ANALYZING THE IMPACT OF SUPPORTED TECHNOLOGY INTEGRATED FORMATIVE ASSESSMENT

A Record of Study

by

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ABSTRACT

This study explored the use of instructional coaching as job-embedded professional learning (JEPL) to implement technology integrated formative assessment (TIFA) during a six-week timeframe. The case study method was used to provide a deeper understanding of professional learning (PL) within a school setting, specifically within a 6th-grade language arts instructional team, using data from teacher surveys, team planning documents, and focus group interviews. The instructional coaches (ICs) utilized job-embedded professional learning (JEPL) throughout the study, which is consistent professional support provided to the teacher during the school day to assist with acquisition of a new strategy. The analysis of JEPL is essential to continue to effectively implement new instructional strategies, such as TIFA. Within the Glen Intermediate setting, teachers get continuous embedded support through the year on various PL and curriculum. This study analyzed the integration of formative assessment using technology by using qualitative data to look at the perceptions and effectiveness of the intervention by the teachers and ICs.

Data was collected during instructional team meetings, with survey questions (pre- and mid-intervention), and two focus group interviews. Qualitative data analysis consisted of breaking down the data using inductive reasoning to develop main and subthemes. Triangulation using the multiple sources of data was used to draw conclusions about the implantation of TIFA and described using descriptive statistics. The main themes developed which best express impactful information about the

implementation of supported TIFA were coaching support with technology, coaching support with formative assessment, collaboration as support, and barriers to TIFA.

DEDICATION

I dedicate all the hard work and effort to God, who gave me the abilities and grit to persevere through this challenge. I also dedicate this work to my family, who made many sacrifices for me to complete this amazing undertaking. My husband, Bernie, has been the light on this journey, always encouraging me to keep going and reminding me to take one step at a time. I am truly grateful for your support and encouragement. My girls, Anison and Ava, have given up time with mom to help me complete this and I admire their patience. Girls, I hope seeing me work through this and my dedication to reaching this goal demonstrates to you firsthand what determination and tenacity looks like. I want you to remember this when you want something deep down, you dig in hard, and get it done, no matter how long it takes. You can achieve anything you want in life with hard work, dedication, and forward progress!

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Contributors

This record of study was completed independently by the student under the supervision of a record of study committee. The committee consisted of co-chairs Dr. Radhika Viruru and Dr. Robin Rackley, and committee member Dr. Trina Davis all from the Department of Teaching, Learning, and Culture, and outside committee member Dr. Noelle Wall Sweany Clinical Associate Professor, Educational Psychology.

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NOMENCLATURE

ELAIC	English Language Arts Instructional Coach
FA	Formative Assessment
ICs	Instructional Coaches
ISTE	International Society for Technology in Education
JEPL	Job-embedded Professional Learning
PL	Professional Learning
PPL	Personalized Professional Learning
TIFA	Technology Integrated Formative Assessment
TLC	Technology Learning Coach

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CHAPTER I

INTRODUCTION

1.1 The Problem Space

The 6th-grade Language Arts instructional team at Glen Intermediate School* (GIS) went through a restructuring of the curriculum, and the instructional team was seeking support on instructional strategies to consistently assess student learning throughout each unit of study. There was a need for improved formative assessment (FA) strategies to specifically address the improvement of first-time instruction within the new curriculum framework. First-time instruction refers to the initial teaching of a concept in the classroom. The use of technology had the potential to provide efficient and effective assessment of student learning, when used with quality FA pieces; however, teachers needed support with the technology's implementation. When implementing innovative instructional strategies, it is essential to use research-based strategies as well as to support the classroom implementation by providing teachers with job-embedded professional learning (JEPL).

Formative assessment is a research-based strategy which has the potential to impact student achievement through systematically tracking student learning and providing learning feedback. By tracking student learning throughout the units of study, teachers have the knowledge to adjust instruction to more accurately provide adequate feedback to help students meet learning goals. Formative assessment is a tool that helps teachers determine what students are understanding and what students are not

understanding in their learning. By specifically determining what students are learning, teachers can have better focus on the learning targets students need additional time to master. Shirley and Irving (2015) demonstrate FA with a conceptual model (Fig. 1) which shows how FA starts with "eliciting responses" or giving the teachers insight into what students are learning, and teachers then use this information to "adapt instruction." When instruction is adapted to various student needs and student misconceptions are resolved before the summative assessment, student learning is increased. With the implementation of various assessment programs, Technology can be used to formatively assess learning in a convenient and user-friendly way.

Figure 1. Conceptual Model of the components of FA. Each phase is necessary to fully enact the process of FA. (Reprinted from Shirley & Irving, 2015)

Assessments are widely used in education; summative assessments are used most often. Summative assessments are defined as "assessments given at the end of units, mid-term and at the end of a course, which are designed to judge the extent of students' learning of the material in a course, for the purpose of grading, certification, evaluation of progress or even for researching the effectiveness of a curriculum" (Bloom, Hastings, & Madaus, 1971).When summative assessments are the only assessment of the unit, students are statistically less likely to be successful because this type of assessment does not provide the teacher and the students with the opportunity to correct misunderstandings throughout the learning process (Bailey & Jakici, 2012).

Formative assessment is a carefully planned process, used regularly to track student learning, to meet students' learning needs, and make adjustments to serve students effectively. Black and Wiliam (1998) define FA as "encompassing all those activities undertaken by teachers and/or, by their students, which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged" (p.7). Further, William explains FA is used in two ways: to direct instruction for the teacher and to inform the student about his/her progress throughout the lesson (Black & Wiliam, 1998). Bhagat and Spector (2017) cite the need for more research on the use of FA with new technologies and how FA can support "learning complex and ill-structured tasks" such as reading and writing in a language arts classroom (p. 312). Bridging technology and FA could lead to increased student success to allow more organized and consistent mini-assessments, which teachers can use to adjust instruction.

Technology is pervasive; thus, it is critical educators explore it as an instructional tool to be used to benefit today's students. Many teachers are working towards integrating technology into instruction as an important part of their classroom pedagogy. Some teachers have not delved into exploring how technology can assist in FA, enhance the assessment process, and assist in using data to guide instruction. Formative assessments, defined by Popham (2008) are classroom activities eliciting student evidence of learning, used to adjust current teaching practices. Technology integrated formative assessment (TIFA) has the potential to allow teachers to provide students with regular feedback to correct misunderstandings (Bhagat & Spector, 2017). Technology and assessment have the potential to merge as partners in the classroom to enable

teachers to utilize data to inform instruction. By designing meaningful TIFA, the FA can be used to guide instruction throughout the teaching and learning process in a consistent and organized way.

In January of 2017, the US Department of Education's Office of Educational Technology published *Reimaging the Role of Technology in Education: 2017 National Education Technology Plan Update*. This plan cites assessments as a large academic piece which can be influenced with the use of technology and focuses on the need for increased assessments with the use of technology. Specifically, the plan states that "At all levels, our education system will leverage the power of technology to measure what matters and use assessment data to improve learning" (US Department of Education, 2017, p. 55). The plan challenges teachers to use technology to use FA to "see evidence of students' thinking *during* the learning process and provide near real-time feedback through learning dashboards so they can take action in the moment" (US Department of Education, 2017, p. 55).

In December 2015, the US education bill, Every Student Succeeds Act (ESSA), required educators to continue working to integrate technology in the classroom. The act requires schools to:

- provide educators with learning environments support 21st-century pedagogies and provide children with the 21st-century skills;
- expand access to content knowledge. Students should not be limited to a textbook printed two years ago and designed 5+ years ago; educational

technology can provide the needed access to the world's best and most up-to-date content;

- support new teaching and learning focused on students as active participants with educational technology tools and strategies to enhance deeper learning, including through effective communication and collaboration (Mesecar, 2015, p. 4).

This policy drives states and districts to implement similar and more detailed standards for technology integration.

The state of Texas has adopted the International Society for Technology in Education (ISTE) standards as a part of its long-range technology integration plan. The long-range technology plan was developed in 2006 and goes through 2020 (International Society for Technology in Education, 2008). These standards are used to help educators and leaders define technology integration and raise expectations on the use of technology throughout instruction. Using these standards to facilitate conversations with teachers and instructional coaches (ICs) was a starting point to investigating the improvement of technology integration strategies, such as FA. This study aligns with the ISTE standard which challenges educators to use technology tools to create optimum learning experiences at various aspects of the lesson design, specifically calling educators to "[d]esign and develop digital-age learning experiences and assessments" (International Society for Technology in Education, 2008). A supporting standard specifically calls teachers to "provide students with multiple and varied formative assessments aligned with content and technology standards, and use resulting data to

inform learning and teaching" (International Society for Technology in Education, 2008). It encourages teachers to vary the assessment strategies and integrate technology to produce data which can be used to determine student needs throughout the learning process.

The ISTE Standards were updated in 2017 and the updates expanded on technology use to assess learning in various ways and expanded on the need for feedback to be given to students. These are the specific educator standards which address technology and assessment listed under the analyst standard:

> b. Use technology to design and implement a variety of formative and summative assessments that accommodate learner needs, provide timely feedback to students and inform instruction.
>
> c. Use assessment data to guide progress and communicate with students, parents and education stakeholders to build student self-direction (International Society for Technology in Education, 2017, p. 2).

The Orchard Glen Independent School District (OGISD) has developed a *Long-Range Technology Plan* that includes goals, objectives, and strategies to "serve as a guide to infuse technology in the classroom, improve student engagement, and enhance instructional strategies" (OGISD Long-Range Technology Plan, 2013). Goal one of the plan states: "We will utilize technology to support a teaching and learning environment that improves the achievement of each student …" (OGISD Long-Range Technology Plan, 2013). The plan is designed to promote instructional strategies specifically utilizing technology to support student achievement. Furthermore, the plan challenges teachers to

"utilize best practices methodology, pedagogy, and systems…to enable the transformation to a digital learning community and improve academic achievement" (OGISD Long-Range Technology Plan, 2013). OGISD gives teachers autonomy to decide what digital learning looks like in their classroom, and teachers research "best practices" to decide what will work to engage students and increase student success.

The ESSA, the ISTE standards, and the district's *Long-Range Technology Plan* stipulate technology integration as a key component to drive student achievement. In 2019, educators continue to explore how to transform lessons with the aid of technology. The collaboration of teachers and instructional leaders is essential to determine how technology can successfully fit into the instructional needs of different classrooms. The collaboration is necessary to seek ways to integrate technology effectively, working together to integrate technology as an enhancement, and to add variety to the learning and diversify the learning experience. Hattie (2009) concluded the most influential characteristic of increasing student achievement is when teachers work together toward a common goal and when teachers collaborate creating a culture of continuous improvement. Teachers setting common goals, regularly assessing student needs, and planning together to seek the most effective way to instruct students increases teacher efficacy to improve. When professional learning (PL) is built into everyday practice and learning is part of what teachers do in a school, improving practice is part of the culture.

1.2 The Problem of Practice

1.2.1 Context/setting. Glen Intermediate School (GIS) is a suburban Intermediate school located in Texas in Orchard Glen Independent School District

(OGISD). The school serves a population of approximately 1,000 students in sixth through eighth grades with an ethnic breakdown of 3.8% African-American, 5% Asian, 26.3% Hispanic, 60% White, and 4% other races or two or more races. Approximately 19% of the student population qualify as economically disadvantaged. The school is in a bustling community with healthy economic activity in the area. The district is located near The Johnson Space Center, many large medical centers, and many oil and gas refineries. GIS employs 60 teachers with a 15 to 1 student/teacher ratio.

In 2018, GIS received a rating of "met standard" according to the Texas Academic Performance Report. In Table 1, the data for GIS indicates the campus is above the state and district passing percentage in all subjects.

Table 1

2018 STAAR Exam Comparative Data

STAAR	State	District	Campus
8th-Grade Reading	86%	92%	96%
8th-Grade Language Arts	85%	91%	98%
8th-Grade Science	76%	82%	92%
8th-Grade Social Studies	63%	73%	81%
7th-Grade Reading	70%	82%	91%
7th-Grade Math	73%	82%	89%
6th-Grade Reading	69%	82%	85%
6th-Grade Math	79%	85%	88%

GIS recently developed a strategic plan and revamped the mission statement in response to district initiative and to set goals for continuous improvement.

> The mission of Glen Intermediate School, the leader in innovative education, is to ensure that each individual explores and discovers unique talents, passions, and abilities through a dynamic system distinguished by limitless opportunities that foster collaboration, creativity, intrinsic motivation, respect for diversity, and citizenship to develop a productive role in society (Glen Intermediate School, 2017).

The strategic plan GIS, created in the summer 2017, included objectives which are essential for continued student success at GIS. The objective addressed in the plan that relates most to technology integration and formative assessment is tactic 1, "We will ensure individual and collective responsibility to create an optimal learning environment" (Glen Intermediate School, 2017). This tactic provides school personnel with the opportunity to explore, investigate, and understand optimal learning environments; subsequently, teachers and support staff work to create these optimal experiences for the students served at GIS. The students share the responsibility to create this optimal learning environment in this model. Another tactic encompassing formative assessment is, "Each student optimizes his or her learning experiences by setting and achieving personal and academic goals." (GIS, 2017). In addition to creating optimal learning environments, teachers are tasked with helping students achieve clear learning standards and using FA as a tool to ensure students are meeting these targets. By improving FA, GIS is working toward their strategic plan objectives.

In addition to the strategic plan, an action team created a personalized professional learning (PPL) plan which challenges teachers to own their learning by creating a personalized learning plan with their own PL goals each year in order to continue building individual capacity. GIS is in its second year of PPL, and teachers propose PPL plans each year to determine and achieve goals to work towards, often working with, teaching teams, ICs, and administrators to achieve these goals. The PPL plan is directly aligned with the Orchard Glen ISD's mission statement; it is used to help teachers establish how their in-class activities directly tie to the district's values and beliefs.

> In OGISD we believe that today's experiences are as valuable as tomorrow's opportunities and that one's heartfelt passion creates limitless possibilities. These beliefs hold true in the way we want our students and teachers to learn and grow. Because trust is built on what we do, not just what we say, GIS has adopted a Personalized Professional Learning (PPL) Plan. Because we believe each person possesses unique talents and creative ability, their needs to grow professionally are also unique and diverse. Therefore, at GIS, each person bears the responsibility to create his or her future in this profession, in this district, and in this school (Glen Intermediate School, 2017).

GIS administration supports personal growth and development for each person, which is why developing TIFA directly aligned with the vision at GIS, as the teachers

developed FA skills. The TIFA project lends itself to JEPL. JEPL is professional learning naturally occurring within the teacher workday. JEPL creates opportunities for growth and development built into the teacher's daily schedule. OGISD is an innovative and progressive district working to embed professional learning into the workday. JEPL involves developing teachers within their natural setting, working with teaching teams and ICs, and using innovative teaching practices with ICs. JEPL takes place on the job, during the workday. JEPL work is utilized to identify problems of practice and collectively analyze solutions to improve student learning (Learning Forward, 2011). "The conditions under which JEPL takes place make it timely, relevant, practical, and personalized" (OGISD Professional Learning Plan, 2017, p. 5). JEPL provides teachers with more opportunity for feedback and reflection of their own practices. The professional learning is built into their daily work and current professional learning needs can be assessed during this time. Teachers having established time to reflect on their own practice and time to develop plans for PL can help foster long-term adoption and the transfer of new skills and beliefs (OGISD Professional Learning Plan, 2017). The transfer of new skills and beliefs will result in continuous improvement of the educational process and lead to increased student achievement. Examples of JEPL include professional learning communities, instructional coaching, mentoring, collaborative assessment development, and action research (Learning Forward, 2011).

1.2.2 Initial understanding. Originally the problem of practice for GIS was framed to find a solution to increase technology integration, but as the context was explored further, the more it became evident that instruction must be addressed within

the technology framework. With curriculum changes happening in the English Language Arts (ELA) department, it was essential for FA to be used with more depth in the classroom. Technology integration was planned out with a FA as the instructional focus to impact student learning.

Technology integration is a priority in OGISD after the district launched a district-wide technology push in 2015 giving all students access to laptops or tablets in the classrooms. The district's professional learning plan includes several goals working toward bridging technology and learning. I assumed that by helping teachers integrate technology, the plan would fit nicely into the district and school plan for technology integration. As the problem was explored in greater depth, it became clearer the need to include an effective instructional strategy within the intervention to effect change and impact student learning, especially with the curriculum changes in the ELA department. By adding a research-based strategy to technology integration the district created an opportunity for classroom strategy improvement and increased student achievement. Educators in OGISD continue to seek ways to improve student achievement supported by FA, which is a district researched strategy teachers should be implementing on a regular basis. In this research, the teachers had autonomy to make the decisions about how they used TIFA in their classrooms. The ELA team, with ICs, collaborated to create TIFA to use in their classrooms. The redesigned ELA curriculum guided the use of TIFA, which allowed the teaching team to create TIFA to fit their instructional needs. The purpose of TIFA was to use technology to gain specific feedback about student

learning and use this feedback to adjust instruction to reach the learning objectives more efficiently throughout the unit.

1.2.3 Relevant history of the problem. Increased technology access for all students has been a major initiative in the district in the past five years; in fact, each student enrolled in OGISD has a district-issued laptop for use at school and home. Technology access has, in fact, increased, but it does not mean technology automatically transferred into the classroom and was effectively integrated into lessons. The successful transformation of lessons and integration of technology takes time, patience, professional learning, clear expectations, and a clear plan for integration. What we have learned about integrating technology is that quality instructional strategies must remain as we learn to use the technology as a tool, and we must continue to find ways to increase student achievement while working to integrate technology. Formative assessment, in this model, was the instructional strategy and technology was used as a tool to improve engagement and efficiency.

Though the district both champions and expects the use of FA in the classrooms, teachers needed additional training and support to best use FA. Though FA has often been a topic discussed at faculty meetings and professional learning, effective FA has not made its way to all classrooms at GIS; thus, students have not always benefited from instruction driven by data. There have been other priorities in OGISD and at GIS which have taken precedence over FA and technology, as a great number of initiatives have occurred in the last five years which required different focus areas. The three areas that teachers, administrators, and students have focused on in years past and continue to work

on are collaboration, innovation, and personalization. TIFA has helped the campus work toward long-standing goals and seek ways to further improve instruction. The Language Arts team collaborated, discussed, and worked to discover how TIFA can be tailored to support the mastery of the standards and inform instruction. By collaborating on TIFA, we continued our goal of exploring innovative teaching strategies with the goal of increased technology integration. Moreover, TIFA supported personalized learning through creating successful assessment strategies built into personalized lessons and enhancing student ownership of learning. TIFA supported past goals and continued to help us build on current instructional strategies.

The most current goal TIFA supported which was established by our instructional teams is to increase student achievement with "first-time instruction." By creating lessons to help all students with the mastery of goals and standards the first time the information is taught, teachers spend less time remediating, and students can move on in the regularly allotted timeline. TIFA supported this goal as FA being built into the lesson had the potential to create ownership for the students and information for the teachers to guide instruction. With a successful implementation and continuous improvements made during the process of TIFA, we should see changes in "first-time instruction."

1.2.4 Stakeholder groups and values. The integration of technology at GIS has been sporadic. Integration varies greatly among departments and teachers. Some teachers use technology every day to stay organized with lessons posted or to help present information. Other teachers have the students using technology for information

retrieval or to record answers. Most teachers did not indicate they were using technology to formatively assess students. There were some attempts at short assessments or quizzes, but there was little indication they were using the information to inform instruction. TIFA provided the opportunity for teachers to use technology to help gather data and use this data to determine next steps for instruction.

Much like technology, teachers are at different places when it comes to formative assessment as well. JEPL has the potential to enhance teacher knowledge of FA and support teacher implementation of FA. GIS employs 60 teachers, and there are many variations of understanding, beliefs, and classroom implementation. When discussing the levels of knowledge teachers have about FA, some teachers do not understand FA as an assessment for learning. Some teachers' understanding of FA is that formative means "formal;" therefore, their assessments are considered more formalized, summative assessments. In this case, students are penalized for not fully grasping a concept by being given a grade on each assessment. One of the ICs stated that she believes some of the teachers think they are using formative assessment effectively; however, these teachers are not using FA to adjust next-day instruction. Formative assessment is specifically used to adjust instruction based on the FA data, and if teachers are not adjusting instruction, they are, in fact, only assessing students. By only participating in the assessment piece of the FA process, the instructional support necessary to increase learning throughout the lesson is missing. Teachers and students do not have the knowledge to correct or improve on misunderstandings if formative assessment is not used effectively. Through my conversations, I learned that a clear understanding of FA is

not shared by all teachers, and more time must be dedicated to this important instructional piece at GIS.

One of the assistant principals believes FA is essential for student success. More specifically, he stated that if students are not assessed with intent to improve instruction, teachers are missing a key teaching opportunity. He realizes FA is critical, and we must find ways to bring this important skill into the classroom to be used regularly. One of the difficulties of using FA consistently is that it takes time to create the assessment pieces, and subsequent planning must take place before and during the lesson to successfully implement FA. Teachers need more time in the planning phase of FA, collaborative support from ICs, and teaching teams to make FA an effective strategy in their classroom.

Through my conversations, it has become clear that campus administration must clearly define FA and set expectations for the use of FA. These expectations will look different in each department as teachers are in different stages of professional learning. It is important teachers know lesson flexibility is key as FA is used to influence instructional changes according to how students respond to the FA. Teachers will need more professional learning time to study FA and how to work FA into the lesson. They will also need time to look at the FA data once they start implementing the strategy and determine lesson direction throughout the unit of study.

1.3 Roles and Personal Histories

1.3.1 My background. I was a high school technology teacher before I became an administrator, which gives me some insight to how technology can fit into lessons. As

a teacher, I remember thinking about how to assess student learning throughout the semester, and I gave students quizzes. Researching more about FA has opened my eyes to the possibilities of using FA effectively and how much more successful students could be if regular FA was used more frequently in the classroom. I have been an administrator for eleven years, and I have collaborated with various instructional teams on technology integration and instructional strategies. One district initiative I worked on with instructional teams was a common learning framework which included using research-based instructional strategies across the school. This included instructional strategies such as writing to learn, collaborative group work, scaffolding, and effective questioning. These classroom strategies laid a solid foundation in our school for the use of effective teaching strategies.

I had the opportunity to attend the International Society in Education (ISTE) conference and learned more about how technology integration can be implemented across curricula and accessed in multiple ways. I had the opportunity to hear from many teachers presenting on their successes incorporating different learning software in the classroom and learning many instructional technology ideas. I was able to share technology programs with teachers to help them start integrating more technology into their classrooms. Teachers in OGISD started using OneNote in the classroom, Google Classroom, Gimkit, and other technology tools to enhance student engagement. Although our technology continues to evolve, there is much progress to be made, If TIFA is implemented successfully, there will be enhanced student learning in Language

Arts. I anticipate this teacher growth to trickle into other departments as our teachers and ICs collaborate and share successes.

I am currently the principal at Glen Intermediate School, which requires me to continually collaborate with teachers and ICs on how we can continue to help improve practice to increase student engagement and student achievement. I aspire to be the best instructional principal I can be by inspiring teachers to be life-long learners in pedagogy and content. In this role, I am tasked with reviewing instructional practices and assessing ways in which the school needs to move for improved learning. This task is not done in isolation; I am in constant communication with ICs, department heads, team leads, and teachers, collaborating with all to ensure we all work together toward a common vision and goals.

1.3.2 My field-based mentor. My field-based mentor, who will remain anonymous for the study, is the principal of Glen High School. She has served as the principal for eleven years. She has a total of eighteen years of experience as an administrator. She was a science teacher; therefore, she is always looking to use data to support learning and growth. This year at Glen High School she has worked to support the new dean of education and ICs as they learn how to effectively support teachers with "first-time instruction". I, along with my mentor, believe that the integration of TIFA, with the support of ICs, can help teachers use data to analyze "first-time instruction" and determine what the next steps ought to be to support student learning.

Recently, my field-based mentor conducted a school-wide teacher survey specifically asking teachers how they used data to address the learning needs of their

students. The survey results reflected the conversations I had with my own ICs and teachers. The survey revealed teachers have various levels of knowledge regarding formative assessment and its use in the classroom. Many teachers stated they used data to adjust instruction, but most were not specific about how they had adjusted instruction. Some teachers stated they focused on testing data to make decisions and reteach after the test, if necessary. It was evident from the survey results that teachers understood the use of data is important, but they need more clarity on the definition of formative assessment and how to use formative data to make informed decisions about instruction. The teachers need more PL support toward the implementation of FA and how to implement it with technology.

CHAPTER II

REVIEW OF THE LITERATURE

2.1 Theories

The first idea that provides the theoretical framework for the program is Vygotsky's work, more specifically, the zone of the proximal development. The zone of proximal development refers to the distance between independent learning level and the collaborative learning level (Vygotsky, 1978). It refers to the difference between what learners can do themselves and what learners can do with help or with a group. When teachers of different skill and ability levels work together with ICs, the process of collaboration, sharing, and learning together helps support teachers' growth. Donohoo (2017) refers to teachers working together toward a common goal as "collective efficacy," which encompasses a team belief system to positively impact student learning together. All teachers can benefit from professional collaboration and teamwork. Bringing teachers together will impact the culture of a school and can especially support struggling teachers to improve instruction. The instructional coaching and professional learning which takes place in collaboration with the teachers and the JEPL to support the development of TIFA are aliged with Vgotsky's theory of proximal development and engages the teachers in collaboration for instructional improvement.

The second theory grounding the instructional strategy of FA is Gagne's Theory of Instruction, which provides a conceptual framework for the use of TIFA (Driscoll, 2000). In Gagne's Theory of Instruction, there are three components of learning: a taxonomy of learning outcomes, conditions of learning, and nine events of instruction

(Driscoll, 2000, p. 341). Of the three components, the nine events of instruction, and specifically the event of eliciting performance, aligns best with TIFA.

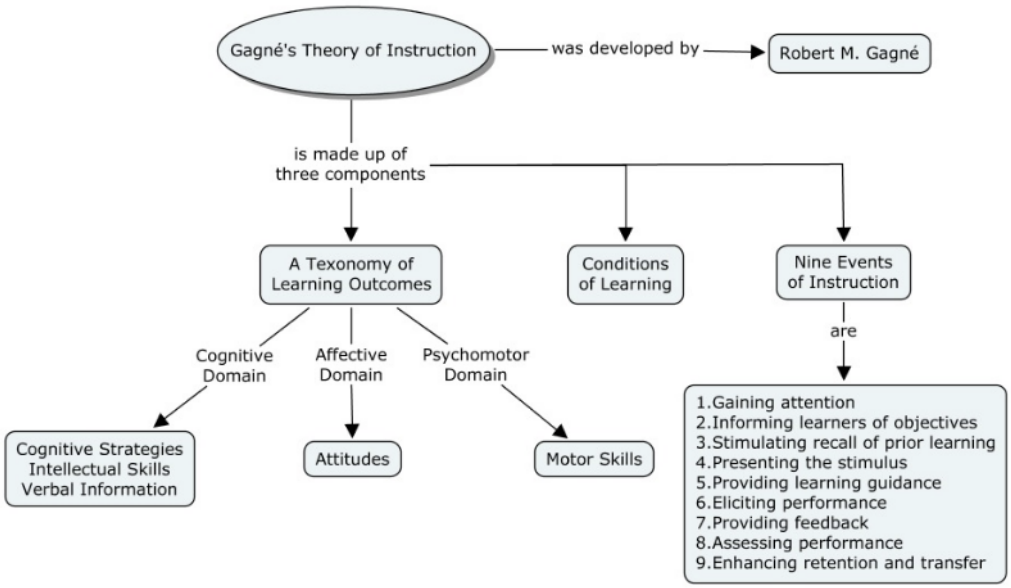

Figure 2. Gagne's Theory of Instruction. (Reprinted from Driscoll, 2000, p.341)

By eliciting performance, a student is asked to demonstrate his or her learning; this allows the teacher to gain knowledge of the learning which can be used to determine if the student understands the objective. TIFA can provide a quick way to elicit performance. Additionally, the teacher will have class data to inform how he or she should proceed in the unit of study.

Both theories were used to develop questions for the surveys and interview within the project. They were also used to develop FA practices for the students and the teachers during the instructional coaching sessions.

2.2 Relevant Literature.

2.2.1 Instructional coaching as job-embedded professional learning. Wan and Gut (2011) agree that to successfully implement any instructional initiative, it is essential that PL also be delivered in a way which is innovative and best supports teachers. These practices may include instructional strategies which make learning authentic with examples, give teachers choices in their learning, and include technology. Knight (2009) described the need for PL to be on-going with follow-up and support present to assist teachers. To effectively enact organizational change with TIFA, on-going support is necessary. This on-going support can happen with instructional coaching as JEPL. It is important for ICs and leaders to provide support in the PL process for assessment activities and learned behavior to be sustained. Giving information to teachers alone will not effectively allow teachers to grow; PL must support and teach teachers to learn how to use the information, analyze it, and be creative with it, much like the facilitation of learning with students. Teachers must see the benefits of the strategy in their classroom, but in order to effectively see benefits, they must know how to implement it with fidelity.

Making the change from the traditional summative assessment practice in classrooms has proven to be difficult with traditional PL. Wang (2017) acknowledges that while "professional development workshops may provide new ideas, coaching provides a space for teachers to transfer their learning…to their own classroom with the support of a coach" (pg. 23). Tierney (2006) noted the process of shifting classroom assessments from a routinely summative orientation is not a direct path. A one-time PL

session will influence little to no impact on instructional practices. In a similar study, Cooper and Cowie (2010) highlighted two practices which have the potential to influence systemic change with FA. The two practices are the addition of collaboration in PL regarding FA and continuous reflection on student FA data. As support from the ICs and teaching team has the potential to provide a support mechanism to enact change, collaboration is key. Within the teaching team, JEPL takes place through an instructional coach, as coaches have the potential to "teach others how to learn very specific, evidence-based teaching practices such as Formative Assessment" (Knight, 2011a, pg. 103). By utilizing an instructional coach, the PL will be on-going, which is the type of support teachers need to establish new learning. The instructional coach can collaborate with the instructional team to help facilitate their continuous forward movement with research, instructional observations, and data disaggregation. The utilization of an instructional coach using JELP increases the potential for TIFA to impact classroom instruction and student learning.

Instructional coaches and administrators must support teachers on how to effectively implement TIFA to benefit classroom instruction and student learning. Delafosse (2011) presented these skills as she claimed that "teachers must be able to teach students to be able to handle the resources of the 21st century by being able to validate, synthesize, leverage, communicate, collaborate, and problem-solve information" (slide 23). It is essential that educators develop these skills to facilitate up-to-date instructional strategies for student learning. It is also imperative that instructional leaders support teachers throughout this process. By effectively utilizing instructional

coaching, teachers will have support as they implement TIFA. Knight (2009) describes several organizational values which help establish successful instructional coaching:

- focus on professional practice,
- intensive and ongoing,
- grounded in partnership,
- dialogical,
- nonevaluative,
- confidential, and
- facilitated through respectful communication (pg. 18).

Creating a culture of continuous learning is one of the essential elements for instructional leadership. Within a culture of continuous learning, teachers and staff understand the expectation of continuous improvement, whether it means content or pedagogy. Effective teachers are always evaluating what they are teaching and how they are teaching it. They are asking how they can teach with more impact, engage more students, and deepen the students' learning. As educators, learning is an essential part of building capacity. In order to impact student learning, we must continue to reform our instructional practices to ensure learning is maximized.

Positive evidence of instructional coaching is explored in two studies by Cornett and Knight (2008), the first study was a five-year study on PL and the instructional impacts made for each type of PL. This study revealed that only 10% of the instructional strategies were used when the PL provided to the teachers was a description of the instructional strategy. When modeling was added in addition to the description 12% to

13% of the instructional strategies were used. However, when coaching was added as part of the PL, 95% of the instructional strategies were implemented in the classrooms (Cornett & Knight, 2008). In the second study, by Cornett and Knight (2008), 51 teachers divided into two groups, participated in a PL session. One group received instructional coaching on the PL strategies, and the other did not. The teachers who received instructional coaching throughout the implementation implemented the strategies 90% of the time. The instructional coaching included JEPL, which can include a variety of coaching strategies necessary to support the teachers. The JEPL strategies include working with teachers in collaboration of instructional planning, use of data to plan instruction, coaching assistance in the classroom, with team teaching, classroom observations, and other coaching strategies specifically support the teacher through the implementation of the strategy. The group that did not receive instructional coaching only implemented the strategies 30% of the time. Instructional coaching has the potential to increase PL implementation by providing ongoing professional support. TIFA can effectively be implemented with instructional coaching support by providing teachers with real-time and continuous PL support.

2.2.2 Formative assessment. The term Formative Assessment (FA) was coined in the 1960s. However, there is still much work needed to make it an effective 21st-century instructional piece. Summative assessment still dominates over FA in education. The shift for more FA is necessary as many students are not mastering learning objectives nor reaching their full potential on major summative assessments. Without FA, neither the teacher nor the learner can take corrective action in the learning process.

Making FA a part of daily instructional practices and integrating FA with technology is the main challenge presented in this study. Shifting educational practices into innovative teaching practices used to assess and guide instruction is an important piece of TIFA. FA can help solve the quandary of unsuccessful student scores and required remediation which is time consuming and challenging for many teachers and students. To best meet students' learning needs, FAs must become a regularly used classroom strategy utilized to adjust lessons in response to what students need to be successful.

The term formative evaluation was created by Scriven (1967) to evaluate programmatic goals while assessing where improvements could be made within the program (Bennett, 2011; Black & Wiliam 2003). In 1969, Bloom was more intentional when he used the term formative evaluation, as he specifically directed the evaluations with student learning and the use of data to make informed instructional decisions (Bennett, 2011; Black & Wiliam 2003). The term formative evaluation is now referred to as formative assessment or assessment for learning. The term "formative assessment" has evolved over the years. Sadler (1998) used FA to describe "assessment that is specifically intended to provide feedback on performance to improve and accelerate learning" (pg. 77). In a similar fashion, Black and Wiliam's (1998) defined FA as "encompassing all those activities are undertaken by teachers, and/or by their students, which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged" (pg. 7). Further explanations specify FA is used to guide instruction for the teacher and for the student to be informed about progress throughout the lesson (Wiliam, 2011). Wiliam (2011) expressed the importance of how

FA should be used in the classroom, specifying that FA should not be graded as a test. Rather, it should be used to monitor learning informally as continuous mini evaluations of the student learning. Today, many use Wiliam's (2011) definition of FA which is more clearly defined:

- The purpose is to improve instruction and provide student feedback.
- It is administered throughout the unit as a reoccurring activity
- Students use results of FA to self-monitor understanding
- Teachers use results to check for student's level of understanding (pg. 39).

By collaborating with ICs and teachers to help clarify FA for ELA teachers, district leadership can establish expectations and start the process toward the creation of TIFA.

2.2.3 Student Learning. Bransford, Brown, and Cocking (2000) describe guiding principles that support how students learn and support the use of FA. "Students come to the classroom with preconceptions about how the world works. If their initial understanding is not engaged, they may fail to grasp new concepts and information are taught, or they may learn them for the purposes of a test but never revert to their perceptions outside the classroom" (Bransford, et al., 2000, p. 14). Not only does FA assist teachers with creating a learner-centered environment by helping teachers gauge where students are in their understanding and mastery of the content, FA also has the potential to help teachers create this environment by helping students understand their own learning and increasing student ownership of learning. Kaput and Education Evolving (2018) describes learner-centered instruction as involving students in education, which has the potential to increase achievement and engagement. Bailey,

Jensen, Nelson, Wiberg, and Bell (2017) concluded that more frequent feedback allows students to determine their learning needs and allows "metacognition" of their own learning, which has the potential for increased success (pg. 16). By teaching students to think about their learning they become stewards of their own learning, which helps students see where they are on their learning path. Teachers have the opportunity to facilitate students' thinking more about their own learning through FA.

Teachers can create optimum learning environments to meet the needs of the diverse learners by gaining valuable insight on where their students are in the content and students can be involved in the process. Ateh (2015) described the fact that teachers are challenged to create FA used to provide teachers and students with quality insights into what students bring to the classroom. By using TIFA, student learning can be tracked online in an online community of learners. Bailey and Jackicic (2012) discuss how creating a community of learners can change the classroom culture and students begin to focus more on the learning.

A second principle Bransford et al. (2000) describes supports a knowledge-centered environment; "students must have a deep foundation of factual knowledge, understand facts and ideas in the context of a conceptual framework, and organize knowledge in ways that facilitate retrieval and application" (p. 16). By using FA, lessons have clear learning goals are set by the teacher or learners, and key ideas and concepts drive the goals. Throughout the lessons, FA is used to monitor the progress and build confidence within the discipline to reach learning goals.

By setting up the learning goals through FA, an assessment-centered environment can be used to benefit learning. Using FA teaches students to constantly evaluate their thinking about their learning goals. An assessment-centered environment is a vital piece of a successful learning environment as assessments are critical "sources of feedback to improve teaching and learning" (Bransford et al., 2000, p.140). Feedback is key, as teacher feedback comes from the data disaggregation and the understanding of the student learning. When data from the assessments is broken down into objectives and evaluated by a teacher or teaching team, evaluation of learning happens for the teacher and the opportunity for learning feedback is available for the students. This learning happens when a teacher is able to ascertain whether or not students are grasping the lesson and understanding the content, and it allows the student to see where they are in grasping the lesson. Quality teachers continuously assess to monitor learning. Assessment of learning should be happening often to know if learning can progress or if it is necessary to spiral in previously assessed standards. Schlechty (2009) agrees assessment is essential for learning progressions to be measured and acted upon in the classroom. He suggests, "both initial assessments and follow-up assessments [are necessary], for it is only through such assessments that direction is maintained" (Schlechty, 2009, pg. 254).

Technology integrated formative assessment lends itself to a setting where there is an expectation that students learn together and continually strive to improve together. As students become more aware of specific learning targets, open dialogue takes place within the classroom community about student progression of learning targets. When

students and teachers can work together to problem solve and regularly reflect in the classroom, a classroom-centered community is created and a learner-centered community is fostered. Creating a community-centered environment helps students feel safe to take academic risks and receive feedback openly, building an environment of continuous learning within the class. Using TIFA could open the door to this feedback.

Timmers, Braber-van den Broek, and Van den Berg (2013) used FA to gain insight into student performance and feedback. FA allowed time for additional teaching and learning to take place before a summative assessment was conducted. Research within their study indicated that the type of student feedback and student effort influence whether FA makes a difference in student learning (Timmers et al. 2013). Students who showed higher task value beliefs and greater success expectancy took the time to seek additional feedback during the FA. Seeking additional feedback was also attributed to the higher efficacy these students possessed. These students, overall, were more successful using FA (Timmers et al. 2013). Frohbieter, Greenwald, Stecher, Schwartz, and National Center for Research on Evaluation, Standards, and, Student Testing (2011) found there is still much uncertainty about FA and many specifics need refinement for better implementation. Frohbieter et al. (2011) described the need for teacher professional learning to shift to support teachers as they begin to implement FA. Consistency and extended guidance within PL are the keys to implementing FA (Frohbieter et al., 2011). This extended guidance of PL supports the need for ICs to provide ongoing JEPL.

Another study by Wang (2008) described a substantial controversy about whether FA using technology is more effective than traditional learning. FA using technology does require more independence from the learner, but this is positive because students can evaluate and be responsible for their own learning (Wang, 2008). Results proved knowledge and comprehension items on the FA were outscored by the students who had received FA, and the students who had not received FA did not perform as well (Wang 2008). A study by Hollingworth (2012) focused on school leadership and what role the leaders played in developing a comprehensive FA program. Within the study, the time for teachers to collaborate and reflect on their practices played a substantial role in the growth and development of FA practices in the classroom. The study supports the need for JEPL as a part of the implementation of TIFA.

2.2.4 Technology Integrated Formative Assessment. As educators in the 21st century, we must consider how students will learn best when implementing progressive strategies such as FA. McGlynn and Kelly (2019) encourage teachers to look at student learning styles when choosing FA methods and to use engaging practices to increase student performance. The students in our classes are high-tech; they know the world as a fast-paced, technological world (Newell, 2012). Newell (2012) described innovative learning as core competencies which are built into engaging lessons, encouraging students to think critically and to be independent learners to increase depth of knowledge and student engagement. An important aspect of TIFA is providing continuous feedback for student ownership of learning and informing students about their learning progress within the content. TIFA involves using technology to elicit

responses to learning, using the related data to make informed decisions, and providing students with feedback to increase their conceptual awareness, independence, and understanding. TIFA has the potential to increase student ownership of learning through knowledge of their own learning.

Today's students want more independence in their learning. Many students know where to find the information; they need support using the information, to analyze, synthesize, and evaluate the information, and make sense of it all. Students are connecting to "social networks, collective intelligence, data, and visual mashups, video on demand, diversity of collaboration, and mobile broadband" (Wan & Gut, 2011, p.192). Educators in the 21st century must transition our instructional strategies to effectively reach our digitally inclined students and help them think through the mass amount of information available to them. More specifically, Wan and Gut (2011) challenged educators to give students access to learning at "anytime, anyplace, at any pace" (pg. 201) They challenged educators to design lessons that can be taught using mobile devices to make it easier to teach students how to track progress and to provide FA opportunities for students to check their own learning. Furthermore, Wan and Gut (2011) explain that helping students become "part of a digital community" will enable improved collaboration and access to learning for all students (pg. 201).

The process of acceptance and application of innovative teaching practices requires significant and regular PL, which results in a shared belief, understanding, attitude, and vision (Kim, Kim, Lee, Spector, & DeMeester, 2013; Phelps & Graham, 2013). Kim et al. (2013) described the regular PL as creating a collaborative culture of

shared ideas resulting in a steady cultural change toward an ever-evolving innovative learning environment. Quality and consistent PL is the key to the growth and development of TIFA. The consistency of PL comes when it is built into regular collaborative meetings involving instructional leaders such as ICs. PL must support our staff throughout this transition to toward a more innovative learning environment, or students will lose valuable opportunities to be prepared for tomorrow's challenges.

Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, and Sendurur (2012) looked directly at the relationship between teacher beliefs and technology integration. These implications were evaluated to give insight to PL for technology integration. Ertmer et al. (2012) asked the fundamental question, "How do the pedagogical beliefs and classroom technology practices of teachers, recognized for their technology uses, align" (p. 36)? Through this research, it is evident that teacher beliefs correlate with frequency of technology use. If teachers believe innovative practices are an important piece of instruction, they will be more inclined to learn how to bring innovation to the classroom. Teachers must see the importance of PL before they are fully invested in it. Ertmer et. al (2012) explains how important "involving teachers in the visioning process, either through participatory efforts or through teacher education and professional development efforts is essential…the cultures in which teachers learn and work must embrace and nurture this new definition." It is important to collaborate with all parties when implementing new technology such as TIFA, as the success of the PL heavily relies on teacher participation. It is essential that the process of developing innovative PL is

collaborative enough to enhance teachers' voices, build teachers' beliefs, and improve innovative instructional practices.

Holmes, Preston, Shaw, and Buchanan (2013) explained that education is drastically changing because of technology. As such, PL must evolve to keep up with the changes. Twenty-first-century PL is more important than ever to demonstrate to our teachers that professional learning is evolving with instruction. We must continue to evolve all aspects of PL to grow effectively and develop education.

Several researchers have investigated instructional practices that include FA and technology and the relationship they have on student achievement. The following list provides those studies significant to this project.

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2.3 Significance of the Literature Review

The areas explored for deeper understanding were instructional coaching as JEPL, the developments of FA, FA as an instructional strategy, how FA supports student learning, and formative assessment used with technology. By examining these areas further, the phenomena of using JEPL to implement TIFA was studied to determine the various factors which influenced the implementation of instructional strategy with technology. One of the original problems framed for the context of GIS was technology integration, but as informal data was collected, other factors were considered. One factor that was considered was how the technology relates to the instruction or content in the

classroom, which is where FA comes into the intervention to support instruction. Another factor that was considered is how does an instructional strategy is implemented on a campus effectively so that teachers get the support they need to follow through with an implementation.

This study aims to look at the following: How does instructional coaching as JEPL positively impact the implementation of a new strategy such as TIFA? What factors influence technology integration with JEPL? and How can JEPL improve the integration of TIFA? Utilizing case study research will allow content analysis and qualitative data collection through surveys, observations, team planning documents, and a teacher focus group interview. As an instructional leader at GIS my hope is that by developing TIFA through JEPL and instructional coaching, the learning culture within our ELA classrooms continues toward the goals of improved first-time instruction, student ownership of learning, and improved student performance.

CHAPTER III

FRAMING THE PROBLEM

3.1 The Problem Situation

3.1.1 Learning more. When conversing with various stakeholders through interviews and informal conversation, I learned that there is a need for increased support with technology integration. For an increase in technology use to happen, it is imperative for technology to have an instructional purpose that teachers can see a need for in the classroom. Formative assessment provides the instructional purpose for technology to have an impact on classroom instruction. This is where technology and FA merge in the study and become TIFA. TIFA has the potential to help teachers gather FA data to help them understand their students' learning needs and provide more focused instruction before summative assessments. This problem situation is evident based on discussions with instructional leaders, informal surveys, and discussions with teachers. To implement or improve an innovative instructional strategy, such as TIFA, there must be ample support. Instructional coaches will support this intervention. Instructional coaches know how to use JEPL and can provide support for a more successful intervention. Wang (2017) emphasizes providing that providing instructional teams with time to look at current practices to critically consider instruction and utilizing a coach for support and encouragement will allow for greater gains.

3.1.2 My findings about values. Through my conversations with various campus staff I learned our teachers are at different places when it comes to formative

assessment knowledge and implementation, as well as technology integration (see Table 2). When 60 teachers are on a campus, there is going to be many variations of understanding, efficacy, and implementation. One of the classroom teachers interviewed, stated that she believes some teachers do not understand formative assessment as assessment for learning. She believes some teachers "think it is important, and I see teachers should do formative assessments, but I think it takes a lot of planning and forward thinking, and some teachers have not taken steps to make it a part of what they do." Time for planning, of course, is essential to the growth and development of TIFA. An instructional coach interviewed, stated that she believes some of the teachers think they are using formative assessment effectively, but believes they need more practice using it to adjust instruction. Formative assessments are specifically used to adjust instruction, and if teachers are not adjusting instruction as a result, they are not using formative assessment as it is defined. Formative assessment understanding and planning time surfaced as a necessary focus area. A clear understanding must be developed, and more time must be put into the practice to enhance FA and TIFA.

It was imperative that OCISD & GIS clearly define FA, provide examples of FA, and provide PL directly on FA methods. In addition to PL, teachers need the support of ICs and administrators throughout this process, ICs to provide JEPL, and administrators to support the vision. Teachers need more JEPL time to study formative assessment and time to develop TIFA and how it fits into the curriculum. They also need consistent team collaboration time to look at the assessments each week and determine which direction to go in the next class. In Table 2, various conversations with staff

members regarding FA and technology integration were held in an effort to better understand the values of FA at GIS.

As a result of these conversations, I have learned our teachers are at various levels in formative assessment and technology integration knowledge and implementation. Some teachers have worked with ICs and some have worked very little with ICs; therefore, JEPL experience with ICs is at various levels as well. There are many factors which influence the implementation of TIFA, using JEPL and using teacher data through the pre-surveys helped determine how to support the teachers' in their learning, which was paramount to TIFA.

Table 2

Example of a Rank-Ordered Table of Values, participants, and Illustrative Statements

Rank	Category and Value	*Participant	Illustrative Statement(s)
1	Professional Values: Obligation to Organization	Mr. Zack	"Formative assessment is essential, if it is not used in the classroom, it is setting kids up for failure."
2	Organizational Values Value: Efficacy	Ms. Petes	"I think it is important and I see that teachers should do formative assessments, but I think it takes a lot of planning and forward thinking and some teachers have not taken that step to make it a part of what they do."
3	Organizational Value: Effectiveness	Ms. Petty	"I believe that some of the teachers think that they are using formative assessment, believes they need more practice using it to adjust instruction. I have seen many teachers use Kahoot or Jeopardy, but never adjust instruction according to how the students performed."

(continued)

Table 2 (continued)

Rank	Category and Value	*Participant	Illustrative Statement(s)
5	Organizational Value: Understanding	Ms. Jamie	"I do not think many teachers understand formative assessment, I think they think formative means formal."
6	Professional Value: Obligation	Ms. Simon	"Check points are one form of formative assessment that comes down from the district, but there is no follow-up or data collection, so they are ineffective formative assessments. I am not even sure why we use them."
7	Organizational Values: Effectiveness	Mr. Zack	"If we can use It's Learning…it will be quick and could give instant data."
8	Basic Human Value: Knowing your Students	Ms. Jamie	"Using formative assessment helps you get to know your students and how they think, you know who gets it and who doesn't."

Note: *Participants are anonymous. (a) Ms. Petes – The technology instructional coach who is in science classrooms daily and works with teachers on a daily basis on instructional improvements, (b) Ms. Simon – The Language Arts instructional coach who is in classrooms and works with teachers on a daily basis on instructional improvements, (c) Mr. Zack – One of the assistant principals who works with the Language Arts team, observes classrooms, and evaluates teaching on the campus, (d) Ms. Jamie – This is an inclusion teacher who provides support is in a variety of classrooms; she is a special education teacher, but has also taught general education as well. (e) Ms. Petty – The English instructional coach that works with the ELA teachers daily and works directly with them in their classrooms as well.

3.1.2 Problem or dilemma. Technology integration has been a dilemma for many years because of the various beliefs teachers have about technology use in the classroom and the various levels of technology teachers are comfortable implementing. The expectation for technology integration has increased due to access to technology; therefore, it remains a dilemma. Technology integration will remain a district quandary

due to the increased expectations by OGISD and the variation in teacher beliefs about technology integration. The array of decisions made by teachers to incorporate a wide variety of instructional strategies in their lessons is challenging. Technology integration is just one decision teachers have to make when designing lessons. Technology integrated formative assessment requires JEPL to give teachers a sound understanding of an instructional strategy which can be implemented using technology in an efficient way and to support teachers with the gathering of useful data.

3.2 My Journey in the Problem Space

3.2.1 Considering alternative viewpoints. My field supervisor considered this as a technology integration study involving JEPL, using a specific strategy to teach teachers how to use the learning management software to implement FA. She wanted me to talk to the Language Arts department about technology integration and determine their collective understanding of formative assessment as an instructional strategy. She wanted me to gauge their efficacy related to FA integration. She agreed that we must continue to provide time and PL for continuous learning expectations and experiences for our teachers, which will lead to increased student achievement. Therefore my field supervisor saw the importance of JEPL for this project. She asserted that it would be essential to get the instructional coach involved as well as the instructional technology coach to provide teachers with various types of support for this project and create collective efficacy within the teaching team.

3.2.2 The evolution of my current understanding. As the exploration of the GIS context unfolded, several things became more evident. The district PL plan included

several goals worked toward technology integration. My assumptions were, by helping teachers implement technology, my plan would fit right into campus technology integration and this could be a key to bring more technology in the classroom and meet the goal. As I looked at the problem in more depth, I realized that I needed to take a more instructional. Even though OCISD was bringing on more technology for the students, it did not mean we had to change practices overnight. Originally, the problem for GIS was designed to find a solution to increase technology integration in the classroom. As exploration of this topic was expended, I realized technology integration alone required more depth to be meaningful to teachers. What this meant was that technology integration must have a "why." To bring something new, such as technology, into the classroom there must be a "why" or a sound reason to do something new. Formative assessment was introduced into the study to give technology integration a "why." Asking teachers to try technology integration using a proven instructional strategy, such as FA, brought another reason to implement technology, it became more than a technology tool. Technology integrated formative assessment became an instructional tool—an instructional tool with the potential to help gather data, which used effectively, would impact student learning.

Looking at this problem it was essential to listen to the staff and support the teachers with technology integration, not mandate it. By allowing teachers to collaborate and have autonomy to make instructional decisions about technology integration, TIFA had a better chance of success. Specific campus targets helped formulate an autonomous approach to building in TIFA into classroom instruction.

Using GIS's strategic plan, I knew I needed to create opportunities for teachers and students to explore optimal learning environments and to explore what optimal learning environments look like at GIS. To help the instructional team learn what optimal learning environments looked like we looked at our students and molded lessons to fit our students learning styles. This specific campus goal that tied to this tactic was: "Creating awareness of student learning styles to support building personalized lessons" (Glen Intermediate School, 2017, pg. 1). By asking the teachers to explore their students' needs, they gained an understanding of the various learning styles they needed their lessons to fit. Using this information, I see how important it is to give the teachers at GIS flexibility in the way they use formative assessment in their classrooms. As I further examined the campus goals, there was a sub-goal which directly tied into the use of data to drive instruction: "Working in academic teams to design engaging lessons, disaggregate data to drive instruction, and to collaborate to enhance our pedagogy" (Glen Intermediate School, 2017, pg. 2). This sub-goal specifically calls for teachers to use data to drive instruction, which is what formative assessment was developed to help teachers do.

CHAPTER IV

PROBLEM STATEMENT

4.1 Audience. The instructional team consisted of the Language Arts Instructional Coach, the Technology Learning Coach, and three Language Arts teachers. The Language Arts instructional coach supports the Language Arts teachers with instruction and assists them in finding ways to increase student achievement while being creative and developing lessons to increase student engagement. The technology learning coach supports teachers with technology integration and working with teachers to choose the most effective type of technology, the software, and how to effectively implement it into classroom instruction. The Language Arts teachers were directly involved in the TIFA intervention and also served as collaborators within the team. The Language Arts teachers and the ICs worked together to improve the effectiveness of instruction through the use of TIFA.

The instructional team was a seasoned group of educators consisting of four veteran teachers, one veteran TLC, and one veteran teacher that was new as the ELAIC. Teacher 1 had 30 years of teaching experience in the ELA department all at GIS. Teacher 2 had 17 years of teaching experience all at GIS and was a teacher aide for 5 years prior to starting her teaching career. Teacher 3 was the team leader for the 6th-grade ELA team. She had been at GIS for a year but had 27 years teaching experience at various schools. Teacher 4 had 29 years of teaching experience. The TLC had 19 years of technology coaching experience and 10 years of teaching experience. The ELAIC had

9.5 years of teaching experience and this was her first full year of instructional coaching at GIS.

4.2 Ideal Scenario/Vision. If this problem of technology integration or lack of FA implementation did not exist, teachers would feel more comfortable utilizing technology for assessment of learning. Teachers would implement FA more regularly to assess student learning and adjust instruction based on the FA throughout the unit of study. Increased student engagement and deeper learning could result if effective FA was in all classrooms at GIS, regardless if technology was utilized for the FA or not. Students would have more ownership in their learning, having opportunities to create, analyze, and critique during various activities to reach higher order thinking skills. By tailoring PL to include training and support with the complete implementation of TIFA, teachers will have an improved understanding about TIFA and understand the importance of its implementation. An increase in TIFA would improve student learning because of the continuous assessment of learning.

CHAPTER V
THE SOLUTION

With the recent implementation of one-to-one technology at Glen Intermediate School, the PL community must shift instructional practice and learn how to integrate technology to benefit student achievement. Twenty-first-century learning strategies must increase with the use of quality instructional strategies. Technology integrated formative assessment is a strategy that teachers can learn to implement successfully through JEPL. The process of providing supported TIFA was explored and two possible solutions explained below.

5.1 Possible Solutions.

5.1.1 Possible solution 1. There are many PL options for instructional leaders to choose when implementing new practices. Some leaders choose to do a one-time presentation in a large group, other leaders do small group presentations, some do lesson studies with their faculty, and there are still other options for implementation. At Glen Intermediate School our teachers are all participating in personalized PL and they have the options to choose the PL to benefit their instruction. One option for TIFA would be asking teachers if they would be willing to complete a book study with an action research on FA supported by the instructional coach. This could be a first-step option as teachers begin to learn how to implement FA in the classroom. The book study group would discuss the contents of the book and establish how each teacher will implement TIFA in their classroom. Data collection would take place by recording the book study

group meetings, teachers writing a one-page journal, and conducting a focus group at the conclusion for follow-up data.

5.1.2 Possible solution 2. This solution involves asking teachers if they will participate as an instructional team with a technology learning coach and content area instructional coach in PL of TIFA. I would work with the ICs in developing FA PL, and they will in turn, collaborate with the teachers implementing TIFA. This solution would involve JEPL which would include regular instructional team meetings and the consistent support of ICs. Data collection would take place by collecting teacher surveys, journal entries, and teacher focus group responses at the conclusion of TIFA for follow-up data.

5.2 Input from Others

5.2.1 Stakeholders' input. The stakeholders, teachers, ICs, and principals have given me quality insight to guide the solution in the study. The ICs and teachers I interviewed have discussed the importance of collaboration in the teaching teams. They unequivocally champion FA as a means to develop sound instructional practices. Further, the ICs were happy to learn the plan involved collaboration. The ICs and teachers specifically opted for the second solution because of the opportunity to provide focused JEPL.

Job-embedded professional learning is a great support for our teachers as they learn a new instructional strategy. It gives them the support they need with the ICs present in the classroom when needed and there for teacher feedback and questions throughout the implementation. Knight (2011b) emphasizes the important roles of the

coaches as they, “frequently model practices in the classroom, observe teachers, and engage in supportive, dialogical conversations about what they observe” (p. 91). By using my research and the input of the campus, the significance of the ICs is evident. The ICs are essential to the support and collaboration when it comes to implementing instructional strategies. Collaboration of the instructional team and instructional coaching support was emphasized to implement TIFA.

5.2.2 Classmate’s input. My classmate agreed that the values within the study were pertinent to the study. Organizational, professional, and basic human values such as efficacy, effectiveness, time, understanding, obligation, and knowing students would all be relevant to the study. She emphasized how important the first five values would be to the teachers in the study and to what level they may motivate them to implement the strategy. The last value, knowing students, ties into FA and the teacher’s ability to know students’ capacity and taking the time to learn where students are in their knowledge. She liked that teachers were given some autonomy in the design of their TIFA. The solution she chose was the second solution, because collaboration was emphasized, and instructional experts were more involved. She realizes the importance of JEPL to support instructional change. She cautioned me to be mindful of the teacher’s time and ensure that ample opportunities to understand formative assessment were offered throughout the initiative.

5.2.3 Field advisor’s input. My field advisor helped me sort through unsuccessful solutions and solutions which would not work for our campus to get to a viable solution. We talked about traditional professional development and determined a

one-time presentation of a new strategy would not effectively promote growth for most teachers. We discussed JEPL and how it has already had an impact with various PL and personalized learning in the classrooms at GIS. We currently have collaborative groups meeting regularly to plan, assess, collect and explore data, and implement plans. TIFA would be a quality strategy fitting naturally into a pre-existing and successful practice. Teachers would use this strategy to help determine need and to help build TIFA instructional activities as an instructional team.

5.2.4 Other's input. I talked to several teachers about the study, and they agreed that collaboration is the key to success with implementing instructional practices. By allowing teachers to discuss best practices and learn from others' experiences, they are able to learn more and gain more confident in its use. The second solution was a more viable solution for the teachers. Collaboration was a key factor in this decision. Teachers with whom I spoke wanted time to learn the strategy and time for implementation while working with ICs. Because OGISD has had ICs in the schools for many years, teachers realize how valuable they are as a resource, and a leader can assist with making instructional decisions and help support teacher learning.

5.3 The Proposed Solution

5.3.1 Informing the solution. After weighing the options and conversing with a number of knowledgeable stakeholders, I was able to decide on a solution involving JEPL and collaboration to develop TIFA. Efficient implementation of TIFA will help foster a campus and classroom atmosphere where teachers use FA data to inform

instruction and students take ownership of their own learning. By developing a solution which has a shared consensus, the solution should produce a better result.

5.4 The Final Solution

It was evident through my conversations that a collaborative effort in decision making would help teachers and instructional leaders implement instructional strategies. The instructional leaders believed JEPL and team collaboration would help them develop a plan for TIFA. I considered the amount of time given to the teachers in order to support them in their learning. I wanted to prevent them from being overwhelmed with the strategy implementation. The ICs were a vital piece of the implementation as the coaches helped the teachers decipher important pieces for effective planning of TIFA and support the effective implementation of this strategy.

CHAPTER VI

METHODS

6.1 Statement regarding Human Subjects and the Institutional Review Board

A preliminary review of the methods for collecting information from human subjects determined the methods proposed for this study did not meet the federal definition of "human subjects research with generalizable results." As the proposed information gathering methods are within the general scope of activities and responsibilities associated with my current position, I was not required to seek human subjects' approval.

6.2 Goals, Objectives, and Activities

The purpose of my study was to understand the utilization of ICs to support the implementation of an instructional strategy. The instructional strategy which was implemented to study this understanding is TIFA. Currently, I believe teachers have a need for increased professional support on FA and technology integration. Formative assessment has the potential to give teachers increased insight to student learning throughout the learning process. By combining FA with technology integration, the strategy has the potential to be more efficient for teachers to utilize FA and collect FA data.

This study focused, with depth, on the impacts of implementing TIFA with the support of an instructional coach utilizing JEPL. I looked at the factors for implementing

technology integration and the barriers for implementing professional learning such as TIFA.

Table 3

Goals, Objectives, and Activities Associated with the Problem Solution

Goal	Objective	Activity
I. Teachers will understand how to implement technology integration formative assessment (FA) and have the time to plan out the use of this strategy with the support of ICs (ELA & Tech).	I. Teachers learn how to implement TIFA through professional learning, time, and instructional coaching support.	1. Teachers and ICs complete pre-survey on TIFA & JEPL. 2. Instructional coaches and administrator develop PL and design the timeline for weekly collaboration and instructional coaching. 3. Teachers are given PL on technology integrated FA. 4. Instructional team has weekly team meetings to plan integrated technology FA to implement into lessons.
II. Teachers will feel supported by ICs during the implementation of technology integrated FA.	II. Instructional coaches will utilize JEPL to provide on-going TIFA support to the teachers during the school day.	5. Instructional coaches will implement instructional coaching to support teachers with technology integration, working with the team to create a collaborative and supportive atmosphere for JEPL.
III. Instructional coaches will gain experience and more insight on working with teachers on technology integration and instructional strategies such as FA.	III. Teachers will be able to discuss positive aspects of instructional coaching and barriers to technology integration and TIFA.	6. Completion of focus group interview with teachers and focus group interview with coaches.

6.3 Guiding Questions, Information Collection Methods, and Rationale for Methods

6.3.1 Guiding Questions. The guiding questions for the study focus on exploring the impacts of instructional coaching on the implementation of TIFA. Additionally, the study analyzed the utilization of JEPL and the impact on technology integration. With the pre-survey, ICs assessed the needs of the teachers to help decide how to effectively plan TIFA strategies and positively support teachers with JEPL. Therefore, the open-ended, guiding questions are the following:

The overarching question.

1. How does instructional coaching impact the implementation of TIFA?
    a. This question specifically addressed the impact of instructional coaching and the teachers' perceptions of instructional coaching in relation to implementing a new strategy.
    b. A pre-survey for teachers was used to determine these perceptions and used to prepare the JEPL for the implementation of TIFA. Pre-conceptions of coaches were also recorded through a pre-survey to determine their perceptions of JELP and TIFA.

The sub-questions.

2. What are specific barriers instructional teams, including ICs, may encounter when working to develop effective technology-integrated instruction?
    a. This question helped address the organization of PL and how teachers need PL best organized for them to learn effectively and efficiently.

This question gave insight into the barriers of JEPL and identified areas the school needed to improve on to increase the effectiveness of JEPL. Many teachers had not been asked how they best learn from PL and how ICs could support them.

3. What are specific barriers to developing effective technology-integrated instruction?
    a. This question explored the barriers to technology implementation, particularly examining the teacher's perceptions about the implementation of TIFA and areas that needed improvement.
4. How can instructional coaching improve the implementation of technology integration?
    a. The surveys and semi-structured interview were used to gain insight from the whole group through interaction about the process of implementing TIFA with JEPL.

6.3.2 Collecting data. For an organization to move forward, we must continue to question our practice. In this research, the case study method was used as this study involved a small number of teachers developing a specific area of instruction. Stake (2010) describes qualitative research as working to describe how things work or understanding the small inner pieces of a situation. To help dissect these inner pieces, intricate data is taken in various forms. Merriam and Tisdell. (2015) give a useful definition of qualitative research which fits the vision for this study:

> "…a basic qualitative study would be interested in (1) how people interpret their experiences, (2) how they construct their worlds, and (3) what meaning they attribute to their experiences. The overall purpose is to understand how people make sense of their lives and their experiences (p. 24).

Creswell (2014) suggests data collection for case study research from multiple sources including interviews, document, and audio-visual materials. Stake (2010) describes "drawing on the uniqueness of the case" and to include qualitative data, such as

1. the nature of the case;
2. its historical background;
3. the physical setting;
4. other contexts including economic, political, legal, and aesthetic;
5. other cases through which this case is recognized; and
6. those informants through whom the case can be known (p.90)

Data was gathered in this case study as objectively as possible through pre-surveys using open-ended questions. I used technology to gather this data which helped organize the data for the answers for interpretation. Other data was collected from meeting agendas, meeting notes, and lesson plans to show TIFA was being planned in an instructional team setting and implemented in the classroom.

Hill, Hill-Jackson, and Walters (2013) studied the development of FA within a middle-school context with a focus on a professional learning community. Although this

study differs in context, similar case study methods were used to gather data. The following data were used for qualitative analysis: a pre-intervention and mid-intervention survey for each teacher involved, a focus group interview conducted after the intervention, and documents supporting the development of FA from the professional learning to the planning meetings.

Table 4

Case Study Data Methods and Dates of Collection

Method	Date of Collection
Formative Assessment PD Session Supporting Documents	Jan. – Apr. 2019
Teacher Pre-survey	Jan / Feb. 2019
Instructional Coach Teacher Observation	Feb. / Mar. 2019
Teacher Mid-intervention Survey	Feb. / Mar. 2019
Team Planning Supporting Documents	Feb. / Mar. 2019
Focus Group Interview	Mar. / Apr. 2019

(Hill, 2013)

6.3.3 Summary

Table 5

Goals, objectives, guiding questions, and assessments associated with the problem solution

Guiding Questions	Data Collection Methods	Rationale for Methods
Overarching Question: How does instructional coaching positively impact the implementation of TIFA?	During the Spring of 2019, all 6th-grade Language Arts teachers and ICs completed a pre-survey about TIFA and JEPL. They received specific training on TIFA. After which, a day long collaborative planning session took place to implement TIFA in the classroom and weekly planning sessions to follow. Data from the planning sessions was collected from agendas, meeting notes, assessments, and lesson plans. Pre-survey responses from each teacher about the planning was placed mid-intervention. Language Arts teachers and ICs completed a focus group interview at the end of the 6-week study.	I am using this method to analyze the process of JEPL with ICs and teachers collaborating to implement TIFA. The study involves many variables, using this approach will provide information about the process of implementing an instructional strategy using JEPL. Instructional Coaches performed classroom observations to see teachers are implementing the strategy.
What factors influence the effective planning of technology integration using JEPL? What are specific barriers to developing effective technology-integrated instruction?	• Pre-survey teachers and coaches • Pre-survey responses from each teacher mid-intervention about the planning taking place • Supporting documents from the meetings • Semi-structured focus group interview	Insight on what the teachers perceive about technology integration and barriers to its implementation, as well as using JEPL how it influences technology integration.

(continued)

Table 5 (continued)

Goals, objectives, guiding questions, and assessments associated with the problem solution

How can instructional coaching improve the implementation of technology integration?	• Pre-survey • Pre-survey responses from each teacher mid-intervention about the planning taking place • Semi-structured focus group interview will be used to reflect on the process.	The surveys and semi-structured interview were used to gain insight from the whole group through interaction about the process of implementing TIFA with JEPL.

6.4 Instruments and Analysis

6.4.1 Protocols and instruments. The instruments used to collect information were surveys, meeting documents, curriculum documents, and interviews. The first instrument was the Teacher Pre-Survey and Instructional Coach Pre-Survey. I collected these using Microsoft Forms, which organizes the information in a spreadsheet for easier analysis of information. The questions used for the teacher survey focus on the teachers' use of formative assessment and of technology. This survey contained open-ended questions asking teachers about how they best learn and what they expect from a coach to support them through the implementation of a new strategy using JELP. The ICs Pre-Survey had questions about what coaches observe in the classroom on a regular basis pertaining to the use of formative assessment and technology. It also had questions about how ICs think teachers learn best and how they support teachers through JELP. By gathering this survey data at the beginning of the study, the ICs and I were able to assess

the teachers' needs before the intervention and provide the most appropriate support during JELP.

The second instrument was a mid-intervention survey from each teacher during the middle of the intervention to get their impressions of how TIFA was progressing with the support of the instructional coach. By having all team members take the mid-intervention survey, the teachers felt less threatened and were assured it would not be used for evaluative purposes. Again, I used Microsoft Forms to collect this pre-survey and used the information gathered in the pre-survey as a formative assessment piece within the study. I used the information collected in the pre-survey to look at how the support with JEPL was progressing. This mid-intervention survey served as support and evidence that the intervention was taking place and ICs provided additional support as necessary.

The third instrument used to gather data was meeting documents. I collected meeting agendas, curriculum documents, and meeting notes throughout the intervention. I used this information as a piece of evidence and knowledge about the planning of TIFA. I looked at the various topics discussed, notes made on each topic, data used to plan TIFA, the TIFA planned, and the support the ICs provided during the meetings. As the intervention progressed, I looked at the results of TIFA and identified evidence for the continued support of the ICs.

The fourth instrument was a semi-structured focus group which was a group interview conducted by an outside person who had no connection to the school or to the study. The interviewer was someone who was experienced in conducting interviews to

ensure the information was gathered effectively. The interview asked in-depth questions about the process of designing TIFA, the implementation of technology, and the support of the instructional coach throughout the process. There was an interview of the teachers and a separate interview of the ICs.

The ICs and I designed the original professional learning the teaching team received. The ICs introduced the instructional design and intervention to the teaching team. The intervention involved the teaching team developing TIFA and utilizing it in their classroom for a six-week period, with the support of an instructional coach.

6.4.2 Analysis of data. During Phase I of the study, data was taken from the pre-survey and analyzed to assess the JEPL needs teachers expressed. These needs helped guide the JELP built into the study. The pre-survey results were analyzed to assess the teachers' and ICs' values and beliefs about FA, technology, and JEPL. The information was used to help guide the intervention. By using this information, the ICs were able to better support the teachers from the start of the intervention. The open-ended questions had information that was analyzed using descriptive coding at the conclusion of the intervention. This information was used to lead the study and later used to compare to data taken later in the study to assess the progression of JELP and the support of the ICs.

During Phase II of the study, the 6-week intervention took place, and the second data set was taken with a mid-intervention teacher and coach survey. The analysis of this survey was done with descriptive coding to best assess and help summarize how the TIFA intervention was progressing and how the support of the ICs assisted with JELP. I used this information to provide the best support possible through the end of the study.

Phase III of the study final data was collected at the conclusion of the 6-week study. The meeting notes, agendas, and FA plans were collected. Samples of the TIFA implemented were also collected. This information was used during the focus group interviews to help the interviewer see the timeline of the development of TIFA. There were two focus group interviews; therefore, there were two sets of data. Descriptive coding was used to evaluate the meanings of the interview information and the meeting data.

Data was coded throughout the study using descriptive statistics to help answer the over-arching question, how does instructional coaching positively impact the implementation of TIFA? The analysis determined if the TIFA implementation went as planned with JEPL and instructional coaching supporting it throughout.

6.5 Timeline

Table 6

Activities Before Study Begins					
Mo	**Order**	**Contact/Activity**	**Collect**	**Analyze /Action**	**Product/Audience**
Sept-Dec		Begin preparing professional learning plan, research	Books, research TIFA, Instructional coaching, & PL		Chapter 1-3
Jan		Proposal to committee			Chapters 1-3

(continued)

Table 6 (continued)

Pre-Intervention Activities					
Mo	**Order**	**Contact/Activity**	**Collect**	**Analyze/ Action**	**Product/Audience**
Nov - Feb	1	Contact Language Arts teachers Design PL with ICs			Communicate with team & ICs Complete initial PL
	2a	Pre-intervention to begin developing phase I survey with instructional team	Ideas for pre-survey	Start developing survey	Draft survey
	2b	Finalize open-ended question teacher & instructional coach survey			Finalized survey
	2c	Administer the Pre-Survey to teachers & coaches	Data on the computer with Microsoft Office	Data using Excel as a tool	Descriptive statistics to explain data and help establish a plan to support teachers in TIFA
	3a	Assess the data from pre-survey (QUAL)		Use data to guide and develop PL	Descriptive statistics to explain needs and develop support plan with instruct coaches
	3b	Set-up Meeting with instructional team to complete the TIFA professional learning plan, adjust according to needs			TIFA professional learning plan finalized

(continued)

Table 6 (continued)

Intervention Activities					
Mo	**Order**	**Contact/Activity**	**Collect**	**Analyze/ Action**	**Product/Audience**
Feb	1a	TIFA collaboration day with instructional team and including teachers	Professional learning conducted		Summary of strengths and concerns
Feb	1b	Schedule weekly team meetings for 6 weeks to develop & analyze TIFA with the support of job-embedded PL	schedule		Calendar of meeting time and location
Feb	2	TIFA Intervention used in the classroom during the 6-week period with the continuous support of job-embedded PL			Teacher developed lesson plans with TIFA
Feb	3	Mid intervention teacher survey	Data taken using Microsoft forms	Used to assess mid interventio n progress	Descriptive statistics taken to guide intervention
Post-Intervention Activities					
Mo	**Order**	**Contact/Activity**	**Collect**	**Analyze/ Action**	**Product/Audience**
Mar	1	Meeting data, agendas, notes, lesson plans	Notes	Use this informatio n to assess planning progress	Meeting evidence notes

(continued)

Table 6 (continued)

Mo	Order	Contact/Activity	Collect	Analyze/ Action	Product/Audience
Mar	2a	Focus group interview developed with TIFA instructional team	Transcript		Final draft of exit interview
ROS Preparation					
Mo	**Order**	**Contact/Activity**	**Collect**	**Analyze/ Action**	**Product/Audience**
Mar	2b	Focus group interview conducted	Transcript		Final conclusions regarding effectiveness
Mar	2c	Focus group interview analysis (QUAL)		Data sorted by themes for analysis	Descriptive statistics used
Mar	1-4	Write drafts of ROS/dissertation chapters, share with chair	Develop detailed schedule with chair to complete by deadlines	Complete all analyses; synthesize informatio n	Draft copies and eventual final draft/share with thematic chair
	1-3	Share final copy of ROS/dissertation with chair (allow 2 weeks) and make corrections			
Jan	4	Share ROS/dissertation with committee			Final draft
Mar		Defend by deadline Receive thesis clerk approval Mar. 2020			
May		Graduate			
April		Share final copy with stakeholders			Summary of findings Copy of completed study

6.6 Issues of Dependability, Confirmability, Confidentiality, and other Ethical Concerns

6.6.1 Dependability. Before the interview questions were administered, my field advisor viewed the questions for clarity. It was important the questions were concise and asked what they were intended to ask. Throughout the study my field advisor supported the study and advised the approach to the study. Also, working directly with the 6th grade ELA team, including the ICs, impacted the approach to the study and the support provided throughout. To increase dependability of the study effort was made to give the 6th-grade ELA teachers autonomy on how they wanted to work through the problem of practice. There were efforts to ensure the team allowed all members to have a voice in the instructional choices made throughout the study, and decisions were discussed and agreed upon. Another way to protect dependability was the fact that I was not a part of the regular collaboration meetings to allow the 6th-grade ELA team to plan without my influence. Member-checking was utilized throughout the study to ensure the ICs and the teachers were able to clarify things which needed further explanation. Explaining the understanding of various pieces of the study ensured the analysis was correct and as clear as possible.

6.6.2 Confirmability. Denzin and Lincoln (1998) explain that "qualitative research has to do with description and explanation, and whether a given explanation fits a given description" (p. 50). To assure the confirmablity of the study, I worked to clearly define terminology and descriptive coding to provide clear descriptions within the study. I used clear interview questions, relevant to the study, and written to gain

quality data. Member-checking was used with the ICs and the 6th-grade ELA team as this team had the opportunity to review the analysis of data to ensure the information was clearly and concisely conveyed. Triangulation of the data was used to draw similarities throughout the study. Disconfirming evidence was also revealed within the study to identify barriers to the TIFA implementation.

6.6.3 Confidentiality. All names used in the study are pseudonyms used to protect confidentiality. The school and district names have also been changed to maintain confidentiality. The participants in the study have been informed all information will be confidential and this study will not reveal their identity.

6.6.4 Other ethical concerns. I have reviewed AERA's Code of Ethics and have identified no potential ethical concerns about the conduct of my study. This project serves as a quality improvement project as it involves an in-depth study of the implementation of TIFA at Glen Intermediate School, within the 6th-grade Language Arts team. Instructional coaching was also assessed, and the process of instructional coaching as JEPL was analyzed throughout the project. The project, looking to improve or implement TIFA, helped teachers work through a full cycle of lessons utilizing FA to inform instruction. This project did not involve teachers I evaluate, nor did it involve human subjects in generalizable research. The teachers in this study participated in a study whose goals were not creating generalizable research. The use of FA is a chosen instructional strategy which teachers volunteered to try in their classroom and complete TIFA collaborative lesson planning as part of the project. This project included data I would normally have access to as the principal of the school. Student and staff

information and data will be kept confidential. In the light of these ethical considerations, I did not need to seek IRB approval to conduct the study I completed.

There were limitations to this study. Although this case study provided insight to JEPL and the development of a technology within an instructional framework such as TIFA, the findings do not generalize across settings due to the small number of members involved in the case. It must also be considered that the case took place at a single school and the data collection was done in a six-week period. The 6th-grade ELA team was a veteran group of teachers experiencing an increased amount of collaboration time, which also impacted the study. A different group of teachers may have had different findings.

Another point to consider it that it is possible the teachers involved in this case were more compliant within the study because they knew I, the campus principal, would analyze and record the findings. It is important to note that the ICs and my interviewer (an unbiased fellow researcher) were used as the leads and the data collectors in the study. The ICs nor the interviewer held a supervisory role at the school. The technology learning coach had been working at the school for six years and the ELA instructional coach was new to the school and to coaching, but she brought with her extensive curriculum knowledge, which was a huge asset to the study. Having the ICs as the insiders in the study was essential to providing a non-threatening environment. The drafts of the data were shared with the teachers, and the drafts of the study chapters were shared with the ICs and teachers to ensure they reflected what occurred within the study.

CHAPTER VII

RESULTS

7.1 Results

The purpose of this study was to determine how instructional coaching supported the implementation of TIFA. In addition, it examined what factors influenced the planning of technology integration, including looking at specific barriers to technology integration.

An important piece before beginning this study involved developing a school culture of on-going JEPL, and part of expanding on the JELP culture was the implementation of TIFA. Establishing consistent professional learning at Glen Intermediate was the groundwork for TIFA, and TIFA will continue to expand this practice. Grade-level team planning was introduced during the first semester of the 18-19 school year, and each grade-level was given a common conference period for teachers to participate consistently in a grade-level professional learning community. Each grade-level team included an instructional coach who attended the weekly team meeting. Each grade-level team had a lead teacher called a Team Lead. The Team Lead was deputized to organize the agendas, maintain notes at each meeting, and take the lead in meetings. Glen Intermediate Team Meeting Expectations were established by the Team Leads at the beginning of the year. The expectations were set to help keep an instructional focus during the team meetings and to keep the meetings timely and professional. These expectations can be found in Appendix A. By setting this

expectation of collaboration as part of the culture, JELP has become a part of Glen Intermediate's learning community.

Another aspect of establishing the professional learning community is the PL of ICs. All ICs in OGISD went through an extensive six-day instructional coaching academy, which focused on the role of an instructional coach and how to build the instructional practices through instructional coaching methods and best practices. The coaching academy was adopted from Learning Forward and focused on these outcomes:

1. Develop teacher leaders to serve as coaches in schools.
2. Develop an understanding of the roles and responsibilities of coaches.
3. Build the individual capabilities of coaches so that they can work comfortably in a variety of roles and with a variety of teachers.
4. Understand CBAM (Concerns---Based Adoption Model) and develop skills to manage change and handle resistance.
5. Develop the communication/relationship skills of coaches so that they can influence school cultures and build trusting and productive relationships with their clients.
6. Develop skills to work collaboratively with other school resource personnel.
7. Create partnership agreements to use with principals and with teachers.
8. Understand how to use facilitate data conversations to make instructional decisions.
9. Develop questioning skills that promote deep thinking and reflection.

10. Explore an array of job embedded facilitation strategies to use in a variety of coaching situations.
11. Explore professional development learning designs.
12. Begin to plan for the role as coach. (Learning Forward, 2015)

Throughout the coaching academy there was an emphasis on building trust with teachers and becoming an instructional counselor for teachers, but highly focused on improving instruction. The PL was a very important step in developing ICs that have the knowledge and efficacy to make an impact on the professional learning community. The six-day coaches academy was organized in a way to build on very specific practices from the role of an instructional coach, to probing questions, to facilitation of teacher collaboration. See appendix G for a complete breakdown of the topics for each day of the academy.

Part of the process for selecting a team to participate in TIFA was seeking a team that had established some collaboration in previous years, and the 6th-grade ELA team was the chosen because of this. The 6th-grade ELA team had previously established a rapport through their collaborations; therefore, this team appeared to be ready to collaborate on TIFA. The 6th-grade ELA team consisted of four teachers and two ICs. Discussions on formative assessment and incorporating technology as a FA tool were started, and the team agreed to participate in the study. The team began to brainstorm possible technology that could benefit the FA process. Instructors tried using electronic spreadsheets with students during the first semester to lightly implement some technology pieces in lessons. The spreadsheets were used for students to keep track of

their reading progress on the computer. Students began charting electronic spreadsheets for reading logs to track number of pages read each day. By starting with electronic reading logs, teachers were able to start bringing some technology into the classroom and started to feel a little more comfortable using technology in their classrooms with students.

7.2 Sample

At the beginning of the second semester, the 6th-grade ELA team met for a day of curriculum planning and discussed the implementation of TIFA for the six-weeks of the study. The teachers and ICs agreed to participate in the study and were assured all data collected and information identifying the school would remain anonymous. From previous FA discussions with stakeholders, as stated in Framing the Problem, it was necessary to establish a clear understanding of FA. It was important that all involved in the study had the same knowledge of what FA was. The principal led a PL on formative assessment to establish a clear definition of FA using information cited in the literature review, see Appendix B provides a copy of the presentation to the team. One of the key pieces that summarized the FA PL was the Formative Assessment Focus Five adopted from Keeley and Tobey (2011). The Focus Five asks instructors to:

1. clearly define the learning goals as well as the criteria for success with students
2. use effective classroom discussions, questions, tasks, and activities that elicit evidence of student learning
3. provide feedback that moves learning forward

4. activate students as owners of their own learning
5. create a collaborative student learning environment, encourage teamwork (Keeley & Tobey, 2011, pg, 1-3).

The team had a discussion on what quality FA is and discussed various ways technology could assist in the FA. The ICs were deeply involved in the discussion to launch TIFA.

The six-week study was conducted with four teachers, one Learning Technology Coach (LTC), and one English Language Arts Instructional Coach (ELAIC). The study resulted in 6 pre-surveys, 13 collaboration meeting notes, 5 mid-intervention surveys, and 2 focus group interviews. All data was collected throughout the process and was input into HyperResearch. As the six-week intervention took place, the principal and the ICs discussed many facets of the intervention including the direction of the intervention, the support during 6th-grade ELA collaboration, and the overall collection of data. We discussed the PL during the ELA collaboration meetings to ensure that we were all on the same page with the intervention. The ICs led the intervention and worked to support teacher learning throughout. The focus group interview was transcribed using HyperTranscribe and resulted in 61 pages of transcribed data.

7.3 Data Analysis

A codebook for this case study was created in HyperResearch by formatting the data into codes and looking for similarities within each code to create broader themes (Creswell, 2007). Merriam and Tisdell (2016) describe the need in a case study to "convey a holistic understanding of the case, the level of interpretation may also extend to the presentation of…themes…" (pg. 233). Themes were developed through looking at

the hierarchical relationships within the coding (Muhr, 1994), or similarities of the codes, used to establish the major themes of technology, instructional coaching, curriculum, formative assessment, and teacher input. These major themes are seen throughout the case study database and were used to organize the major findings of the study. Yin (2014) describes the organized data as the case study database – a "systematic archive of all the data" that forms a case study (p. 238) which he describes as different from the case study report. Through analysis, interpretations are made and organized into results to "convey a holistic understanding of the case" (Merriam & Tisdell, 2016, pg. 233). The major themes that were developed during the analysis of data by breaking down each comment into theme groups. These themes were used to organize the data and to answer the overarching question and sub-questions.

The Overarching Question:

1. How does instructional coaching impact the implementation of TIFA?

Sub Questions:

2. How does instructional coaching support influence the effective planning of technology integration using JEPL?
3. What are specific barriers that instructional teams, including instructional coaches, may encounter when working to develop effective technology-integrated instruction?
4. How can instructional coaching improve the implementation of technology integration?

The major themes were used to categorize each piece of data into the themes of

technology, instructional coaching, curriculum, formative assessment, and teacher input. All of these themes were connected to the theoretical framework and are supported by the following sub-themes: (a) coaching support with technology, (b) coaching support with FA (c) collaboration as FA support (d) barriers. Table 7 lists the TIFA codes and the frequency they occurred within the data.

Table 7

TIFA Code Book – Frequency Table

Code	Count of Code	Code Theme
Curriculum barrier	15	Curriculum
Curriculum focus	13	Curriculum
Evidence of FA assessment	8	FA
FA assistance	29	FA
FA Barrier	15	FA
FA frequency	2	FA
FA knowledge	4	FA
Coaching support	69	Instructional Coaching
Evidence of autonomy	5	Instructional Coaching
Instructional coach feedback	14	Instructional Coaching
Instructional coach barrier	6	Instructional Coaching
Professional learn techniques	8	Instructional Coaching
Professional learning	32	Instructional Coaching
Student impacts	4	Instructional Coaching
Emotions noted	41	Teacher
Evidence of collaboration	13	Teacher
Teacher feedback	15	Teacher
TIFA feedback	5	Teacher
Time barrier	52	Teacher
Technology assistance	30	Technology
Technology barrier	47	Technology
Technology frequency	3	Technology
Technology specific use	10	Technology
Code total	440	

To ensure the credibility of the study data, triangulation was utilized. According to Merriam and Tisdell (2016), triangulation "is a powerful strategy for increasing the credibility or internal validity of your research." (pg. 245). Triangulation confirms the multiple data sources used to capture the realities of the study and each source played various parts in verifying subthemes. Triangulating the data patterns using multiple sources substantiates the subthemes and shows the sources of data supporting each theme. The sources of data used for TIFA were pre-survey data, mid-intervention survey data, collaboration data (team meeting notes and emails), and the focus group recordings. The data triangulation matrix in Table 8 supports the subthemes and shows the sources of data supporting each theme.

Table 8

Case Study Data Triangulation Matrix

Subthemes	**Source of Data**		
	S	**C**	**F**
Coaching Support with Technology	X	X	X
Coaching Support with FA	X	X	X
Collaboration as Support		X	X
Barriers	X	X	X

Note: S = Survey Data, C = 6th-grade ELA Team Collaboration Meeting Data, F = Focus Group Data

7.4 Findings

The findings were organized to respond to the overarching research question: How does instructional coaching impact the implementation of TIFA? The following sub-questions also guided this research study:

1. How does instructional coaching support influence the effective planning of technology integration using JEPL?
2. What are specific barriers instructional teams, including instructional coaches, may encounter when working to develop effective technology-integrated instruction?
3. How can instructional coaching improve the implementation of technology integration?

Coaching Support with Technology

Coaching support with technology includes specific technology instructional coaching of the instructional team, professional dialogue, and technology PL used during the development of the technology pieces of TIFA. Vygotsky's Theory of zone of proximal development was the theory was used to support the need for collaboration of teaching teams and the involvement of ICs (Vygotsky, 1978). The research of Phelps and Graham (2013) and Knight (2012) support the need for on-going PL for the continued growth of teachers. This research supported the need for JEPL to be at the forefront of implementation for new instructional strategies such as TIFA. Table 9 shows the list of codes and the frequency with which they occurred for the instructional coaching with technology theme. The table shows most of the codes in this theme were

in coaching support and professional learning, but there were also a large number of codes related to technology assistance and technology barriers.

Within the larger theme of instructional coaching with technology, the evidence revealed that numerous coaching opportunities that arose during the team planning meetings. The code counts show that technology coaching direction was given from both the ELAIC and the LTC that supported the teachers throughout the intervention. Focusing specifically on technology coaching, the responses showed that the LTC took numerous occasions to support with technology throughout TIFA. The 30 coded responses within the technology assistance demonstrate that coaches gave specific technology directions either through visits, team meetings, or emails. Thirty-two responses were coded as professional learning because these excerpts demonstrated some type of learning that the teachers were experiencing during TIFA; much of this evidence was cited during the team planning meetings.

Table 9

Instructional Coaching with Technology – Frequency Table

Code	Count of Code	Code Theme
Coaching support	69	Instructional Coaching
Evidence of autonomy	5	Instructional Coaching
Instructional coach feedback	14	Instructional Coaching
Instructional coach barrier	6	Instructional Coaching
Prof learn techniques	8	Instructional Coaching
Prof learning	32	Instructional Coaching
Student impacts	4	Instructional Coaching
Technology assistance	30	Technology
Technology barrier	47	Technology

(continued)

Table 9 (continued)

Code	Count of Code	Code Theme
Technology frequency	3	Technology
Technology specific use	10	Technology
Code Total	228	

The technology coaching support was evident throughout the data. All the teachers on the instructional team commented about the LTC's support with TIFA throughout the intervention. In the focus group interview, the teachers discussed how the LTC's clear technology directions supported the teachers through each TIFA strategy. They also made it clear the LTC was available to support them when they needed her most. Teacher 3 commented about this support in the focus group interview stating,

> One of the days I was setting up one of them, something wasn't working, something wasn't clicking, and I emailed the tech coach and she was on campus that day, and she was down like in two minutes and it was like one little button I needed to push, that was very helpful because in the moment you know when you want it. (teacher focus group interview, April 2019)

This is an example of how easily accessible the TLC was to the instructional team and it helped them feel more comfortable using the technology as they knew they could rely on her. When she was on-campus she would assist them personally, and when she was off-campus she would call, email, or text them.

The Learning Technology Coach was present in the collaboration meetings, as noted in the collaboration meeting notes, visited the classrooms for support each day she was on campus, and was available through email and phone at any time (February 2019).

Detailed notes regarding the frequency of the LTC's communication about TIFA are listed below:

- During the six-week period it was noted that the LTC was present in all six of the weekly meetings and provided detailed instructions on the two phases of TIFA, using different applications
- During the week of 2/19 she met individually with each teacher on the instructional team to support them with extra help since it was the first phase of TIFA
- The LTC met with Teacher 2 three additional times outside of collaboration to support TIFA implementation
- Throughout the intervention she sent 7 follow-up group emails to the 6th-grade ELA instructional team focused on the technology of TIFA
- She sent an additional 10 emails to individuals on the 6th-grade ELA team in response to questions about the specific TIFA technology (LTC email, January 2020)

The LTC documented a need for her support in the mid-intervention survey, stating "without coaching support, I doubt the teachers would take risks with technology to try new ways" (March 2019). The teachers relied on the LTC for support and technology professional learning (teacher focus group interview, April 2019). The implementation of technology requires teachers to devote extra time and effort for learning new skills, and time is often difficult to find for teachers. The instructional team made time a priority and met weekly throughout the six weeks of TIFA. This time was

set aside to collaborate and support each other with the implementation. The LTC provided specific technology assistance on the TIFA instructional pieces to implement the intervention in their classroom effectively and efficiently. Evidence of this assistance is found throughout the phases of the case study.

During the first phase of TIFA, the team brainstormed various ways to implement TIFA without causing a huge shift in the use of classroom instructional time. Noted in the February collaboration meeting (2019) the team wanted to use a type of technology tool students and teachers were familiar with to make the strategy easier and less time consuming to implement. The LTC discussed the use of ItsLearning and she introduced some ways ItsLearning could be utilized for assessment purposes. ItsLearning is the Learning Management Software the school district has been using for four years; therefore, the teachers were more comfortable with the program. After more discussion, "The team decided to have the students snap a photograph of the writing and upload it to ItsLearning" (collaboration meeting, February 2019). The teachers felt having students type a response would take more time than they were willing to give. The first phase of TIFA was established through the collaborative discussion. The technology piece was for students to take a picture of their written response to a persuasive essay prompt and upload the picture of the essay in ItsLearning. The TLC explained to the team how the response could be pulled up for each students' entry and assessed in the ItsLearning program. Feedback could be given to the students within the program and the assessment piece would be used to give them knowledge about where the students were in their learning of writing a persuasive essay.

The 6th-grade instructional team was content with trying this TIFA instructional strategy and noted one anticipated benefit to using technology was not carrying a stack of notebooks home to assess student learning (collaboration meeting, February 2019). Detailed notes were made during the collaboration meeting (February 2019) noting the directions the LTC had prepared for the team on the technology piece of TIFA; she gave them instructional notes and demonstrated how to utilize the platform. The LTC created the instructional materials for the teachers and for the students to utilize for the first phase of TIFA (collaboration meeting, February 2019). The instructional materials were used to provide clear technology directions and provide ease of implementation.

The LTC checked in with every teacher on the team to ensure they were comfortable with using the technology (collaboration meeting, February 2019). The LTC "helped her [Teacher A] with how to access the assignment in Itslearning and showed… both the teacher view and student view. [Teacher A] expressed nervousness about integrating the technology and described her personal lack of experience with technology" (collaboration meeting, February 2019). Phelps and Graham (2013) encourage educators to support technology learners "new and old, confident and hesitant – to continue to learn with and from their students" (pg. xii). The ICs have had PL on how to build teachers' confidence with various strategies and how to work with teachers with various levels of knowledge with technology. The ICs learn to meet teachers where they are and build on the knowledge they have. Teacher B "similarly expressed an unfamiliarity with technology integration. The LTC walked [Teacher B] through the steps the students will take to upload the photograph of their assignment." (collaboration

meeting, February 2019). As captured in the collaboration meeting (February 2019) the TLC went back to Teacher A and Teacher B throughout the use of the phase one TIFA strategy to continue to support the teachers and ensure understanding with the technology piece. Teachers C and D had a better understanding of the TIFA technology pieces and "both expressed more comfort with the technology integration" (collaboration meeting, February 2019). Supporting teachers where they were in their level of knowledge for technology was something the LTC was cognizant of, and she supported teachers in the way that best served them.

As phase one unfolded it became apparent the uploaded photos of student essays were blurry, most were difficult to read, and some were impossible to read (collaboration meeting, February 2019). The LTC explained she learned the ItsLearning program compresses the photo upon upload; therefore, the photo quality was lost. She listed out specific things the teachers could try within the technology to see the pictures better and tips the team could use to assist their students in uploading the best picture possible (collaboration meeting, February 2019). Phase one of TIFA was difficult due to the compression of the picture quality; however, teachers were trying something new, trying to use technology to assess learning, and collaborating to work towards solutions to impact student learning. The data for phase one of TIFA shows the number of students who uploaded an essay and if teachers used it for FA:

> Teacher A: 41 students submitted a photo of their writing. She has scored them and given them feedback inside ItsLearning, however, many of them are still illegible in this format, so she must have also looked at their physical writing

(notebooks) which makes the submitting of the photo perhaps unnecessary/not useful. She also scored the students who did not submit a picture.

Teacher B: 17 students have submitted a photo of their writing. Same issue with readability, however, her students wrote less - most only a paragraph, so more of them could be read online. No feedback has been given.

Teacher C: She has 42 Pre-Advanced Placement students who have submitted writing to her second assignment. Even with the second opportunity, some are legible, some are not. But more are legible this time around. She has not given feedback within ItsLearning. She does not have any regular students who have submitted photos of the writing.

Teacher D: 19 students submitted a picture of their writing. Some were legible, others not. Teacher D has not given any feedback to them within ItsLearning. (collaboration meeting, February 2019).

Three of the four teachers abandoned the use of the technology to complete the assessment of the essays. Teacher A was the only teacher who scored the assessment within the ItsLearning program, and she had to use student notebooks to be able to see some of the written pieces since the pictures were not visible in the ItsLearning program. The fact she had to use physical notebooks defeated the purpose of uploading the essays to ItsLearning, and she reported it took her longer to assess the student work due to the technology issue.

During the discussion about phase one of TIFA, the teachers were frustrated with the results and the fact they were unable to see the students' essays online. The LTC

"suggested to the team that it is okay this particular TIFA didn't work seamlessly and encouraged them to be comfortable taking risks with technology integration because we learn both from what works, and what doesn't" (collaboration meeting, February 2019). The LTC saw this as a learning experience for all involved and stayed positive throughout the discussion. Phelps and Graham (2013) write the importance of attitude when implementing technology integration and that "teachers can be prompted to see becoming proficient relies more on attitudes and learning strategies than on having a 'magic' personal quality or skill set" (pg. 32). The technology in the first phase of TIFA was not successful, but despite the difficulty, learning happened for the instructional team. The LTC knew when trying new types of strategies with classes of students the strategies may not go exactly as planned, especially when using a completely new strategy. The LTC helped steer the team and keep them positive and learning through the TIFA implementation.

During phase two, the instructional team discussed different options for using TIFA. The LTC was looking for easier, user-friendly tools to introduce, so she helped them learn about Padlet (collaboration meeting, February 2019). It was important for the team to feel more success during this phase of TIFA. During the meeting the LTC "connected to the projector and showed teachers, supported by a handout she had prepared for them, how to login to Padlet" (collaboration meeting, February 2019). Padlet is a technology tool which allows students to respond to a prompt using technology. The students' responses are posted on the teachers Padlet screen, and the

teacher can post them in front of the class to assess immediately. The teachers can also reopen the Padlet screen to assess student responses at a later time.

The LTC followed up with each teacher during the implementation of phase two, and teachers were successfully using Padlet, a type of response technology. This application allowed the teachers to get quick responses from students. The LTC sent the teachers an email message responding positively about the Padlet technology use which gave the teachers supportive reminders, guiding their usage. Here is a short excerpt from the email: "I popped in and took a look at your Padlets today – wow! I see some good responses in there and although I have not read the articles, I am excited to hear if this was an effective formative tool for you" (email correspondence, February 2019). Also, within the email she gives them additional support regarding the effective use of Padlet and reminders about setting clear expectations when using technology in the classroom. The full email can be seen in Appendix C.

The LTC provided positive support of collaboration and learning for all throughout the implementation of phase two of TIFA. During phase two the LTC was collaborating with each teacher as she, again, went to each team member's classroom and checked in as they were implementing the TIFA with students (collaboration meeting, February 2019). One example of learning for all is the LTC's celebration of Teacher B having a positive technology moment. Teacher B found a better way to imbed the Padlet link for students to access it easier, and the LTC recorded the finding as a "technology success" for Teacher B and sent it out to the team (collaboration meeting, February 2019). It was a positive highlight for Teacher B and a growth opportunity for

all the teachers. The LTC recounted Teacher B's discovery. "I was so excited that she had discovered this (something I should have thought of, myself, but didn't), that I said 'I am going to share this with the others!' then turned to the class and said 'Snaps for [Teacher 1]!' The class was happy to give her snaps, and [Teacher 1] was obviously pleased and excited" (collaboration meeting, February 2019). This moment shared by her students and the instructional team was an opportunity the LTC took to build confidence in Teacher B's technology abilities and celebrate Teacher B's ownership in technology discovery.

During the second week of phase two of TIFA, the instructional team continued the use of the Padlet technology. The teachers had success with it and wanted to continue using the same program to bring continuity to the use of TIFA in the lessons (collaboration meeting, February 2019). In the collaboration meeting (February 2019) the LTC provided support to the teachers to help them better monitor student posting in Padlet. She stated, "The kids were still posting gifs/ images to [Padlet], even this morning, so we deleted the Padlet, created fresh ones with a new question, and we turned the moderation ON, allowing the teacher to see the posts before they are visible to the other students" (collaboration meeting, February 2019). Throughout the TIFA implementation, the LTC helped monitor student work and find solutions to make sure teachers understood how to ensure use the TIFA. The LTC also talked to the team about how to organize the Padlet entries to make it easier to assess student learning. She suggested that the teacher take the time to assess student responses after they have all been submitted and she also suggested they use the "shelf" template for this for

organization of Padlet entries. (collaboration meeting, February 2019). By giving the teachers additional support with all the little details of various technology applications, the teachers felt supported with technology use throughout the TIFA intervention.

Coaching Support with Formative Assessment

The coaching support with FA refers to the curriculum support during the implementation of TIFA. The English Language Arts Instructional Coach (ELAIC) supported TIFA curriculum because the TIFA study was implemented with a 6th-grade ELA instructional team, and Glen Intermediate has a part-time coach. The support from the ELAIC was different than the support from the LTC. The ELAIC supported from a collaborative curriculum focused angle, and the LTC provided a technical angle. The ELIAC supported curriculum, lesson activities, question stems, formative assessment items, and assessment data strategies. The ELAIC was also there to support the teachers with instructional decisions. Table 10 shows the list of codes and the frequency with which they occurred for "coaching support with the formative assessment" theme. The table shows that most of the responses in this theme were in coaching support and professional learning, but there were also a large number of responses in FA assistance and curriculum.

Within the coaching support with formative assessment theme, responses indicated that numerous coaching opportunities that arose during the team planning meetings and in the focus group interviews. The code counts show that FA coaching direction was given from the ELAIC. Focusing specifically on instructional coaching, the responses show that the ELAIC took numerous occasions to support with instruction,

specifically FA throughout TIFA. The 29 responses within FA assistance demonstrate excerpts that gave specific FA directions either through visits, team meetings, or emails. Additional evidence shows specific coaching and various curriculum-specific support the ELAIC provided to help establish quality FA within the TIFA intervention.

Table 10

Coaching Support with Formative Assessment – Frequency Table

Code	Count of Code	Code Theme
Curriculum barrier	15	Curriculum
Curriculum focus	13	Curriculum
Evidence of FA assessment	8	FA
FA assistance	29	FA
FA Barrier	15	FA
FA frequency	2	FA
FA knowledge	4	FA
Coaching support	69	Instructional Coaching
Evidence of autonomy	5	Instructional Coaching
Instructional coach feedback	14	Instructional Coaching
Instructional coach barrier	6	Instructional Coaching
Professional learn techniques	8	Instructional Coaching
Professional learning	32	Instructional Coaching
Student impacts	4	Instructional Coaching
Code total	224	

The coding process revealed evidence that the ELAIC provided ample support throughout TIFA by providing thorough curriculum support throughout the intervention. During one particular collaborative meeting (February 2019), her support was necessary for the instructional team to fully understand the potential of TIFA within the lesson cycle. She explained where a specific TIFA intervention fit into the lesson cycle and helped the teachers see how FA could blend into the lesson effortlessly. This type of

coaching supported positive thinking toward trying a new instructional strategy and supporting teachers with where TIFA fit into the lesson. The 6th-grade ELA team was better able to see how TIFA could blend into the lesson design. Sometimes the teachers see the lesson as "set in stone;" therefore, when the ELAIC was able to articulate the possibilities about how TIFA could be utilized within the lesson, it supported the growth of the team. The team was able to use TIFA more positively and saw they only had to adjust their lesson slightly to implement it. Throughout the TIFA intervention, the ELAIC was a vital supporter helping the instructional team with key curriculum support.

During the first phase of TIFA, the ELAIC discussed the intervention with teachers and showed how to provide students with support through providing feedback using TIFA. Students were to upload a photo of their persuasive essay in ItsLearning for teachers to respond to. She gave the teachers ideas on how to give feedback on student work and ideas for student intervention. In the collaboration meeting notes (February 2019), the ELAIC discussed that she and the LTC went to each team members' classroom to assist them with phase one of TIFA. She supported the teachers with specific information about how to use TIFA to formatively assess student learning in the collaboration meetings and followed-up in email, listing possible strategies to be used. The following is the list of intervention strategy options she sent in a follow-up email:

- form a small group of students, reteach persuasive techniques, and have them rewrite their essay, and resubmit a new photo

- make a conference list of students who's writing clearly did not use the persuasive techniques you isolated from the mentor text, and conference with them about their work
- reteach the persuasive techniques lesson to the whole class if more than half of your students writing does not show evidence of persuasive techniques
- ask some students who did not use persuasive techniques in their writing to come to tutorials (email correspondence, February 2019)

During the visits to the classroom in phase one of TIFA, the ELAIC had candid discussions with each teacher about the lesson objectives and what student feedback each teacher would be seeking for FA. These discussions are noted in the meeting notes (February 2019). The ELAIC expressed that Teacher 4 "was not able to articulate what she should look for in students' work" (February 2019). With the help of the ELAIC, Teacher 4 decided to focus on persuasive techniques and whether the students could use two different types of persuasive techniques in their writing. Without the ELAIC, Teacher 4 may not have been able to articulate a clear objective for the lesson. The ELAIC also reported that Teacher 1 was seeking more of a summative writing sample for phase one of TIFA, reporting she was looking for a "multipara-graph persuasive essay" (collaboration meeting, February 2019). The ELAIC discussed with Teacher 1 the need to scaffold each lesson by building on concepts to teach students how to complete a full persuasive essay. The ELAIC reported that this conversation was uncomfortable as Teacher 1 did not want to ask for support (collaboration meeting, February 2019). Both Teacher 2 and Teacher 3 were able to articulate clear curriculum objectives in phase one

of TIFA. The ELAIC met with each of them to ensure each teacher felt comfortable with the intervention and the curriculum being used.

At the conclusion of phase one, as stated in the previous results section, the technology was unsuccessful as many of the essays were not visible in the ItsLearning program. During the collaboration meeting (February 2019) the ELAIC was still working to ensure the teachers were using the written essays for FA. She realized the importance of the assessment piece and saw the need for teachers to use the essay for student data and information even though the technology piece was not viable. The collaboration meeting provided information about how she coached the teachers to use the student information to inform instruction. She noted,

> I then offered that the students' writing is still potentially a valuable piece of data that we can use to inform the instruction we provide for students this week. I suggested that teachers return to what they learned reading the assignments regardless of the lack of success with the technology piece. We briefly discussed how many of the students did not write persuasively, but rather wrote personal narratives, and that teachers who noticed this in their students' writing should attend to that problem this week (February 2019).

It is important to note the ELAIC worked to keep the teachers focused on the goal of student FA, and to not allow the failed technology to distract the instructional team from the student data. Only Teacher 4 showed evidence of follow-through in an attempt to gather student data from their persuasive essay. The ELAIC noted about Teacher 4 data, "The feedback this teacher provided was all positive, and not constructive"

(collaboration meeting, February 2019). Although, Teacher 4 had good follow-through with working to complete the TIFA, the feedback given to the students was not given in a way that supported student growth. Teacher 4 needed more instructional support on how student feedback should be given to help students grow in the process. For Teachers 1, 2 and 3, because the technology failed for this TIFA strategy, they did not follow-through on using the assessment to inform instruction.

During phase two of TIFA, the ELAIC continued with supporting the curriculum implementation of TIFA. She helped the LTC lead the discussion on what technology the teachers would utilize during phase two of the intervention. The team decided to use the Padlet application to gather student responses from a class reading passage. The ELAIC offered support through reminding the team about the structure of the ELA curriculum. She explained that TIFA was a solid activity for the active engagement part of the lesson. Here is the excerpt from the collaboration meeting:

> I offered that one place in our lesson cycle that a quick Padlet assessment would fit seamlessly is the "Active Engagement" part of the minilesson. During Active Engagement, teachers are encouraged to observe students quickly applying the skill they have just been taught, and to note which students need further support based on this observation. Because this part of the minilesson is already structured to be a formative assessment, teachers may especially have good outcomes inserting the TIFA here…Finally, I provided teachers with a list of possible FA questions…" (February 2019). The list of possible FA questions can be found in the Appendix D.

This type of ELAIC support is seen throughout the TIFA intervention to give the teachers as many resources as possible, but to also give the instructional team autonomy to decide how to implement it in their classroom. Evidence from the Padlet TIFA shows the teachers did choose a question from the questions she gave them.

After the ELAIC viewed the Padlet use from the students, the ELAIC coach supported the team by making a student data tracking sheet called the TIFA Padlet Analysis Sheet (collaboration meeting, February 2019). This tracking sheet was an option to be used to collect the data from the TIFA intervention and to make it easier to organize the data. She presented an example of this data tracking sheet with sample data from one of the teachers Padlet pages, this sample can be found in Appendix F (collaboration meeting, February 2019). Teacher 2 commented on the data tracking sheet, describing it as a useful tool. Teacher 2 also discussed the ELAIC's contribution in the teacher focus group interview (April 2019) "I know one thing that [the ELAIC] gave to us is the little sheet that we could monitor how the students were answering questions; we were setting up through the TIFA, and she offered to us once we get all the data what we can do with it." The ELAIC tried to make it easier for student data to be assessed for student learning. The LTC also commented on the assessment tool and "explained how it is perfect for a formative assessment because you can quickly see which students need intervention" (collaboration meeting, February 2019). The student data tracking sheet proved to be a very useful tool which assisted with the organizing of phase two TIFA data. This tracking system made it efficient for teachers to assess student learning from the TIFA responses. Teachers had the opportunity to use the data

to glean important information on student learning and use this information to adjust instruction.

Although the ELAIC is only on campus two days a week, the teachers described the support from the ELAIC as "100% support from the coaches" (focus group interview, April 2019). She was at the weekly collaboration meetings, supporting the curriculum decisions, and providing instructional tools along the way. Throughout the intervention she would stop and check with them outside of the planning meetings to let them know she was there to support them and answer questions. The team even noted in the focus group interview that they communicated with her in various ways when support was necessary. "She checks her email and text often so she is available to both campuses that way….because I have several questions and when she is not on campus she is very quick to email and or even text, so she helps us immediately" (focus group interview, April 2019). The ELAIC was readily available to support the teachers throughout the TIFA intervention and beyond.

Collaboration as Support

This theme of the study is focused on TIFA collaboration and support, as was stated earlier instructional team collaboration is something GIS focused on during the 18-19 school year. During the TIFA study, the teachers knew this focus and used the time to meet about lessons and about TIFA implementation. Teacher 3 commented on this in the focus group interview stating, "One of the things that we did get this year, I guess for the first time in a long time, is we got our conference periods off together, so we have a collaboration period every day, and we usually meet" (February 2019). This

shared collaboration period is when the TIFA collaboration took place with the ICs. How this time was used was documented in the meeting notes, which is focused on the ICs' collaboration about the use of TIFA. There is some evidence of collaboration among the instructional team; however, much of the collaboration documented is driven by the ELAIC and LTC. Below, Table 11 shows the code frequency table for collaboration as support. Since instructional coaching is such a large piece of collaboration, those codes are also in this category as well as teacher codes. The higher frequency of codes in this theme were coaching support, emotions noted, and time barrier.

Within the instructional coaching collaboration as support theme, responses indicated that the collaboration from the instructional team made an impact on the implementation of TIFA. The code counts showed that collaboration was a huge support to the teachers throughout the intervention. Focusing specifically on evidence of collaboration, the responses showed that the LTC, the ELAIC, and that various instructional team members took numerous occasions to support each other throughout TIFA. The 41 responses coded as "emotions noted" demonstrate excerpts that gave specific teacher or instructional coach emotions either during visits, team meetings, or a few emails. Throughout this intervention there was evidence of collaboration that kept them going and pushing through to learn the technology pieces of TIFA.

Table 11

Collaboration as Support – Frequency Table

Code	Count of Code	Code Theme
Coaching support	69	Instructional Coaching
Evidence of autonomy	5	Instructional Coaching
Instructional coach feedback	14	Instructional Coaching
Instructional coach barrier	6	Instructional Coaching
Professional learn techniques	8	Instructional Coaching
Professional learning	32	Instructional Coaching
Student impacts	4	Instructional Coaching
Emotions noted	41	Teacher
Evidence of collaboration	13	Teacher
Teacher feedback	15	Teacher
TIFA feedback	5	Teacher
Time barrier	52	Teacher
Code total	264	

During the planning of phase one of TIFA there was evidence that the instructional team collaborated on the type of technology to implement. I would expect to see more collaboration on the content of the activity, but the data shows the focus was on learning the technology. There was discussion was on which TIFA technology would best support teachers and students as a starter phase of TIFA. As stated earlier, the team selected the ItsLearning program with students taking photos of their essays and uploading them. One response shows that in phase one of TIFA, the 6th-grade Team Lead worked to lead and collaborate with the team by sending a follow-up email about TIFA.

> The TLC has created an assignment for your students in the "Resources" section of all of your Itslearning courses. Students can take a picture of their "Touch,

> Taste, Travel" persuasive writing, upload it to this assignment, and submit it to you. You can respond to their writing with a grade and feedback in the form of notes. (Team Lead, follow-up email, February 2019)

The team lead was working to communicate with the other teachers on the instructional team to ensure everyone knew about the directions uploaded into ItsLearning. This type of communication, support, and collaboration is an expectation of the professional learning community established at GIS. Killion (2018) describes the importance of collaboration in schools to help teams progress in their learning stating collaboration is "a core research supported component of increasing the quality of teaching within a school" (pg. 2).

As stated in the earlier sections, phase one of TIFA was unsuccessful for the team due to the technology challenge and the instructional team not following through on gathering data. The process of gathering data did not turn out as convenient as the teachers anticipated it would be, but the teachers could have developed assessment data from the written work of the students. This would have been a strong piece to collaborate on. There was no evidence that the instructional team completed the data for FA. The collaboration about the technology piece was a positive, and the team worked to develop a plan for TIFA and followed through with implementation in the classroom; however, the collaboration to follow-through on the results was not present and, ultimately, FA data unavailable.

Phase two collaboration began with the instructional team discussing the use of a new type of technology. It was clear they were ready to try something new and explore

other areas of technology. The LTC showed them various applications, and they decided that they would try Padlet. This collaboration was positive for the instructional team as it allowed them to have teacher autonomy in making instructional decisions. As stated in the earlier section, the LTC collaborated with them on the use of Padlet. She took the time to explain the different types of Padlet features and discussed different ways Padlet could be used in their classroom. This type of collaboration was a very positive step with the team. As the team explored different ways to implement technology, they were feeling more comfortable using technology. The fact that the team decided to use a program outside of ItsLearning was a positive step in exploration and collaboration around technology. Phase two of TIFA brought the team further towards technology collaboration.

During phase two of the intervention, the ELAIC was working toward more collaboration on the results of TIFA. She asked the instructional team if the use of Padlet resulted in an adjustment in planning, intervention, or reteach. She shared, "Teachers responded that it did not, but only because they were at the end of a unit and the instruction had gone well, students had multiple opportunities to practice with the persuasive technique" (collaboration meeting, February 2019). The ELAIC was working to generate collaboration about student data from the TIFA intervention; however, the team believed the data they received was all quality, and they were ready to move on. This moment proved to be a realization for the ELAIC. She realized that the instructional team needed more clarification on how to assess data. She went back to the phase two data results from the Padlet TIFA and assessed the data herself. As noted in the

collaboration meeting notes, “I can see that some students were not able to isolate and describe a persuasive technique as the standard asks” (February 2019). The ELAIC knew that the team needed more support, and she noted how she would provide the team with clear exemplars the next week, stating “I will provide a non-example, and an example of a desired response” (collaboration meeting, February 2019). This piece from the TIFA study showed areas in which the 6th-grade instructional team had opportunities to grow. If the team had been more comfortable with analyzing student responses, the full process of formative assessment would have been more fruitful. Formative assessment data was not brought forward; therefore, the teachers did not capitalize on the opportunity to collaborate on assessment data results.

After reviewing the data, there is evidence that the 6th-grade ELA instructional team did a collaborate about the technology decisions of TIFA, but collaboration about assessment data was not evident. Much of the collaboration was led by the ICs to ensure the instructional pieces were put in place for successful classroom instruction; however, the follow-through to bring FA data together and develop a plan for intervention was missing.

Barriers

Throughout the study there were several instances in which barriers to TIFA were discussed, worked through, and often set aside to continue the work. As listed in the Table 12, two of the most frequent occurring barriers mentioned in the data were the time barrier and the technology barrier. The time barrier was constantly coming up in various ways throughout the intervention and caused some issues with the full

development of TIFA. In this section, I explore the most frequent barriers and examine their effects on the TIFA study.

Table 12

Barriers – Frequency Table

Code	Count of Code	Code Theme
Curriculum barrier	15	Curriculum
FA Barrier	15	FA
Instructional coach barrier	6	Instructional Coaching
Time barrier	52	Teacher
Technology barrier	47	Technology
Code total	135	

Time was noted as a barrier 52 times within the study. The 6th-grade instructional team had strong feelings about teachers not having enough time to integrate FA and to implement technology into the classroom as much as they want to. All teachers on the instructional team identified time as the number one barrier for not implementing formative assessments consistently in the classroom or reflecting and evaluating FA data. This failure was seen in the lack of assessment data evaluated toward the end of each phase. One example that caused discouragement in reference to time was the amount of time it took for one of the teachers to assess student work in phase one of TIFA. Teacher 2 reported that it took her "5 1/2 hours reading and evaluating student's writing assignment and providing feedback to them on ItsLearning" (collaboration meeting, February 2019). This amount of time would not be a typical amount spent on an FA activity. A larger amount of time was taken due to the TIFA technology not

working as it was intended to and the teacher had to use the students' written work to complete the assessment. Throughout the TIFA intervention time was not allotted to collect and assess data from the FA; therefore, the TIFA data shows that the FA had little impact on influencing instruction moving through the lesson.

During the focus group interview that the ELA teachers and the ELAIC had, they cite time as a real barrier, but there was more to this barrier. The evidence from TIFA revealed that ELA curriculum contributed to the time barrier due to its depth and complexity. The ELA curriculum is expansive and there are high expectations of using the Texas Essential Knowledge Standards (TEKS) to guide every instructional decision to ensure alignment of the curriculum. During the ICs focus group interview the ELAIC expressed a need for more time for JEPL to support teachers instructionally, asking, "how do we support them in their content knowledge…there are a lot of TEKS but if you just pace out traditionally the way teaching has been taught, a TEKS a day, a TEK every couple days the units don't really support the stepping away from that pacing in their defense the pressure is there, the curriculum to cover all the stuff?" (March 2019). The complex curriculum leaves a lot of room for interpretation and gives freedom to the teachers to work on how to best cover all the TEKS in the amount of time they are supposed to; this caused a barrier to TIFA implementation. The curriculum assumes a high degree of experience and comfort with the ELA workshop model of teaching and requires the teachers to develop pieces of their own curriculum to put it all together. The curriculum provides a limited sample of assessment questions, and often these questions are not aligned to the outcome statement of the unit or the curriculum provides little to

no examples of student responses. The teachers need samples of exemplar student work to calibrate grading and ensure that student work is quality.

During the focus group interview, the instructional coach stated that "teachers perceive they do not have time to formatively assess and respond to that assessment because they feel the demands of the pacing guide" (ICs focus group interview, March 2019). The ELAIC felt the pressure the curriculum pacing made the teachers feel, especially during TIFA. It made the teachers feel rushed to get through the curriculum and onto the next curriculum piece, leaving no room for responding to assessment data. Throughout the TIFA intervention, the teachers ran into many time restraints due to planning, assessing, and working through many decisions due to the depth of the curriculum and the pacing the teachers felt they must adhere to.

A curriculum barrier that came up from the ELAIC was teacher curriculum knowledge and the need for increased PL on curriculum to support teachers. The ELAIC learned many things about the 6th-grade ELA teaching team during the TIFA intervention as this was her first school year to be an instructional coach at GIS. In the focus group interview, she discussed something she learned about the team which she felt created a barrier for TIFA and as well as a barrier beyond the intervention. She cited that the teachers were planning weekly lessons without being responsive to student needs and that there was an overall lack of content knowledge. Additionally, she stated that the teachers planned as if the pacing was immovable and the units were designed to be adjusted as necessary for student needs (ICs focus group interview, March 2019). This mindset was causing teachers to be inflexible with their lesson design. She felt the

team needed increased understanding of content to support their design of effective FA that would support improved student achievement. The ELA teachers needed support with curriculum and then we were are asking them to implement TIFA. "It was a very uncomfortable place for them to be" (ICs focus group interview, March 2019). During TIFA, the 6th-grade ELA team needed to gain a higher comfort level on content knowledge, and this made learning new technology difficult. This challenge is why the ELAIC refers to it as a "double layer of uncomfortableness" for the instructional team (ICs focus group interview, March 2019).

A barrier that came up 47 times throughout the data was technology. A technology barrier that came up several times during the collaboration meetings was student responsibility with laptops (February 2019). Since technology is something that the teachers were not utilizing consistenly, students were not in the habit of bringing a charged laptop to class every day. The teachers spent time discussing ways to get students to bring fully charged laptops to class daily. Here is an excerpt from that discussion:

> We then spent several minutes brainstorming ways to encourage students to regularly bring fully-charged laptops to class…We discussed sending reminder emails to parents…the importance of making technology integration engaging and frequent, so that students want to participate, the importance of routines and procedures in the classroom to support use of technology, and the importance of having a back-up plan so that students who do not have their devices know what to do as an alternate. (collaboration meeting, February 2019).

It was a constant barrier for teachers, but it was a topic in which the LTC kept giving them suggestions of setting high expectations in the classroom of students coming to class prepared. In the focus group interview the LTC expressed the constant need for support with this technology barrier. She stated that teachers used this as a shifting of responsibility, blaming the students for not coming to class prepared. The LTC stated that teachers complained about "students with uncharged laptops, uncharged, laptops, missing their laptops. There was a lot of shifting their [responsibility to engage] the students" (ICs focus group interview, March 2019). The LTC was not allowing this to be a barrier for teachers to use as an excuse to not integrate technology. She insisted that they put the procedures in place, communicate to the parents, and maintain the expectations that students will have their device ready to go when they arrive in class.

CHAPTER VIII

CONCLUSIONS AND IMPLICATIONS

This chapter summarizes the overall findings of the record of study, procedures used for data gathering, conclusions from the study, and the findings from the data analysis. This study involved a group of four, 6th-grade ELA teachers and two ICs (TLC and ELAIC) who formed an instructional team. This team worked together to implement TIFA for a 6-week period. This chapter also discusses implications and recommendations for further study.

8.1 Summary

The purpose of this qualitative study was to explore the supported implementation of FA using technology. To begin the study, professional learning was conducted by the principal, focused on FA, and the instructional team collaborated on how to best implement TIFA throughout a six-week period. Qualitative data was taken during the study through a pre-survey, weekly instructional team collaboration notes, a mid-intervention survey, and two focus group interviews. The pre-survey was implemented before the intervention to gain an understanding of teacher FA and technology knowledge and use. Continuous support was provided to the teachers throughout the study in the form of technology assistance and curriculum assistance by the ICs. Coaches documented the support given within weekly instructional team meetings and through support emails. The last form of data was taken at the conclusion of the intervention through two focus group interviews. The teachers on the instructional

team were interviewed by an unbiased researcher to gain insight from the teacher perspective. Both ICs on the instructional team were interviewed by an unbiased researcher to gain insight from the ICs' perspective. This study looked at details involved with providing instructional support within the implementation of TIFA, how that support was provided, and the barriers of TIFA.

I selected a qualitative design for this study to capture the details of the implementation of TIFA and its support. Inductive reasoning was used to develop the main and subthemes and to evaluate the qualitative data. The main themes I identified which best express information about the implementation of supported TIFA were coaching support with technology, coaching support with formative assessment, collaboration as support, and barriers to TIFA. Triangulation of multiple data sources helped to understand the implementation of TIFA and the effects of TIFA were described using descriptive statistics.

The study included four teachers, two ICs (technology and instructional), and a principal. The study was focused on the development of TIFA with coaching support. The research questions addressed in this record of study were:

Overarching Question.

1. How does instructional coaching impact the implementation of TIFA?

Sub-Questions.

2. How does instructional coaching support influence the effective planning of technology integration using JEPL?

3. What are specific barriers that instructional teams, including ICs, may encounter when working to develop effective technology-integrated instruction?
4. How can instructional coaching improve the implementation of technology integration?

These questions were addressed through the interpretation of qualitative data. Instructional coaching had a significant impact on the implementation of TIFA through technology coaching and instructional coaching. Participant responses suggested that the instructional team was more successful with the technology pieces with the support of the LTC. The LTC provided continuous technology support throughout the six-week implementation. She provided step-by-step instructions at the collaboration meetings, was available for in-class support when necessary, and was on-call for support through email or text when she was off campus. Throughout the analysis of data, responses indicated that the LTC greatly helped the teachers by developing technology directions that teachers would most-likely not have had time to develop. These directions and LTC encouragement, as support, gave the teachers confidence to implement TIFA. The instructional team relied heavily on the technology directions and support of the LTC throughout the TIFA study and likely would not have tried TIFA without this technical support.

The response to the ELAIC support was positive throughout the data. She gave them valuable insight on using the TIFA intervention to understand what their students were learning or not learning. She intentionally coached them on how to analyze student

data, even if the technology did not go as planned. There is also evidence that she worked to help them find ways to work TIFA into their lesson plans and took time to explain that TIFA could be used as "active engagement" within the lesson. The ELAIC calibrated formative assessment items with the instructional team by asking questions to lead the team. One specific question asked was, "why is this an essential part of reading instruction" (ICs Interview, April 2019). Asking essential questions such as this guided the instructional team to develop meaningful assessment items. The ELAIC taught the team how to self-check their FA items as they were developing the TIFA items in order for them to monitor their own FA items in the future. One important piece of instructional coaching was collaborating with teachers in a supportive way that grew teacher capacity. When ICs provided teachers with tools to builds their own capacity, the lesson design improved, and student learning was impacted. The ELAIC provided this type of support; however, throughout the implementation of TIFA curriculum support was necessary, a support that can only be relinquished by continual practice designing lessons that effectively assesses student learning. By using the Texas Essential Knowledge Standards, the team can better plan and align their lessons for FA.

8.2 Conclusions

This record of study demonstrated that the teachers need the support of ICs to implement new instructional strategies, especially when implementing new technology. This relates to Vygotsky's zone of proximal development (1978) as stated in the research section of the study. This theory discusses the professional level of learning that is raised with collaboration and learning together, which was demonstrated in this study. The

consistent support from the ICs gave the teachers the technology and the curriculum support to implement TIFA, therefore the IC's connection to the project positively affected the teachers' zone of proximal development. The teachers' dependence on TIFA to fully assess student learning was not effective for demonstrating full FA; therefore, the evidence of student learning was not fully present in each phase of TIFA. Without clear FA student data assessed and organized by the teacher it was difficult to show if the students benefitted from the FA. The entire instructional team learned new skills and pedagogical awareness from the implementation of TIFA, and positives were gained from the intervention:

- Instructional team collaboration to design TIFA continued to develop the campus culture of the professional learning community and increased JELP.
- The ICs built rapport with the team to enhance trust and collaboration during TIFA and beyond.
- The ICs increased their awareness of the teachers' knowledge of curriculum and FA to better support them moving forward.
- The teachers learned how to use various types of technology and increased their ItsLearning use, which is the district-wide technology student management software.
- The instructional team learned about various FA tools and will consider using them again in the future to support student learning.
- It was noted that student engagement with quick TIFA strategies was beneficial to teachers.

8.3 Implications

The implications for this record of study show that further study is needed to support teachers with fully utilizing assessment data gathered when using FA. The data taken during the implementation of TIFA could have been used more effectively. Formative assessment is only impactful if the assessment is used to adjust instruction. During the TIFA study, the implementation of the technology pieces was such a huge part of the planning that the follow through with FA data did not take shape. The FA data was not fully analyzed; therefore, the data was not used to make instructional decisions.

The TIFA intervention was new and these teachers had limited technology experience in their classrooms; therefore, many of the participants focused more on learning how to use the technology effectively than effectively using the FA to improve instruction. The teachers reported that time constraints and curriculum requirements made it difficult to include the TIFA in lessons since it was new to them. In addition, they reported that all students did not bring charged laptops every day; therefore, there were times when all students could not participate effectively. The students either had to share a computer or use their phones.

8.4 Recommendations for Further Study

Recommendations for further study include the following:

1. Recreating the study, starting this study at the beginning of the year to give the teachers more time to come in for PL during the summer. Improve the time barrier by staring during the summer.

2. Give additional time to assess learning.
3. Before starting a new TIFA, ensure that the teachers know how to do a regular FA without technology, and practice the discussion with instructional changes.
4. Choose teachers that are technology veterans to work through TIFA.
5. Create a campus expectation that all students have their charged laptops daily.

There were a few things that would have helped improve the results of this study and to help the teachers improve the data resulting from the TIFA intervention. Future researchers should ensure that teachers are able to assess regular FA data without technology before expecting them to implement TIFA. Additionally, a mid-intervention PL day for the teachers to come in and assess data could have improved teacher experiences and results. The time constraints for planning were tight, and there was not enough time during their conference period to make plans for intervention.

Overall, the TIFA study resulted in instructional growth of the 6th-grade ELA team in several ways. The team collaborated productively throughout the study, which was beneficial to the overall culture within the team and the professional learning community. The team learned how to implement various technologies in their classroom, which helped strengthen their pedagogical knowledge. The ICs had the opportunity to lead the team through various phases of TIFA development and in turn learned a great deal about the team's strengths and opportunities for growth. With the knowledge gained

throughout the study GIS and the 6th grade ELA team will be able to build on this information and continue moving forward and improving instruction together.

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APPENDIX A

TEAM MEETING PROTOCOL

[redacted]

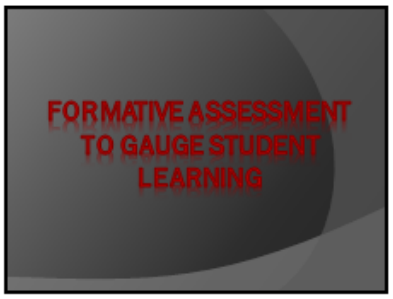
Goal/Vision: To provide educators an opportunity to collaborate in an instructionally focused environment where we can create engaging lessons, share best practices, and improve instruction to prepare our students for the future.

Team Meetings will take place every Tuesdays will be the day for all teams to meet during their conferences. Team Lead & AP's are avoiding Tuesdays for scheduling ARD, 504, or SST meetings.

1. Meeting Rules/Norms
   - Each team develops their own norms anchored by the following cornerstone principles:
     - Be on time
     - Stay focused on the agenda/meeting goals
     - All members should be positively contributing to the meeting
     - All meetings should be instructionally focused
     - Be honest, but gentle
     - All members should come to meeting prepared
2. Accountability
   - Electronic Agenda provided or on one created and agreed on by the team.
   - Team Leads please add who was present on the agenda.
   - If a team member was assigned a task, please complete it on time and bring any required materials to the meeting.
   - Instructional Coaches, Administrators, and Department heads may attend team meetings.
   - If a member of the team is not going to be at the team meeting they must communicate with the team lead.
3. Team Meeting Activities
   - Lesson planning
   - Common Assessment Creation and Evaluation
   - Data disaggregation
   - Sharing ideas
   - Problem solving issues in the classroom (running out of time in class, solving discipline issues, etc).
4. Agenda
   - Team leaders/team sets the agenda for each meeting based on team goals and last meeting.
   - Stick to the agenda throughout the meeting.
   - Use a system to get the group back on task, if people get off the agenda (ie. parking lot strategy, etc).
5. Frequency of Meeting
   - A schedule of common conferences and meeting location will be created and shared out.
   - Tuesdays will be the day for all teams to meet during their conferences. [redacted] avoiding Tuesdays for scheduling ARD, 504, or SST meetings.
6. Hierarchy/Roles
   - The team leader is responsible for leading the meetings, unless otherwise delegated.
   - If there are team issues, the DH is available for intervention. This should be the first person in the case of an issue.
   - If the DH cannot solve the issue, go to AP.
   - The team may decide to have roles such as timekeeper, secretary, etc. It is up to the individual teams how they would like to organize (page 37 of Power of Teaching Teams).
7. Multiple Preps/PAP/Singleton teachers
   - If you teach multiple preps – STAAR tested areas will take priority over other teams. If there are conflicts, please see your DH and/or AP.
   - Pre-AP should attend their team meeting.
   - Singleton teachers will only meet once a month with their departments. They are encouraged to engage with all teachers for instructional strategies and collaborate with other teachers in the district for content collaboration.

APPENDIX B

FORMATIVE ASSESSMENT TEACHER PROFESSIONAL LEARNING



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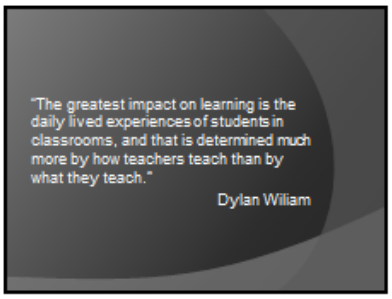

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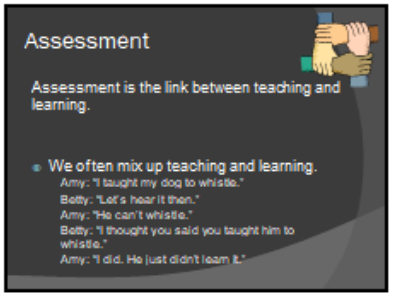

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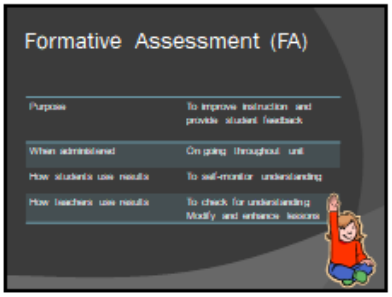

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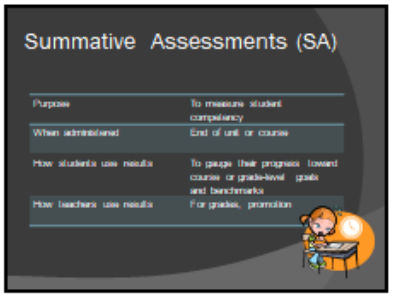

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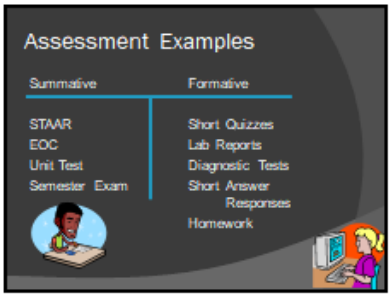


6

1

Formative Assessment vs. Grades

FA is only effective if data is used to adjust instruction…

FA's should not be graded like a test, but used to monitor learning informally and used as continuous mini-evaluations of the student learning (Wiliam, 2011).

7

Using FA's Supports a Quality Learning Environment

8

The Pilot

(Wiliam, 2013, Dylan Wiliam Part 1)

9

Video Response

- Feedback from Video?
- Every piece of information elicited from students is FA data.
- How have you adjusted instruction this year based on FA?

10

Implications

- Improved learning environment where students feel safe and collaborative in their learning
- Students are more responsible for their own learning as opportunity for improvement is evident
- Increased student learning due to adjusted instruction; therefore impacting summative assessment, grades, and overall student success

11

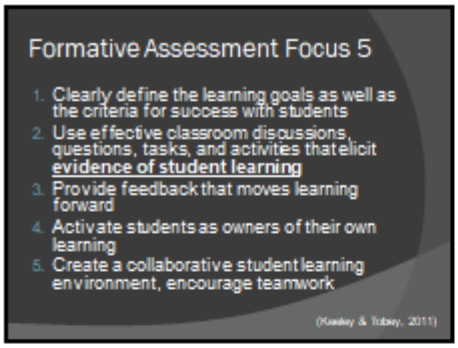
Student Ownership of Learning

- Student's "ability to reflect on their own work prompts learners to think about how their learning is progressing and how they can continue to improve…The new purpose of education is to develop a capacity for lifelong learning, understand the process, and access the tools and resources to make it efficient and effective"

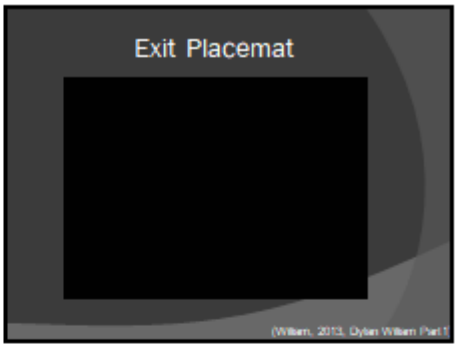
(Wan & Gut, 2011, p.14)

12

2


Formative Assessment Focus 5
1. Clearly define the learning goals as well as the criteria for success with students
2. Use effective classroom discussions, questions, tasks, and activites that elicit evidence of student learning
3. Provide feedback that moves learning forward
4. Activate students as owners of their own learning
5. Create a collaborative student learning environment, encourage teamwork
(Keeley & Tobey, 2011)

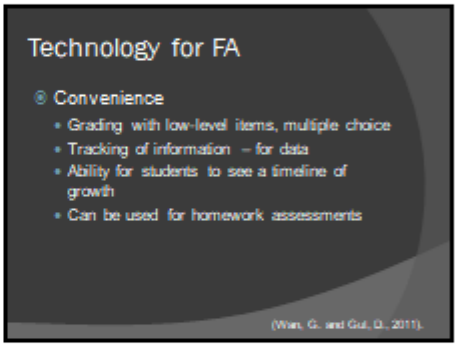
13


Exit Placemat
(Wiliam, 2013, Dylan Wiliam Part 1)

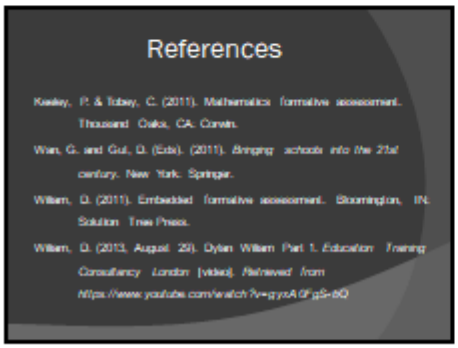
14


How can this be implemented at Seabrook?
Using all data as FA
FA discussions in content teams, collaboration on data, how to repond
Support from instructional coaches

15


Technology for FA
Convenience
Grading with low-level items, multiple choice
Tracking of information – for data
Ability for students to see a timeline of growth
Can be used for homework assessments
(Wan, G. and Gul, D., 2011).

16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Wan, G. and Gul, D. (Eds). (2011). Bringing schools into the 21st century. New York. Springer.
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17

APPENDIX C

PADLET FOLLOW-UP EMAIL

After looking at the padlets, I sent the following email to the group:

Subject	**Padlet Follow-Up**
From	[redacted]
To	[redacted]
Cc	[redacted]
Sent	Friday, March 1, 2019 2:26 PM

Happy Friday, ladies!

I popped in and took a look at your padlets today – wow! I see some good responses in there and although I have not read the articles, I am excited to hear if this was an effective formative tool for you!

A few tidbits of info that may help you using padlet moving forward:

1. Be sure to name your padlet – even if it is just "5th period" or something simple like that, it will help you remember where you are when dealing with multiple padlets.
2. With any tech tool or new activity, it's a good idea to set clear expectations before the kids start. Things like:
    - stay on topic
    - images are ok if they relate to the topic **or** no images allowed
    - place your name in the title space **or** make sure your name is in there somewhere
    - write at least 2 sentences **or** respond with the persuasive technique from this list
3. For those kids who post silly things, like unrelated comments and images, you should as the teacher be able to delete those. I wouldn't make a big deal about it, lest the kids get more inappropriate attention. I would just remove them.
4. Reminder that if you use Add → Link instead of Add → Note in itslearning, it will save you a lot of time and extra clicks!

Please ask if there is any other way I can support you with this tool!

Any questions at all, please ask!

[redacted]
Learning Technology Coach
[redacted]

APPENDIX D

POSSIBLE FORMATIVE ASSESSMENT QUESTIONS

Possible Formative-Assessment Questions-Week of 2/26/2019

The questions below are just suggestions-questions you could ask students to respond to during the active-engagement part of a minilesson.

I can analyze, make inferences, and draw conclusions about persuasive texts and provide evidence from the text to support my analysis 6.11, RC19D

- What is the writer's overall claim?
- Is this text persuasive?
- How do you know this text is persuasive?
- What is one piece of evidence the author gives in support of his/her claim?
- Which is the most effective piece of evidence the author gives in support of his/her claim?
- What is one persuasive technique the author used to persuade his/her readers?

I can compare and contrast the viewpoints, purposes, organizational structures, claims, and supporting evidence of two different authors writing for the same purpose 6.11A

- What is the persuasive claim of each author?
- How do the persuasive claims of each author differ?
- Which author was more effective at persuading his/her audience?
- Did each other structure their text in the same way?
- How did each author structure his/her text?

I can infer the author's purpose of a paragraph, group of paragraphs, or an entire persuasive text, beyond PIE (persuade, inform, entertain) 6.9, RC 19D

- Why did the author write this text?
- Why did the author write this paragraph?
- Why did the author chose this word?
- Who is the author's intended audience?
- Why did the author choose to (persuasive technique)?

APPENDIX E

TIFA PADLET ANALYSIS SHEET

TIFA Padlet Analysis Sheet

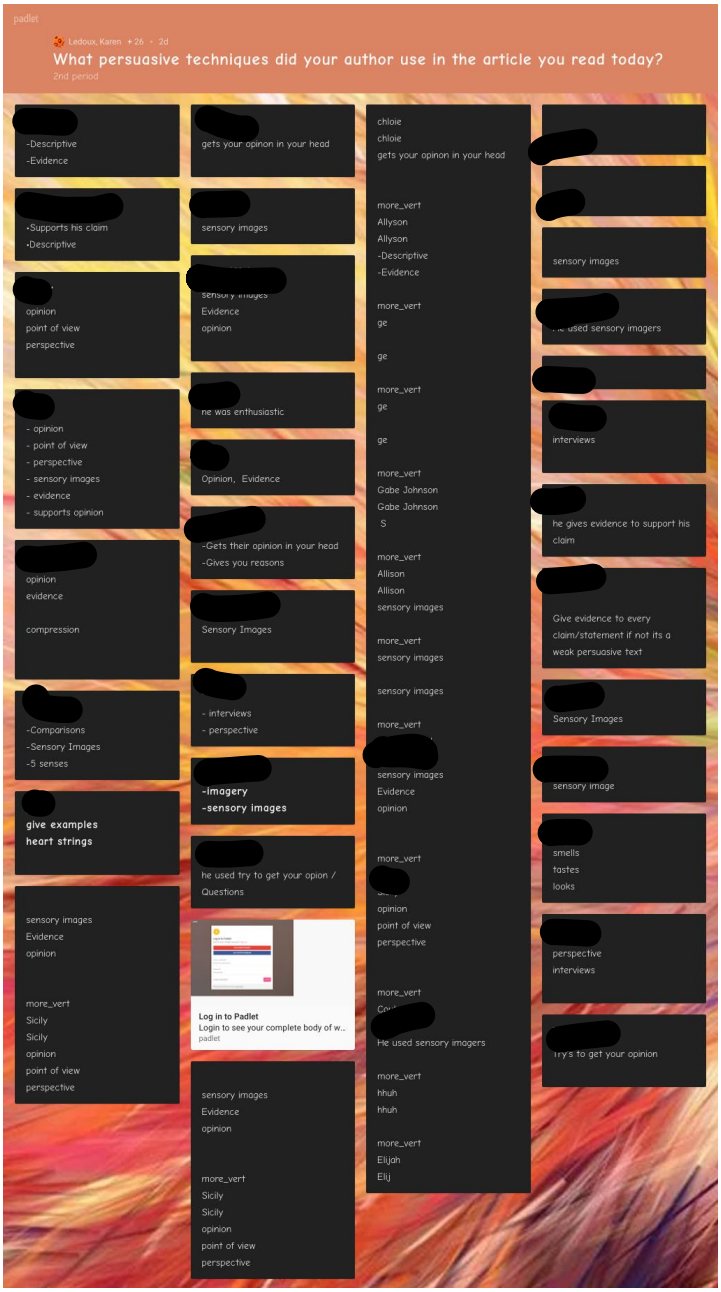
Teacher_____ Period_____

Question_____

Student	+	✓	−	Intervention Type

APPENDIX F

TIFA – SAMPLE PADLET (NAMES DELETED)



APPENDIX G

INSTRUCTION COACHES – COACHES ACADEMY

LEARNING FORWARD (2015)

AGENDA

Daily schedule: Session begins at 8:30 and concludes at 3:30. Lunch at 11:30.

Day One Overview/Introduction Essential Questions Characteristics of Effective Coaches Roles of Coaches Change and Resistance Impact of Coaches' Work	**Day Four** Facilitation Skills Presentation Skills
Day Two Coaches' Work Demonstration Teaching Co-Teaching Partnership Agreements	**Day Five** Data-Driven Conversations Effective Professional Development
Day Three Reflective Stance Communication Skills Paraphrasing Pausing Presuppositions Probing Questioning Skills Components of reflection Planning Conversations	**Day Six** Reflective Practice Questioning Skills Post Observation Conference