributing QR codes
13	• "What is the question asking you?" teacher prompted student
14	• Student told the teacher that she did not feel well and she put her head down • Student got out of their seat and walked to the back of the classroom
15	• Student completed the assignment and read silently at her desk • Teacher reread a clue to the student
16	• Student sat quietly and raised her hand and waited for the teacher to respond
17	• Students began to complete the assignment and raised their hand to turn in their iPads
18	• Teacher instructed students to raise their hands if they were completed with the assignment
19	• 12/12 students stayed on the correct app • No off-task conversations
20	• Teacher instructed students to return their iPads to the storage location

Appendix J : Minute-by-Minute Summaries of Students and Teachers from Observation 1 and 2

Minute	Focus	Observation 1 (pre-treatment)	Observation 2 (post-treatment)
1	Teacher	• Asked students to have a seat and took role	• Instructed students to get their iPads and visit Schoology
1	Students	• Students participated in off-task conversations and danced in the room	• Students gathered their iPads from the charging station
2	Teacher	• Teacher waited for students to get quiet • Teacher sat in her chair at the front of the room and posted student groups on the whiteboard	• Teacher finished instructions and answered the phone
2	Students	• Students listened to instructions for the lesson • Students conversed with each other	• Students remained quietly in their seats and waited for teacher instructions
3	Teacher	• Teacher instructed in a mono-tone voice and asked for students to have “eyes on her”	• Teacher instructed students to read the prompt on Schoology
3	Students	• Four students entered the class late • 9/12 students listened to instructions, one student put her head down, two students spoke with each other	• 12/12 students were on-task on their iPad viewing the teacher’s Schoology page
4	Teacher	• Teacher distributed materials for the lesson	• Teacher distributed QR codes for students to scan
4	Students	• Two students continued to participate in off-task conversations	• Students worked on their iPads individually
5	Teacher	• Teacher separated students into their groups and began to circulate the classroom	• Teacher circulated the classroom to answer a student’s question • Assisted a student with iPad camera

5	Students	• Students opened their materials and began to read the prompts in the envelope	• Students worked on their iPads individually • One student his raised hand
6	Teacher	• Teacher gained the attention of the class by stating “eyes on me” and reminded them to raise their hands if they encountered difficulty	• Teacher circulated the classroom while students worked individually
6	Students	• Students continued to read materials • conversations between classmates	• Students worked on their iPads individually
7	Teacher	• Distributed additional materials • Met with group 1	• Teacher circulated the classroom while students worked individually
7	Students	• Student in group 4 layed on the ground and didn’t participate	• Students worked on their iPads individually • One student retrieved a pencil from the front of the classroom
8	Teacher	• Teacher met with group 3	• Teacher responded to an individual student
8	Students	• Off-task conversations happened in group 2 • Student raised her hand for 40 seconds to ask a question	• Students worked on their iPads individually • One student distributed scratch paper for the class
9	Teacher	• Teacher prompted students in group 2 to discuss as a team • Teacher announced pacing to the class	• Teacher reminded the class to raise their hand if they needed a new QR code
9	Students	• Students continued to work collaboratively	• Students worked on their iPads individually
10	Teacher	• Teacher collected envelopes from groups	• Teacher read a direction aloud for the class
10	Students	• 9/12 students continued to work collaboratively	• 12/12 students were working on their iPads
11	Teacher	• Teacher spoke with students in group 1	• Teacher re-engaged a student who was idle
11	Students	• Students continued to work collaboratively	• Students used scratch paper as needed
12	Teacher	• Teacher read clues to students • Teacher asked clarifying questions	• Teacher moved around the room distributing QR codes when needed

12	Students	• Student asked a question • Student in group 4 continued to lay down and sleep	• Students worked on their iPads individually • Students raised their hand when they needed a QR code
13	Teacher	• Addressed the sleeping student	• Teacher assisted a student who had a question
13	Students	• Off-task conversations in group 3 • Students began to walk around the room looking for clues	• Students worked on their iPads individually • Student had a question that was answered by the teacher
14	Teacher	• Teacher encouraged a student to wake up and participate	• Addressed a student who wasn't feeling well
14	Students	• Student in group 2 put her head down and went to sleep	• Students worked on their iPads individually • A student felt ill and put her head down
15	Teacher	• Teacher assisted a student who was searching for clues	• Teacher assisted a student with a question
15	Students	• Students in group 3 argued about an answer and spoke out for help	• Students worked on their iPads individually • One student finished a read silently at her desk
16	Teacher	• Teacher assisted group 4	• Teacher circulated the room • Teacher assisted a student with a question
16	Students	• Students were walking around the class looking for clues	• Students worked on their iPads individually • One student sat quietly with her hand raised
17	Teacher	• Teacher assisted group 4	• Teacher circulated the room
17	Students	• Groups 1, 2 and 4 continued group work while group 3 continued to look for clues	• 4 students completed their assignment
18	Teacher	• Teacher assisted group 1 with a question	• Teacher instructed students to raise their hand if they were completed
18	Students	• Students in group 3 were throwing their clues into the air to see how paper floated	• 3 students raised their hands when they completed the assignment
19	Teacher	• Teacher assisted group 1 with a question	• Teacher circulated the room
19	Students	• Students in group 2 were arguing about whose turn it was to answer the next clue	• 2 students raised their hands when they completed the assignment

20	Teacher	• Teacher assisted group 3 • Teacher praised them (Good job!)	• Teacher instructed students to return their iPads to the charging station
20	Students	• Students in group 3 gave each other a high-five after answering the final clue correctly	• All students completed the assignment and returned their devices

Appendix K : Modified Marzano Engagement Rubric

Indicator	Meets Expectations	Exceeds Expectations
1. Noticing When Students are Not Engaged	The teacher scans the classroom to monitor students' levels of engagement.	In addition to monitoring for student attention, the teacher monitors for cognitive engagement
2. Using re-engagement strategies	When students are not engaged, the teacher uses strategies such as games to re-engage them and focus their attention on academic content.	re-engagement strategies focus on important concepts, generalizations, and principles as opposed to lower-level information.
3. Using Physical Movement or brain brakes	The teacher uses strategies that require students to move physically, such as vote with your feet and physical reenactments of content.	Frequent movement is facilitated by students leaving their desks to gather information, confer with others, use specific types of technology, etc.
4. Maintaining a Lively Pace	The teacher slows and quickens the pace of instruction in such a way as to enhance engagement.	Students are provided with adequate time to gather information, confer with others, use specific types of technology, etc.
5. Demonstrating Intensity and Enthusiasm	The teacher uses verbal and nonverbal signals to show that demonstrate enthusiasm about the content.	The teacher demonstrates enthusiasm by sharing a deep level of content knowledge.
6. Relevance	The teacher uses techniques that allow students to relate content to their personal lives and interests.	Students are asked to relate the content and the use of specific skills to their daily lives.
7. Presenting Unusual or Intriguing Information	The teacher provides or encourages the identification of intriguing information about the content.	The unusual information focused on important content.

8. Student choice	Teacher establishes a foundation for students to choose applications to use to advance learning	Students must justify their application choice.

Adapted from Marzano, Carbaugh, Rutherford, & Toth, 2014.

Appendix L : Application of Modified Marzano Engagement Rubric to Pre-Treatment Observation Summaries

Indicator	Notes and Evidence	Meets or Exceeds Expectations
1. Noticing When Students are Not Engaged	• Teacher asked students multiple times to sit down • Student was attempting to sleep on the floor • Off task conversations	Meets expectation
2. Using re-engagement strategies	• "Eyes on me" • Proximity • Reminders about appropriate talk	Meets expectation
3. Using Physical Movement or brain brakes	• Students moved around the room as they searched for clues	Exceeds expectation
4. Maintaining a Lively Pace	• Teacher encouraged students • "You should be on clue 2 by now"	Meets expectation
5. Demonstrating Intensity and Enthusiasm	• Teacher was mono-tone • Little inflection in voice • Lacked enthusiasm	Did not meet expectation
6. Relevance	• Lesson was aligned to PA-Core standards	Meets expectation
7. Presenting Unusual or Intriguing Information	• Teacher designed an escape room theme	Meets expectation
8. Student choice	• Not applicable	Not applicable

Appendix M : Application of Modified Marzano Engagement Rubric to Post-Treatment Observation Summaries

Indicator	Notes and Evidence	Meets or Exceeds Expectations
1. Noticing When Students are Not Engaged	● Teacher circulated the room ● 12/12 students completed the assignment	Exceeds expectation
2. Using re-engagement strategies	● Proximity ● Students were highly engaged in the lesson	Meets expectation
3. Using Physical Movement or brain brakes	● Students stayed in their seats for the entire lesson unless gathering materials	Meets expectation
4. Maintaining a Lively Pace	● Lesson was designed for self-pace	Exceeds expectation
5. Demonstrating Intensity and Enthusiasm	● Teacher was mono-tone ● Little inflection in voice ● Lacked enthusiasm	Did not meet expectation
6. Relevance	● Lesson was aligned to PA-Core standards	Meets expectation
7. Presenting Unusual or Intriguing Information	● Lesson was designed on Google Forms ● Students used the camera function of the iPad to scan QR codes ● Entire lesson was completed on the iPad	Exceeds expectation
8. Student choice	● Not applicable	Not applicable

Appendix N : Lesson Plan 1

Standards:

B-K.1.1.2
Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text

Objective:

- The students will be able to:
    1. Read and comprehend literary fiction on grade level, reading independently and proficiently

Essential Question:

- How do strategic readers create meaning from informational and literary text?
- How does interaction with text provoke thinking and response?

Materials

- Recording sheets (students record answers for each riddle)
- Envelopes with clues
- Clip boards
- Pencils

Procedure

- Review Main Idea and Supporting Detail (via Flocabulary video)
- Escape Room:
    1. Students work in groups of 3-4
    2. They will work together to solve riddles and crack a code
    3. Each student will be provided with a color, a recording sheet, and a set of clues
    4. Each group starts with card #1, and 3 envelopes labeled 1
    5. The clues are hidden around the room, in large envelopes
    6. The students escape when they reach the last envelope and save the museum
- When finished, read to self

Adaptations:

- Extended time
- Read out loud of directions
- Graphic organizer /Interactive Journal with definitions.

Appendix O : Lesson Plan 2

Standards:

A.V.4.1.2
Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

a. Interpret figurative language (e.g., simile, metaphor, personification) in context.

Objective:

- The students will be able to:
    2. Interpret figurative language when reading grade-level text.

Essential Question:

How do readers know what to believe in what they read, hear, and view?
How does interaction with text provoke thinking and response? ?

Materials

- iPad (Google Form and to scan QR code)
- Envelope with clues
- Scratch paper
- Pencils

Procedures

1. Ask students to log in Schoology
2. Go to Mrs. McLellan's page, and click on Escape Room (Figurative Language)
3. On the first envelope, scan the QR code
4. The QR code will tell you if your answer to the question is correct
5. If your answer is correct, you will be able to go to the next set of clues
6. Independently, complete each step (ask for help if needed)
7. Raise your hand have Mrs. McLellan will hand you out the next envelope
8. When finished, read to self

Adaptations:

- Extended time
- Read out loud of directions
- Graphic organizer /Interactive Journal with definitions

Appendix P : Application of Modified Marzano Engagement Rubric to Lesson Plans

Summaries

Indicator	Lesson Plan 1	Meets or Exceeds Expectations	Lesson Plan 2	Meets or Exceeds Expectations
1. Noticing When Students are Not Engaged	Not informative	Not applicable	Not informative	Not applicable
2. Using re-engagement strategies	Not informative	Not applicable	Not informative	Not applicable
3. Using Physical Movement or brain brakes	Students move around the room looking for clues	Meets expectations	Not informative	Not applicable
4. Maintaining a Lively Pace	Not informative	Not applicable	Incorporates technology (iPad driven lesson)	Meets expectations
5. Demonstrating Intensity and Enthusiasm	Not informative	Not applicable	Not informative	Not applicable
6. Relevance	Lesson is aligned to PA Core Standards	Meets expectations	Lesson is aligned to PA Core Standards	Meets expectations
7. Presenting Unusual or Intriguing Information	Lesson was themed to an escape room	Exceeds expectations	Lesson was themed to an escape room	Exceeds expectations
8. Student choice	Not applicable	Not applicable	Not applicable	Not applicable

Appendix Q : Coaching Feedback/Reflections from Participant

	What new knowledge did you gain from this coaching session?	Do you feel that this session was valuable? Please explain.	What do you hope to gain from our next session?
Session 1	I have learned about the SAMR model and about TPCK.	Yes. I have heard about the SAMR model, but I had some confusion that the session clarified for me. This was the first time I have heard about TPCK, and that was very enlightening. The videos I saw were very detailed and informative.	I hope to learn more about how to enhance student engagement and how to incorporate technology in my instruction.
Session 2	During this coaching session we went over the lesson plan for my first lesson. We looked at what worked and discussed how to increase student engagement and how to increase the use of technology in my instruction.	Yes. I have learned how to identify and increase student engagement and increase the use of technology in my class and in my instruction.	I hope to learn how to create and use Google forms in my instruction.
Session 3	I have learned how to create and use Google forms. I watched a how to tutorial that was very helpful in providing me with a step by step instruction in the creation of Google forms.	Yes. I feel that I am ready to use the information I have gained and apply the new knowledge in the creation of an Escape Room.	I hope to get feedback on how I have applied the knowledge I have gained on this session- I am creating a Google form with 5 questions, I will work on changing the color, adding an image and sharing the form.

Session 4	Today we had a good conversation about how to use the Google Form for the lesson and how I can integrate the QR codes into the lesson	I feel confident that I will be able to use iPads to strengthen the student engagement in my classroom.	I am confident that when we debrief my lesson we will see an increase in student engagement through the use of my lesson with iPads.

Appendix R : Coaching Session Reflections

R.1 Reflection 1

Our first coaching session happened on Wednesday, May 23rd, 2018. I met with the single teacher that is a part of this research study. To begin the coaching session, I asked the teacher if she had ever heard of SAMR or TPCK. She responded that she has heard a little about SAMR, but did not have an understanding at all about TPCK. Because of this, we began the coaching session by reviewing what SAMR was. In addition, we also watched a video on Common Sense Media that interviewed Dr. Ruben Peudentura, who was the creator of the SAMR model, which stands for substitution, augmentation, modification and redefinition.

The video was about 12 minutes long. The content really got into the depth of device choice. The concept of choice allows teachers to not just substitute a device for a program, but really think about how the tool will change the learning for teachers or students. This meant that students were now able to recreate products or develop some sort of a project assessment that was previously unable to create without the use of technology.

We talked about things like creating iMovies on the iPad for students to videotape and demonstrate their knowledge on a specific topic as opposed to students taking some sort of standardized assessment. The teacher had noted that those were things that do not happen within her classroom, traditional measures of weekly assessments or things that continue to happen; however, students were not using technology in that form yet. We also had similar conversations around TPCK, which stands for technology, pedagogy and content knowledge, which is when you braid the different knowledge bases of technology with pedagogy and then

with the specific content. We created a Venn diagram that explained the common ground within that Venn diagram where they have overlapping sections of these three disciplines of technology, pedagogy and content knowledge, and how they overlap with one another, and how the instruction should be developed considering all three categories.

Our coaching session lasted about 70 minutes. At the end of the coaching session, I developed an example Google Form. I sent it to the participant, and she had written a brief summary of her experiences.

R.2 Reflection 2

Our second coaching session happened on Tuesday, May 29th, 2018. Our coaching session involved lesson plan analysis and conversations around incorporating technology into this specific lesson.

The specific lesson was an escape room themed scavenger hunt around figurative language. The lesson that I observed included zero technology. The students were given clues inside Manila folders, and they had to solve a simple problem that involved similes or metaphors or hyperboles. Once they solved the problem, they were given a clue to where their next problem to solve was throughout the room.

The conversation that I had with the participant was "How can we use our iPads as opposed to the clues that were within the Manila folders as an entry level to technology use that I would classify under the substitution within the SAMR model?" But, beyond that, using tools on the iPad, such as a QR reader, could scan codes to identify what those questions are. So opposed to students just reading the questions that were predetermined by the teacher, there would be a

QR code throughout the room that a student would need to scan that would bring that question up on their screen; again, something within the substitution form of the SAMR model.

Next, we had an in-depth conversation about the use of Google Forms, where I learned that the participant had zero knowledge in designing Google Forms within the Google Drive. This information lead us to an important part of our third coaching session where I will demonstrate how to create a Google Form, how to access the results from a Google Form, how to develop different types of questions within the Google Form. As a result, we are climbing up the SAMR model when we are using a tool like Google Forms, because we can use Google Forms for formative assessment within the classroom, we can use those questions to sort of differentiate our next question based upon the answer that the students gave. If students got the answer incorrect, the Google Form could take them to an alternative question--maybe asked in a different form than the previous one--to help give the students an additional opportunity to be successful on the assignment.

During our third coaching session, I will have the participant create a short Google Form and use the sharing function within Google to distribute the assessment to students within the classroom.

We also talked about our learning management system within the school—which, unfortunately, she had has limited experience with this year--we could recreate pretty much the whole assignment within our learning management system so students are able to go to their account and access that information without having to use any paper products within the classroom.

Through the work of the second coaching session, we have clearly defined what we need to work on in our third coaching session, with the development of Google Forms. Also, for our

fourth coaching session, we will focus on helping the participant restructure her lesson plan and incorporate technology from the SAMR model into her lesson to improve student engagement.

Also, in the second coaching session, we took a look at the observational video and identified engagement within students, looking at Marzano's eight indicators of engagement within the classroom.

R.3 Reflection 3

On Thursday, May 31st, at 3:35 pm, I conducted my third coaching session with the participant. We learned, in the second coaching session, that the participant was not familiar with Google Forms. Because of this, we spent quite a bit of time today learning about Google Forms, how to create them, the different intricate details that are involved in developing the Google Form. We also spent a considerable amount of time talking about the relevance of formative assessment within the classroom, using tools like Google Form to gain instant data from our students. We spoke about, "How can I use this tool to share information back and forth?" "How can Google Form be used as a collaborative tool for group work, for the teacher to create an assignment and send out to the entire class?" "How can a student complete an assignment and share their information with the entire class?" the multiple different uses of a Google Form. Also, the participant created her own Google Form as an assessment piece, so I could help her with the functions of developing a Google Form.

For our next coaching session, we will be taking her lesson plan and adding technology, adding the use of Google Form within the lesson plan to develop her escape room theme lesson, with the added use of technology so we can measure the difference in student engagement.

R.4 Reflection 4

Today is June 3rd, 2018. Today I conducted my fourth coaching session with a research participant where we examined her lesson plan and added instructional technology to her lesson through the use of Google Forms.

We designed a rather extensive Google Form that students will use to occupy their entire lesson for ELA class around figurative language.

The Google Form was created so that it would help students drive their own instruction at their own pace. So as they completed questions in their Google Form, they would get the next clue to help move through the scavenger hunt activity.

Beyond the Google Form that was created, we also created QR codes for the students to use the camera function of the iPad to scan. After they completed a question on the Google Form, they would scan the QR code, which would take them to another question on the Google Form. If they didn't get the answer correct, they would not move forward through the Google Form and there would be some academic struggle there. If they were really stuck, they would raise their hand and the teacher would come over and assist them individually.

This lesson was designed for individual student use and not group use, because we wanted to really take a look at each student being on their own iPad, "How did that engagement differ from a group activity where a scavenger hunt theme was taught in the past."

The teacher and I did a dry run ourselves of the standard space lesson. The Google Form should take the students approximately 20 minutes to complete. The data will then be shared from their answers directly to the teacher in the way of a Google sheet, so the teacher will be able to compile the responses from the students in a timely manner.

R.5 Reflection 5

Today I met with my research participant to talk about similarities and differences that we saw from the first observation to the second observation. The first observation being an escape room themed lesson on figurative language where she didn't use any technology, and the second lesson being a digitally enhanced lesson on figurative language.

What we noticed a lot in both videos was that she is extremely active in the classroom and that she monitors her students well using strategies like proximity to move about the classroom.

In her first teaching lesson, she had students work in a group, and in her second lesson, she had students work individually, but she moves around the classroom making sure she's meeting the needs of her students well.

A few things that we noticed that were different was students worked in a group, obviously there was a lot of collaboration, a lot of talk, which also led itself some off-task behavior and also off-task conversations. When students worked individually on their own iPad, there was zero evidence of any students shouting out or any off-task conversations, and there was zero off-task behavior, which means that the students were doing what they were supposed to do when they were supposed to do it.

We also noticed a similarity in her delivery style to the students. Marzano identified that an engagement strategy for students could be enthusiasm from the teacher, and my participant speaks in a very monotone voice and there's not a lot of inflection and you can't really decipher any excitement in her delivery style.

I showed her some of the evidence of coding, based upon Marzano's eight indicators of student engagement, and I think she was very excited to see the differences between both

observations, but she was really excited about the effectiveness of engagement in the digitally-enhanced lesson for the students who used iPads to complete their assignment.

Appendix S : Application of Modified Marzano Engagement Rubric to Participant and Coaches Feedback

Indicator	Participant Feedback	Meets or Exceeds Expectations	Coaches Feedback	Meets or Exceeds Expectations
1. Noticing When Students are Not Engaged	Learned what engagement is	Exceeds expectations	Participant has a clear understanding of what engagement is	Exceeds expectations
2. Using re-engagement strategies	Learned strategies to re-engage students	Exceeds expectations	Participant has a clear understanding of how to re-engage students	Exceeds expectations
3. Using Physical Movement or brain brakes	Not applicable	Not applicable	Not applicable	Not applicable
4. Maintaining a Lively Pace	Not applicable	Not applicable	Not applicable	Not applicable
5. Demonstrating Intensity and Enthusiasm	Not applicable	Not applicable	Not applicable	Not applicable
6. Relevance	Not applicable	Not applicable	Not applicable	Not applicable
7. Presenting Unusual or Intriguing Information	Creation of Google Form	Exceeds expectation	Creation of Google Form	Exceeds expectation
8. Student choice	Not applicable	Not applicable	Not applicable	Not applicable

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