IMPLEMENTING THE SCHOOL PLAN: THE INFLUENCE OF INTELLECTUAL AND SOCIAL CAPITAL

by

NATALIE AMBER LOONEY

(Under the Direction of April Peters-Hawkins)

ABSTRACT

This action research case study utilizes a group of middle school leaders to examine the role of intellectual and social capacity within curriculum groups in the implementation of formative practices, a component of the school improvement plan. This study addresses the concept of capacity by applying David Hargreaves' *Capital Theory of School Effectiveness and Improvement*, which examines how leveraging intellectual and social capital improves educational outcomes. Through these concepts, this research explores the influence of capacity and the process of implementation. Hence, what do "we" already possess and what do "we" need to do in order to accomplish this goal? An action research team was organized to collaboratively develop the current school plan and design interventions that examine how curriculum groups acquire and share knowledge as it pertains to formative assessment. As qualitative data was collected and analyzed, the team worked through the action research cycles to determine how intellectual capacity (knowledge, experience, and skills) and social capacity (relationships, networks, and trust) influence the implementation of formative assessment practices. This study demonstrates how action research in regards to school improvement plans allows a school to strengthen formative practices, by examining the phenomenon of

implementation and the influence of the action research cycles. In addition, the team explored how measurement and modeling of intellectual and social capital can inform decision-making processes in educational settings. The case study component of this project focused both on the work of the action research team and the implementation process within curriculum groups. Findings show that implementation is based on the degree to which each individual's knowledge is known, shared, and utilized as a factor that contributes to group collaboration. These aspects, along with strong curriculum leadership influence the use of formative assessment practices in a school. Findings also show that trust, cohesion, and continuity set the stage for increased implementation within educational settings. In addition, action research can strengthen formative assessment practices through big picture awareness and a focus on listening and feedback. The use of measures and models can also assist with this awareness and inform decision-making processes in educational settings; however, leaders will have to decide when it is best to use them for evaluation and when it is best to use them for reflection and support.

INDEX WORDS: School Improvement Plans, Intellectual Capacity, Social Capacity, Curriculum Groups, Implementation

IMPLEMENTING THE SCHOOL PLAN: THE INFLUENCE OF INTELLECTUAL AND SOCIAL CAPITAL

by

NATALIE A. LOONEY

B.S. Indiana University of Pennsylvania, 1996

MBA Mercer University, 2008

A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

DOCTOR OF EDUCATION

ATHENS, GEORGIA 2013

IMPLEMENTING THE SCHOOL PLAN: THE INFLUENCE OF INTELLECTUAL AND SOCIAL CAPITAL

by

NATALIE A. LOONEY

Major Professor:	April Peters-Hawkins
Committee:	Karen E. Watkins
	Karen Bryant
	Walker Parish

Electronic Version Approved:

Suzanne Barbour
Dean of Graduate School
The University of Georgia
August 2016

DEDICATION

To

My beautiful family,

My gifts from God

Husband, Michael and children Lucille and Patrick

Thank you for your sacrifice

and for always believing in me.

To

My mother, Deborah

Thank you for your love and encouragement.

I am a teacher at heart and forever believe in the power of education.

"As I teach, I project the condition of my soul onto my students,

my subject, and our way of being together."

~Parker J. Parker, *The Courage to Teach*

ACKNOWLEDGEMENTS

I would like to extend my appreciation for my doctoral advisory committee members: Dr. April Peters-Hawkins, major professor, and members Dr. Karen Watkins, and Dr. Karen Bryant. It has been an honor to have you as mentors, teachers, and advisors. I will forever cherish my opportunity to learn from you all. You exemplify educational leadership, and I aim to follow your example as I progress through my career.

I would also like to acknowledge the members of my research team who put in many extra hours to work on this project. They are some of the best teachers I have ever had the opportunity to work alongside. They continually learn and innovate with a desire to make a positive change in education.

A special thanks goes out to the members of Cohort 1 in the Educational Administration and Policy program at the University of Georgia. I have developed lifelong friendships and I look forward to working with many of them in future endeavors.

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER 1

INTRODUCTION

The influence of management on education has been welcomed by some, and criticized by others. I understand the idea that education is its own entity, and applying production-based theories or functional operations management techniques to it does not take into account all that is required in the formation and development of other human beings' acquisition of knowledge, or the complexity of the student-teacher relationship. However, I am also aware of the influences that have positively affected the field of education such as the creation of formalized structures, data analyses and measurement tools, and human resource management. I believe the development of the relationship between both disciplines should continue to evolve, keeping in mind that adaptation should consider the core values, while also being hyper-sensitive to the encroachment of extremes. In other words, "for profit" concepts should remain in the realm of business, and education should focus on teaching and learning.

With that in mind, this research steps into the overlay portion of that Venn Diagram in hopes to borrow ideas from other disciplines in gaining a deeper understanding of my own. From an economic standpoint, the capacity within a school, which is made up of teacher knowledge and instructor networks, has the potential to create a competitive advantage in achievement gaps, poverty, and illiteracy. Therefore, schools and school leaders must have a firmer grasp of what that capacity involves, what influence those capacities have on implementation methods, and how to develop and manage them. Human resource development occurs at the school level, and viewing teachers as real assets is a crucial element. It is time we

view teachers and the capital they possess as adding value and creating a competitive advantage. Intellectual capacity is not just reserved for those outside of the schoolhouse, and social capacity is not just reserved for the people in neighborhoods or towns. Highly effective educators have intellectual capacity that can be considered an economic asset. Highly effective curriculum groups have social capacity that should also be considered an asset in accomplishing the school's goals. Likewise, there are those that may be lacking in such capacities that may be limiting a school or team's ability for overall reform or improvement. This is even more reason to explore how these capacities influence outcomes. Although it is impossible to place a value on teachers in general, and listing them out as assets on a financial statement would be limiting to say the least, considering their capacity in light of the trajectory of a school is definitely a step in the right direction.

This action research project sought to examine the relationship between capacity and implementation. It does not create a perfect picture of these concepts, but it does provide a more focused view of them. There are no perfect lines drawn between start and finish or input to output, but there is deeper understanding. The following chapters describe the journey between purpose and findings, between conception and realization, and between fragments and entirety. Not only do intellectual capacity and social capacity matter, it also matters how we recognize it, and what we do with it.

Problem Statement and Purpose

Every year, teachers are presented with the goals of the school and the improvement plan and are expected to form their own classroom goals in support of the overall school plan. These plans begin with a needs assessment to determine areas in which the school must improve. A lot of attention goes into the needs assessment and development of the plan, but

less attention is placed on the capacity that exists to carry the plan out. Schools then attempt to align goals for improvement with professional development plans to ensure that teachers gain additional knowledge in the area of focus. Success with regard to school plans and plan implementation is mainly measured by increases in data and achievement gap closures, without regard to the other areas of capacity that may have essentially limited the growth achieved.

In this study, the focus area of the school plan was formative assessment practices and teachers' use of formative assessment practices to influence student achievement. However, based on previous experience, the capacity to implement the change in formative assessment practices may not be fully present across all groups in the school. This research addresses the problem of the lack of capacity that may exist within curriculum groups to allow a school to go from plan to action. Within the context of a middle school, this problem was realized after multiple plans were developed, and what was written on paper was then expected to be implemented into teacher practice. This assumes that there is either sufficient intellectual capacity to carry out the plan or that intellectual capacity can be built in such a way to ensure effective use of formative assessment practices. This also assumes that there is sufficient social capacity within curriculum groups who are called to collaboratively plan formative assessment practices together. Although the school that is the site of this study made gains each year, actual growth may have been limited due to such issues with capacity.

During preliminary teacher interviews, many teachers commented on their own learning and the impact of their curriculum group. As lead researcher, I began to see the variance of knowledge, experience, and skills among teachers and teacher groups. I also began to notice the social aspects of curriculum planning, and how that influenced collaboration within the groups. Therefore, this research takes a deeper look into the efforts surrounding school plans and the

intellectual and social capacity aspects that are necessary to move from what is written on paper to what happens in practice.

Moreover, this problem poses additional questions as it relates to educational leadership. Are schools and school leaders examining the capacity that is within the building? Are they aware of individual and collective teacher knowledge to address the area(s) of focus? Are they aware of the social connections and trust that does or does not exist among team members? How is information learned and transferred within the organization? I argue that without understanding the influence of intellectual and social capacity in a school setting, leaders are spinning their wheels in the continuous chasing of the goal. This action research project investigates this problem by specifically examining this gap in capacity.

This problem is further magnified by continuous changes in assessments that require students to demonstrate abilities such as problem solving, critical thinking, citing evidence, and argumentative writing which also requires teachers to change how they deliver curriculum and instruction. Many schools have followed the changes in assessments, and schools have taken steps to ensure that their staff members are adapting to new models of teaching and assessment. This focused and continuous learning on behalf of the teacher is beneficial for the school, and may be underutilized as an asset into achieving the school's goals. The concern then lies with determining if the capacity aligns with the improvement plan and how does one influence the other, and if schools are leveraging the capacities that exist within.

In order to address the problem, the purpose of this research was to examine how a school becomes aware of the intellectual and social capacity within the building and how that capacity influences the implementation of the school plan, specifically formative assessment practices. In addition, this study determines how action research can play a role in

strengthening capacity to address the goals of a school plan and how that can inform and support decision-making processes. By infusing interdisciplinary concepts, this research aimed to examine capacity in the educational setting in the meeting of school goals. The following research questions guided this action research study.

1. How do intellectual capacity (knowledge, experience, and skills) and social capacity (relationships, trust, and networks) influence the implementation of formative assessment practices?

2. How does action research about school improvement plans allow a school to strengthen formative assessment practices?

3. In what ways can intellectual capacity and social capacity be measured or modeled to inform decision making in educational settings?

The first question attempts to examine capacity building as a means of leveraging inputs to outputs by investigating the concept of intellectual capacity and social capacity found in the organizational science literature. Through these concepts, this study explored the process of implementation. The team looked at factors of knowledge, experience, and skills to gain an in-depth understanding of teacher intellectual capacity. In light of formative assessment practices, these include a teacher's ability to use different types of assessments to gauge student learning, his or her ability to use feedback to guide student learning, and the choice of an appropriate assessment based on the learning target. This also includes, but is not limited to, the teacher's previous experience as it relates to assessment and professional learning in this area that has supported their practice. The team also explored the function of relationships, networks, and trust, and how those factors influence teachers' ability to share knowledge and best practices with each other. This involves groups planning formative assessments together, sharing strategies with one another, and using the professional learning community to enhance each teacher's abilities and goals, as well as those of the school.

The second research question focused on how the action research process strengthened formative assessment practices using action research cycles as an instrumental tool for school improvement. Through the process of executing, reviewing, and evaluating outcomes, the team was able to design and review interventions intended to increase a curriculum group's competency on formative assessment practices. The final question attempts to draw from industry's use of intellectual capacity and social capacity to determine how schools can use this concept as a value-added measure.

These research questions are addressed through an action research case study approach. A group of individuals known as the core project team, individuals who "possess technical competence and hierarchal status", worked alongside the lead researcher to find answers to the research questions (Coghlan & Brannick, 2014, p. 82). As such, this project's action research team included a group of school leaders that met together to design and analyze interventions based on this study's research questions in light of the conceptual framework. The process by which the action research team learned about the concepts of intellectual capacity and social capacity and worked through the action research cycles were analyzed as the case study component of this project. Data were collected during action research team meetings, curriculum group meetings, focus group sessions, and individual teacher interviews. Field notes and documents were also collected and analyzed as data sources.

Analysis is based on a parallel approach to this study. One part of analysis is the function and activities of the action research team itself; the other is the intervention cycles operationalized within the curriculum groups. Guided by this research purpose, the goal was to examine capacity as an asset within a school setting, and how the expansion of this asset can

produce value in terms of collective capacity, the achievement of goals, and academic success for students (Sergiovanni, 1998).

In order to thoroughly address the problem and purpose of this action research case study, the next section provides more information on the setting and background of the research site. Contextualizing is a key component in understanding the role of capacity and how it influences outcomes pertaining to school plans. The setting described below provides a broader view to these concepts and how they play out in a middle school whose goal is to increase student achievement, and to ensure that there is a focus on teacher capacity in order to make that happen.

Setting and Background

Homer Middle School has a population of approximately 1,600 students and a staff of 85 people. It serves a working class community in a suburb of a large southern city. The original building was built in the 1960s, and last year marked the 50th anniversary of the school. Over the last 50 years, the school has witnessed many aspects of school reform from desegregation to the No Child Left Behind mandate. Homer Middle School, like many schools in the district, has experienced demographic shifts resulting in greater diversity and steady increases in free and reduced lunch recipients. Currently, the student ethnicity is comprised of Hispanic/Latino (65%), African-American (23%), Asian/Pacific Islander (7%), White (3%), and Multiracial (2%). English Language Learners comprise 18% of the population, Students with Disabilities are 12% of the population, and 6% are Gifted. The free and reduced lunch rate is offered to 93% of the student population.

Over the course of the last five years, Homer Middle School has focused on a turnaround and sustainability mindset. The school was labeled by the state as a school needing

additional focus from 2011–2014. In 2014, the school was removed from the state's "needs improvement" list, but has remained under district oversight to ensure continued growth. Removal from the list was, in part, due to the focus on improved collaborative planning, the building of teacher leaders, and the increased focus on aligning curriculum to assessment. During this time, the state adopted a new teacher evaluation system, which also added additional support and accountability to the classroom teachers. Teachers who operated under the radar of the previous evaluation system were provided support and expected to show improvement. Extensive professional learning was also offered during this time. In addition, the use of data as a tool to gauge instruction and student performance became a norm within curriculum groups. This was a direct result of district leaders' desire to see measured improvements, but was also a part of a culture on the use of assessment scores from the district's assessment system. All of these factors contributed to the capacities of teachers and the educational culture of Homer Middle School.

The school improvement plan was the tool to measure and monitor such improvements. Each school in the district is required to complete a school improvement plan comprised of long-term goals and annual goals. Each goal includes assessment data, an implementation design, and staff development strategies. The Local School Plan for Improvement (LSPI) is part of an online tool in which administrators have access to populate and edit. The school plan is designed to lead the initiatives in the school for the designated year, and to serve as a framework from which teachers develop their own individual goals. Each year, the Homer Middle School analyzes data from student performance and based on the needs of the school, develops the school plan for improvement. Plan development was mainly an administrative function, and the resulting plan was shared with the school as the basis for curriculum leaders to

focus their goals accordingly. Sometimes this trickled down to teacher awareness and sometimes it did not. However, teachers did use their previous data to inform goal development for the upcoming year.

Historically, the LSPI process has occurred during the summer months and the plan was shared with teachers at the beginning of the school year. Prior to this study, there has been limited discussion around the process of implementing aspects of the school plan and limited teacher participation in its development. The 2014–2015 plans and the current plan included a goal with an area of focus related to formative assessment practices. The leaders of the school felt that in order to increase overall student achievement teachers needed to use effective formative strategies in-between summative assessments. The use of formative assessment practices requires teachers to be aware of the standards related to their curriculum, create learning objectives or learning targets, and then assess student mastery of the specific standards. Formative assessment use is derived from the use of criterion-related assessments that are common in state testing, where students are assessed based on criteria developed from the state standards. However, formative assessment practices are related to a shift or change in pedagogy that requires lessons to be less teacher-focused and more student-focused. In order to reach that goal, the school participated in a series of trainings related to the topic. These trainings, facilitated by teachers and leaders at the school, were designed to develop this skill set and create a language around formative assessment practices in the school. Teachers participated in the series, which included a "blended" format with the use of face-to-face and online modules. As such, the topic of formative assessment practices became the focus of staff development during the 2014–2015 school year. At the end of the year, some teachers were still at the "awareness level" and it became apparent to leadership that additional focus was needed.

Homer Middle School prides itself on being a school focused on professional development and transformational practice. The school has made significant gains in student achievement as measured by annual yearly progress, as well as new state indexes and measures. Homer Middle School has a holistic teaching philosophy and has a rich tradition of influential teachers, collegiality, and perseverance. Many district leaders began their careers at Homer Middle School. Fluctuating accountability measures, changing curricula, and teacher turnover rates have presented obstacles for the school. Despite these challenges, teachers embrace new faculty members and continue to steer the ship in the right direction.

The next logical step in school improvement for Homer Middle is the strengthening of teacher teams around the goals of the school. With the implementation of formative assessment practices for these teacher teams, Homer Middle School has the opportunity to become a model for others to demonstrate what capacity-building means in practice.

Significance

Many scholars have contributed to the area of educational research and schools have benefited from research in leadership, assessment, curriculum, and school improvement. The significance of this study is that it introduces new concepts into this field of research, from a practitioner's perspective. The concept of organizational advantage can be applied in educational settings, and schools can employ the human capital within their contexts to create change (Corcoran & Goertz, 1995). Likewise, when groups of teachers learn together, develop relationships and interdependence over time, they are able to benefit from their own social capital (Nahapiet & Ghoshal, 1998). Firms utilize the concept of intellectual capacity as a value-added measure while sociologists consider social capital a vehicle to which connections are made for improved mutual benefit. Based on the scholarly work of Leif Edvinsson, James

Coleman, David Hargreaves, Michael Fullan, and many others, I hope to share a different, yet valuable perspective of educational research, one that focuses on the notion of capacity in practice.

CHAPTER 2

LITERATURE REVIEW

This chapter discusses the literature from research that is significant to school improvement and school plans, formative assessment practices, intellectual capacity, and social capacity. These four areas, separately, provide grounding and foundation to the problem, and woven together they demonstrate how educational research benefits from other academic areas. Studies and articles from the disciplines of education, organizational management, and social science form the background of this review. These disciplines provided a lens from which to examine the application of capital as a resource within educational settings in order to improve organizational outcomes. The goal was to take a holistic approach from these disciplines and apply them to this study. For the resources supporting this review and study, I accessed the University of Georgia's library site, including GALLILEO, Educational Resources Information Center (ERIC), and Google Scholar. Following each category of literature is an empirical table that includes the studies or theories that have contributed to the study.

School Improvement Plans and Implementation

This action research focused on examining the gap of capacity between the school plan and action. Therefore, the literature pertaining to school improvement plans and implementation was a cornerstone to understanding the problem, and provided background knowledge needed for the action research process.

School plans are created for a number of reasons, and all types of schools regardless of their overall performance use some type of plan to drive their short-term goals and long-term

vision. The increase in prevalence of the school plan came as a result of the realm of increased accountability, while the process of plan development stems from district leaders or other oversight managers' need for a tangible road map to determine if school efforts are in fact making a difference. However, these plans can and do become a part of strategic operations and can lead to improvement. This, of course, depends on the quality of the plan, implementation of the plan, awareness of the plan, alignment of staff development efforts, and the ability to determine the capacity required to make the expected change.

Many schools, especially those showing achievement gaps, are required to have some type of improvement plan in place. This is composed of the goals for the year and a plan for implementation of those goals. This practice has increased since the inception of No Child Left Behind (NCLB) legislation where schools were to develop plans to meet or maintain Annual Yearly Progress (AYP). Usually a plan was developed from a needs assessment and the school determined areas of focus to create the "path back to healthy performance" (Mintrop, MacLellan, & Quintero, 2001, p. 197).

There are aspects to consider regarding school plans and the relation to improvement. First, the quality of the plan correlates to student achievement. Through statistical measures and examining the effectiveness of school improvement plans, Fernandez (2011) was able to show that components related to goals, implementation, and measurement strongly correlate to increased student achievement. This involves formal planning, which requires personnel to be reflective on previous work, solve problems, and design innovative and research-driven strategies to move from where they are to where they need to go. To that end, the design and implementation of the plan is an integral component to student achievement. The key components in the design of any school plan should include specific and measureable goals that

involve inquiry, action steps for professional development, and frequency for monitoring, as well as a thorough evaluation process. School planning begins by examining student achievement data, previous professional learning programs, and then using the cumulative information to create new goals. After a school plan is made, the process of implementation, monitoring, and evaluation is continuous.

Second, creating overall awareness of the plan is vital to a school's academic success. Some teachers may be aware of the goals and the need to increase their knowledge level to meet the goals set by the school, but act in isolation (Hopkins & Reynolds, 2001). Although a teacher learning in isolation may influence his or her own intellectual capacity, it does not create avenues for that knowledge to be shared or to influence implementation. The school may lack a coherent communication and implementation plan that makes it actionable. Increasing awareness and making the school plan a function of teacher's responsibility helps reduce isolation, and helps teachers become aware of what they need to learn.

Third, staff development efforts must align to the goals set in the school plan (Fullan, Bennett, & Rolheiser-Bennett, 1990). This involves awareness, not only of the plan itself, but also of the staff development efforts that would best support school plan efforts in practice. Corcoran and Goertz (1995) pointed out that it is the role of the school to establish the focus for improvement such as setting goals, providing high quality professional learning to meet the goals, and mobilizing staff around the accomplishment of its goals. However, they believe that there is a supply problem when it comes to effective professional development that is aligned to the goals of the school or district (Corcoran & Goertz, 1995). Therefore, a thorough analysis should be conducted to determine the staff development that is necessary for teachers, and the availability or capacity of such training at the school level.

Borrowing from the organizational sciences, Barker and Duhaime's (1997) study on *Strategic Change in the Turnaround Process* illustrates that the use of field data greatly impacted the ability to measure the extent of change and the capacity to enact change. Their study examined whether the capacity existed within the organization in order for the organization to make strategic changes. In the educational context and in light of school plans, interval monitoring, examination of the schools' capacity, and the use of data allow a school to develop strategic plans and determine whether the change will happen.

The implementation of the school improvement plan therefore, becomes an integral part of the process. For example, the implementation plan must contain staff development activities aligned with the goals established by the school or school district. This involves the ways teachers increase their knowledge through structured and unstructured learning activities, and utilize this learning within their classrooms to affect student learning (Sergiovanni, 1998). Hopkins and Reynolds shared their concern about this link between the plan, staff development, and teacher practice:

> The great majority of the 'levers' that have been pulled are at the school level, such as through development planning or whole school improvement planning, and although there is a clear intention in most of these initiatives for classroom teaching and student learning to be impacted upon, the links between the school 'level' and the 'level' of the classroom are poorly conceptualised, rarely explicit and even more rarely, practically drawn (2001, p. 466).

The Educational Reform Rating Rubric attempts to address this issue by analyzing qualitative and quantitative data of reform efforts (Bessell, Burke, Plaza, Okhee, & Schumm, 2008). Bessell and colleagues' examination of implementation efforts shows that collective participation, principal leadership, and teacher and instructional quality are some of the efforts that can be measured to determine the effectiveness of implementation. Fullan and Pomfret (1977) took this a step further by studying aspects of implementation. Although their study

focused on curriculum, the connection to school plans were made, due to the inextricable link between the two. They argue that the *planning* for implementation cannot be overlooked, and the users of the innovation should be consulted in one form or another to determine compatibility and provide feedback (Fullan & Pomfret, 1977). If plans are to be implemented within a school, teacher input should be pursued to ensure and determine whether the conditions that should exist prior to implementation are explored and addressed. Plans that involve input from school leadership and teacher leaders are shown to be more effective in increasing overall student achievement (Fernandez, 2011; Picucci, Brownson, Kahlert, & Sobel, 2002). It is also important to pay attention to what needs to happen prior to implementation. Neal Gross, a sociologist who has studied innovation and implementation across a number of school settings, shares specific failures on the part of leaders in the anticipation or solving of implementation problems (Gross, Giacquinta, & Bernstein, 1971). Some of these include the "inadequate consideration given to the new skills or attitudes that teachers would need to acquire in order to implement an innovation" (Gross et al., 1971, p. 77). Others include "lack of clear operational procedures" and "the disjointed manner in which the school systems implemented innovations" (Gross et al., 1971, p. 78).

School improvement efforts should follow the vein of empirical literature, which attests that teaching and learning are central, leadership is the driving force, and collaboration is the foundation. If these are the desired results, the next logical question is, what are the elements of a school improvement plan that promote sustainable capacity building? While there is research available to address the quality of plans or address school improvement efforts, the availability of research examining the matching of instructional capacity to implement school goals is scarce. School improvement happens only through capacity-building efforts. The driving

forces of capacity-building for school improvement include the establishment of operational structures, thorough needs assessment, processes for follow through, and crafting a culture around improvement (Earl & Lee, 2000; Harris, 2001; King & Bouchard, 2011; Murphy & Meyers, 2009; Watterston & Caldwell, 2011). To see these elements as separate and distinct from a school plan caused a limited view of how a school plan can facilitate change. As the literature has shown, these elements are all interconnected and show that the plan in and of itself requires an ecosystem of integral elements in order for it to produce outcomes and become actionable. The table below illustrates the key literature around school improvement plans used to support the research about moving from plan to action. These studies served as a resource in the development of this action research project.

Table 1

School Improvement Plan Studies

Title/Author	**Purpose**	**Methods**	**Results/Conclusions**
Bessell, Ann G. Burke, Marisa Collett Plaza, Miriam Pacheco Okhee, Lee Schumm, Jeanne Shay. (2008). *The educational reform rating rubric: Example of a new tool for evaluating complex school reform initiatives*	To determine the usefulness of an evaluation rubric as a tool to measure school reform initiatives.	Mixed methods	Development of a tool that assists with longitudinal program evaluation. Tool demonstrates that schools with higher values in leadership, instructional quality, and environment, had a higher collective participation.
Fernandez, Kenneth E. (2011). *Evaluating school improvement plans and their affect on academic performance*	Examines the relationship between plan and improvement. Content analysis of the SIP for CCSD (Clark County School District).	Document Analysis	Although correlation does not provide for causation, formal planning can affect school performance.

Title/Author	Purpose	Methods	Results/Conclusions
Gross, Neal, Giacquinta, Joseph B, & Bernstein, Marilyn. (1971). *Implementing organizational innovations: A sociological analysis of planned educational change*	Examines the process of planned organizational change at Cambire school.	Case Study	Innovation was not widely implemented and some were unclear of factors surrounding the new innovation. Failure to implement is less due to resistance to change. Researchers should consider "neglected facts" and other barriers to change.
Picucci, Ali Callicoatte Brownson, Amanda Kahlert, Rahel & Sobel, Andrew. (2002). Driven to succeed: High-performing, high-poverty, turnaround middle schools.	The study investigates the commonalities of schools that were both high poverty and high performing by studying evidence of embedded practice in school plans and other documents.	Qualitative	Through collaborative environments, shared vision and strategic implementation practices, schools were able to make improvements in student achievement.

Formative Assessment Practices

The following research on formative assessment frames the aspect of the study that focuses on the practice of formative assessment. This includes defining formative assessment in the literature, determining the reasons for and value of formative assessment, and exploring the link between formative and summative assessment. The role of teacher training programs and leadership are also discussed, demonstrating the necessary foundation for educators and continued support required for sound assessment practices.

Formative assessment is an ongoing, real-time assessment that occurs during instruction. When this type of assessment is utilized in classrooms as a part of instruction, we use the term "formative assessment practice". Although they both mean the same thing and can be used interchangeably, we use the term "practice" to bring light to the pedagogical change in utilizing

and planning formative assessments. Based on the literature on formative assessment, some definitions include "the process of feedback and corrective action" (Wiliam, 2011, p. 4), "how judgments about the quality of student responses (performances, pieces, or works) can be used to shape and improve the student's competence" (Sadler, 1989, p. 89), and the use of evidence in student learning to determine where students currently are in the learning process (Gulikers, Biemans, Wesselink, & van der Wel, 2013; Wiliam, 2011; Wiliam, Lee, Harrison, & Black, 2004). Assessment is the only way "we can find out whether a particular sequence of instructional activities has resulted in intended learning outcomes" (Wiliam, 2011, p. 3). Also referred to as assessment *for* learning, "such assessment becomes formative when the evidence is actually used to adapt the teaching to meet student needs" (Black & Wiliam, 2010, p. 82).

Formative assessment usually takes place in between summative assessments, and can involve everything from simple checks for understanding to an in-depth analysis of student performance. Its purpose is to both increase student learning and to inform instruction and can be both formal and informal in nature. As a part of an overall assessment system, formative assessment is a required element to ensure student mastery. There are three elements that must be considered with regard to formative assessment: feedback, corrective action, and evidence. *Feedback* should use *evidence* of student learning to produce *corrective action*. Appropriate feedback provided to the student allows the student to see where they can improve and make efforts toward mastery. There are various levels of feedback that range from a score on an assignment, considered weak, to explanations on what students did well and how to improve, considered strong (Gulikers et al., 2013). Consequently, methods for providing feedback to students are another component in effective formative assessment practice. However, as research has shown, this process often requires intervention and analysis along the way to

ensure best practice. In a collaborative action research study, Torrance and Pryor (2001) found that the use of questioning played a large role in closing and opening learning opportunities for students, which then required the teachers to examine their questioning practices in light of the formative assessment process. Some teachers in the study noticed how their questioning in class promoted or hindered students' approach to the task or learning at hand. Their work demonstrated that "pedagogical self-awareness is a starting point to developing effective formative assessments" (Torrance & Pryor, 2001, p. 628). In other words, knowing how the formative assessment process works is just the beginning. Teachers and researchers must also be able to determine the necessary changes in practice that will produce mastery in learning. These changes include observing students in the learning process and making mid-stream changes, while also ensuring that teachers use "variation in their instructional practice" to meet the variability in student progress (Torrance & Pryor, 2001, p. 628).

Classroom or formative assessment comes in a variety of forms. Most of this type of assessment is teacher or team developed, although teachers may use vendor-created quizzes or tests for formative purposes. Although assessment creation is an aspect of teacher work, teachers have concerns about the time it takes to make assessments, their desire to improve the quality and type of assessments, and how to incorporate structured performance assessment into their daily practice (Guskey, 2005, p. 2). Stiggins reports that "if assessment is not working effectively day to day in the classroom; then the power of assessment at all other levels is diminished" and offers a list of suggested competencies to be used by teacher preparation programs, such as creating clear purposes, creating collective understanding of expectations, use of proper methods, and inter-rater reliability (1999, p. 23).

The development of formative assessments requires being aware of the changing landscape and innovation of summative assessment. That way, teachers can address misconceptions through increased knowledge of formative assessment practices and use them as a part of the assessment system (Stiggins & Bridgeford, 1985). However, changes in the summative landscape have not always produced changes in the formative landscape. Some "conceive assessment as school accountability or student accountability, while the new assessment paradigm would require a conception of assessment that improves teaching and learning" (Gulikers et al., 2013, p. 122). This requires dialogue around teachers' use of assessments, curriculum group practices in the creation or development of assessments, and how formative assessment practices support students' achievement on summative assessments, as well as, the awareness of adjustments in instructional techniques. It also requires teacher knowledge on the issue of alignment of formative assessments to national summative practices or outcome-based assessments (Gulikers et al., 2013). As such, changes in summative tests should be reflective in the process of formative assessment and the practices by teachers in the classroom.

School leaders also have a large responsibility in this process by ensuring that assessment practices meet student needs and by ensuring that teachers have the skill set and reflective practice necessary for effective formative assessment practices. Hollingworth (2012) found that leadership played a key role in increasing the knowledge and implementation of formative practices. Her study demonstrates the importance of teacher collaboration, teacher leadership, and common planning time in increasing the use of formative activities. Hence, in order to increase formative assessment practices, there is a need for structure and

implementation process, in order to develop what O'Leary refers to as "teachers' assessment literacy" (2008, p. 109).

The research on formative practices provides a clear understanding of the value of formative assessment, and how it influences student mastery through the process of feedback and corrective action. However, the research also demonstrates the need for training in assessment, understanding of the continuum of assessment, and foundational aspects to effective formative assessment practices. Below is a table of the empirical studies that inform the component within this literature review and the action research study.

Table 2

Formative Assessment Practice Studies

Title/Author	Purpose	Methods	Results/Conclusions
Gulikers, Judith TM Biemans, Harm JA Wesselink, Renate & van der Wel, Marjan. (2013). *Aligning formative and summative assessments: A collaborative action research challenging teacher conceptions*	Provide insights into formative assessment practices in the context of Dutch Agricultural Vocational Education. Examination of current and required conceptions between formative and outcomes-based summative practices.	Collaborative action research	Teachers were able to see their misconceptions of formative assessment as a grade rather than a tool for learning. Goal to professionalize teachers in formative assessment.
Hollingworth, Liz. (2012). *Why leadership matters: Empowering teachers to implement formative assessment*	Understand the role of the school leadership and classroom teachers as catalysts for innovation in instruction and classroom assessment.	Qualitative Case Study	Success hinged on relationships between teachers and leaders. Principal was a catalyst and assistant principal assisted in building capacity.
Torrance, Harry & Pryor, John. (2001). *Developing formative assessment in the classroom: Using action research to explore and modify theory*	Apply research to practice by collaborating with teacher researchers to bring about changes in classroom assessment practices.	Collaborative action research	Teachers must be able to investigate and reflect on classroom practice in order to develop new approaches. Action research is suited for this type of work.

Title/Author	Purpose	Methods	Results/Conclusions
Wiliam, Dylan, Lee, Clare, Harrison, Christine, & Black, Paul. (2004). *Teachers developing assessment for learning: Impact on student achievement*.	Reports on the achievement of secondary school students who worked in classrooms where teachers made time to develop formative assessment strategies.	Case Study	Effect size average for use of formative assessments designed and implemented by teacher = .32 (in favor of the intervention

Intellectual Capital

The concept of intellectual capital is discussed in the literature from a number of perspectives. Much of the literature comes from a value perspective of examining how intellectual capital creates a competitive advantage in an industry. This section discusses the concept of intellectual capital as reviewed in the literature, knowledge and knowledge creation, the components of intellectual capital and how they relate to the context of this study, and how measurement or modeling bring valuation to the concept.

Origins of intellectual capital emerged from the work of Leif Edvinsson (1997) when he analyzed competitive edge among companies. His goal was to "develop intellectual capital as a visible lasting value, complementary to the balance sheet" and "provide a link between Business Development, Human Resource Development, and Information Technology Development" (Edvinsson, 1997, p. 368). The concept of intellectual capital is also presented in the literature as the fuel to generate innovation (Edvinsson, 2013), a factor in knowledge creation (Bontis, 1998), the collective knowledge of an organization (Nahapiet & Ghoshal, 1998), and an intangible asset that creates value (Demartini & Paoloni, 2013). These themes are also found in educational practices and are applied to the context of this study.

Innovative practices are developed and created by people who have a specific knowledge base, freedom to think outside of the box, and are perhaps members of a team that contribute to this type of thinking. As educators continually introduce new practices, there is much to be learned from the work of Edvinsson who researched the components of intellectual capital from a company and industry-wide viewpoint. Within the context of Skandia, a Swedish company, he developed this theory to see how organizational learning could create value for the company. His work focused on organizational learning and the awareness of human assets in producing competitive advantage. He was also able to enlarge this to a macro view in which he was able to view this concept from a country or industry-wide standpoint, thus being able to analyze intellectual capital as a collective resource. As educators, we can also examine the innovative practices within our buildings, and how that translates to the individual and collective intellectual capital of educators within the school and within the profession.

Intellectual capacity and innovation go hand-in-hand. Innovation is where knowledge is created, and knowledge creation is a critical element of intellectual capital. Knowledge creation comes from the collaboration of individuals who create new products, new methods, awareness of changes and habits in customers, or new capabilities (Chua, 2002). Schools and teacher groups are natural incubators for knowledge creation, and these groups are areas in which knowledge creation can and does happen. The concept of the professional learning community (PLC) is a prime example of a structure in which innovation and knowledge occur. This includes sharing of new and innovative practices, increased understanding of student learning, or greater "customer" awareness. This process also includes understanding the element of social connection within knowledge creation. Alton Chua (2002), in studying the curriculum development process in higher education, examined the link between social interaction and

knowledge creation. Therefore, when studying intellectual capacity and the ways in which knowledge is created, we must also consider the social element involved within group learning, and how this creates collective knowledge. This transfer of knowledge is the power behind improvement. Hargreaves talks about the origins of intellectual capital stemming from knowledge that creates wealth or competitive edge, but he explores this idea in schools as "the sum of the knowledge and experience of the school's stakeholders that they could deploy to achieve the school's goals" (Hargreaves, 2001, p. 490).

As collective knowledge, intellectual capacity is made up of "explicit knowledge such as facts, concepts, and frameworks" and "tacit knowledge such as theoretical and practical knowledge of people in the performance of different types of skills" (Nahapiet & Ghoshal, 1998, p. 247) Within a school, an example of collective knowledge would be the pedagogical, content, and instructional knowledge of the curriculum group within. In the development of formative assessment practices within curriculum groups, a gap may exist between the explicit and the tacit, requiring a deeper assessment of the teaching staff regarding knowledge of the specific initiatives and those initiatives in action.

In studying the intellectual capital in educational settings, we must consider these elements and how they influence the work in the K–12 setting. Just as with any industry, there are fundamental best practices that stand the test of time, but there is also the element of innovation and knowledge creation that should be very much nurtured to ensure the continuous improvement of teaching craft and formative assessment practices. One method of this analysis pertains to the examination of intangible assets.

Researchers, DeMartini and Paoloni, examined the link between "indicators of performance and indicators associated with intellectual capacity" in order to see how one

influences the other (2013, p. 70). Their study explored intangible assets as facets and building blocks of intellectual capital, and how those assist management in their decision-making processes. As a component of this study, intangible assets were examined to determine how they influence intellectual capacity in a school setting and support formative assessment practices.

Intangible assets can also be separated into the three components of intellectual capital as a further method of analysis. The three components that make up intellectual capital are human capital, relational capital, and structural capital. These three elements help to conceptualize how intellectual capacity functions as an asset. Human capital is comprised of the knowledge of individuals or employee competencies; structural capital pertains to structures, processes, or information; and relational capital is internal and external relationships (Edvinsson & Sullivan, 1996; Martínez-Torres, 2006; Nahapiet & Ghoshal, 1998). Chua (2002), utilizing the work of Nahapiet and Ghoshal, explores the dimensions of social interaction: structural, relational, and cognitive in the creation of knowledge. The intersection of the constructs of intellectual capital and social interaction allow for further analysis of how groups of teachers come together to produce innovative practices yielding increased student outcomes.

The goal is to determine how to "build the bridge between the brains inside of the organization, known as "human capital" and the connection between individuals within an organization "relational capital" (Edvinsson, 2013, p. 168) to move toward the goal of school improvement. This bridge creates the network of relations, also referred to as the social structure or capacity. Cuganesan's (2005) case study on an eBusiness initiative demonstrated the importance of human, relational, and structural components of intellectual capital and knowledge creation, when he determined that the external relational component influenced the

outcome of the project. Built on trust and relationships, intellectual capital is strengthened and transferred among individuals within organizations including schools, and can impact how an initiative unfolds. In addition, school leadership must determine what structural elements already exist that creates the processes for this bridging to occur.

Another consideration of intellectual capacity is the option to use models and measures to make decisions. Demartini and Paoloni (2013) examined intangible assets of a firm, and through the use of mapping, was able to develop an intellectual capacity narrative resulting in increased training, mentoring, and coaching. Mapping has also shown to be effective when an organization begins with the overall goals and then maps the intangible assets needed to achieve those goals (Martínez-Torres, 2006). These "visualization approaches" (Cuganesan, 2005) allow organizations to view intellectual capacity as a whole, and to see the relationships between the different dimensions described above.

With regard to education, using intellectual capacity as a tool to determine staff development needs and to monitor initiatives ensures the operationalizing of the school's implementation plans. Intellectual capacity creates value within an educational setting that, on an individual and collective basis, can produce desired outcomes with regard to teacher learning, application of knowledge, and assessment. These elements found in the literature demonstrate that innovation and knowledge creation are key elements in developing intellectual capital both in industry and education. The relationship among the components of human, relational, and structural capital provide a framework for understanding the concept in action. The relational element creates the bridge between intellectual and social capital. The social element is explored in the next section on social capital research, and provides a deeper level of understanding of how social capital also informs teacher work in educational settings. The table

below lists the empirical works associated with intellectual capital and the findings that support this action research project.

Table 3

Intellectual Capacity Studies

Title/Author	**Purpose**	**Methods**	**Results/Conclusions**
Bontis, Nick. (1998). *Intellectual capital: An exploratory study that develops measures and models*	Pilots measures and models to link between intellectual capital and business performance. Creation of survey items to effectively capture the constructs of capital.	Quantitative	There is a strong interdependency of human, customer, and structural capital in order for a company to leverage its knowledge base.
Chua, Alton. (2002). *The influence of social interaction on knowledge creation*	Study designed to examine the relational dimension in curriculum development teams.	Quantitative with questionnaire provided to faculty and students	There is a positive correlation between the level of social interaction and the quality of knowledge created, resulting in new capabilities.
Demartini, Paola & Paoloni, Paola. (2013). *Implementing an intellectual capital framework in practice*	The study aims to operationalize the existing IC models in order for management to make decisions based on existing measures.	Action research between researchers and management	The creation of a feedback phase within an IC framework allows management to deal with emerging problems and opportunities.
Martínez-Torres, M Rocío. (2006). *A procedure to design a structural and measurement model of intellectual capital: An exploratory study*	Understand the use of Intellectual Capital in a knowledge-based organization.	Case Study	Structural capital converts personal knowledge into value. From the mission and goals of the organization, a measurement model was developed and validated showing how intangible assets comprise IC.

Social Capital

Pulling from sociological and organizational disciplines, social capital is the component that fosters connections, trust, and the establishment of networks that allow knowledge to be shared. The literature informing this concept is based on the role of social capital in the creation of human capital (Coleman, 1988), the flow of information within groups (Lin, 1999), mobilization of assets through the network (Nahapiet & Ghoshal, 1998), establishment of trust (Cosner, 2009), and the role of structural relationships. The concept of social capital is examined as an asset found within teacher teams, regarded as both an architectural component and a force behind productive implementation.

Coleman's study on the dropout of high school students and how "obligations and expectations, information channels, and social norms" influence intellectual development (1988, p. 95) demonstrates the link between social structures and knowledge outcomes. Social capital is situated between "the actor governed by social norms, rules, and obligations" and "the actor having goals independently arrived at, as acting independently, and as wholly self-interested" (Coleman, 1988, p. 95). By carefully bringing these two views into cohesion, he explains that the social capital could assist with goal attainment for some, but could also act as an exclusionary tool for others (Coleman, 1988). In the context of education, this illustrates how social capital within teacher groups can influence the intellectual work of the group, only with the careful balance between the needs of individuals and the needs of the group as a whole.

Lin (1999) builds on the concept of the individual as the sole benefactor of social capital, and talks about social capital at the group level and how the maintenance of a group, such as trust, structure, and norms allows it to function as an asset of value. When examining social capacity through theoretical and practical lenses, it is important to embrace the value-

added aspects, being carefully aware of self or group interests that could limit access to those who are new to an organization or whose capital is under-utilized, under-developed, or not yet considered. Likewise, awareness of how information flows and is mobilized within a network also assists in the operationalizing of social capital. Therefore, it is beneficial to understand social capital in the context of a curriculum group to ensure access and transfer of knowledge among members.

This asset, seen both individually and collectively, supports the actions that occur within a school's social structure. Teachers are influenced by their curriculum group members, the school, the school system, or other political influences. Teachers are also influenced by their own self-interest in achieving personal goals or aspirations. As part of a professional learning community, teachers develop social capital as they form relationships with other teachers and professionals. The awareness and strengthening of social capital for individuals and groups is often an uncovered area within the school setting, and overlooked when it comes to determining the effect on student achievement. As networks and trust are built, teachers are able to create and share strategies with each other. However, the "maintenance and reproduction" (Lin, 1999) of these social capital structures takes time and effort. Awareness around social capital, especially from curriculum group leaders, allows for new and existing group members to increase accessibility, such as the sharing of experiences, lessons, or research in an open and safe environment. These elements of social connection and networks create utility that can be transferred to increase teacher and group effectiveness (Coleman, 1988).

To keep this social science concept outside of the confines of the professional learning community ignores the ability of the concept to offer "understanding of institutional dynamics, innovation and value creation" (Nahapiet & Ghoshal, 1998, p. 245) that exists in educational

networks. These networks contain knowledge assets, that when leveraged, allow information to flow. In order to build professional capital of educators and the capital of the education profession, Hargreaves and Fullan argue that "collective social capital" is achieved by building capabilities of individual and peer groups (2012, p. 157).

Lastly, the binding influence of social capital is the element of trust that exists within the various contexts discussed in the literature. When groups work together toward a common goal, it is the establishment of trust the permits capacity to be built and shared. Cosner's work revealed that social structures built by principals for teacher interaction produced "collegial trust", which in turn reinforced the social capacity of the group (2009, p. 282).

The following table lists social capital theorists discussed above and their application to educational contexts. Their research undergirds the conceptual framework of this study, and is operationalized within the case study in the educational context.

Table 4

Applying Social Capital Theory

Scholar	**Theoretical Perspective**	**Application**
Coleman, J.S. (1988)	Social structures influence knowledge outcomes; governed by norms, rules, and obligations.	Social capital within teacher groups can influence the intellectual work of the group, only with the careful balance between the needs of individuals and the needs of the group as a whole.
Lin, N. (1999)	Social capital is embedded in social networks; access to resources within the group; action based on the structure and opportunity of the group.	Awareness of how information flows and is mobilized within a network. It is beneficial to understand social capital in the context of a curriculum group to ensure access and transfer of knowledge among members.
Nahapiet, J., & Ghoshal, S. (1998)	Social capital facilitates the creation of new intellectual capital; organizations are conducive in the development of high levels of social capital; and because of their social capital can have organizational advantage.	Social capital within a curriculum group can influence the knowledge created and innovation within the group, and then collectively throughout the department or school. Groups with higher social capital have an advantage in the implementation of formative assessment practices.

CHAPTER 3

METHODOLOGY

This chapter discusses the methods used for this action research case study. It begins with a discussion of the conceptual framework that assisted in understanding how capacity-building methods influences implementation. Action research and case study methodologies are described within the context of this study. Presented next is the design of the study and the phases of the action research team. Lastly, the data collection and analysis processes that were used are shared to provide a more in-depth view of the process taken by the lead researcher and the action research team.

Conceptual Framework

The conceptual framework for this study applies the work of David Hargreaves' (2001), *A Capital Theory of School Effectiveness and Improvement*. Hargreaves' theory indicates that as a school mobilizes and improves its intellectual capital, which is the ability to create and transfer knowledge, and its social capital, which is the capacity to sustain trust and networks, it has a greater ability to improve educational outcomes and increase leverage. Hargreaves' concepts are displayed below in Figure 1. As applied to this study, school plans implemented with a strategic focus on enhancing intellectual and social capital provides leverage for improved outcomes in the use of formative assessment practices.

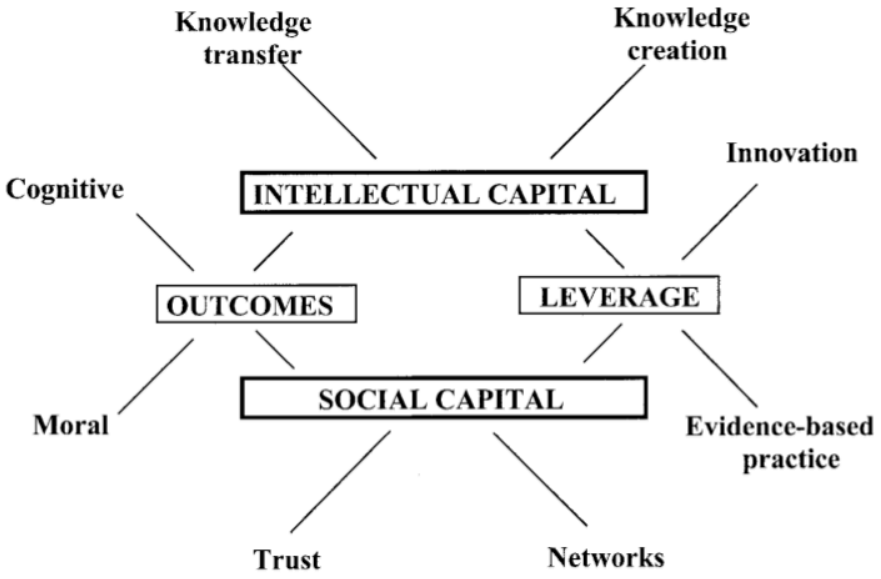

Figure 1. Master and subsidiary concepts from Hargreaves' *Capital Theory of School Effectiveness and Improvement (2001)*.

With Hargreaves' theory as a basis, the aim was to operationalize the concept of capacity. Capacity is defined as the collective skills and knowledge within an organization. Within a school, these include the teachers, leaders, and teams that work together to solve problems and plan for improvement. Capacity-building efforts occur when these collective groups develop critical friendships in the area of instructional practices (Harris, 2001), develop modes of inquiry, and communities of practice in generating knowledge (Copland, 2003). Conceptually, as school leaders and teachers establish goals based on areas of need and work collaboratively to meet these goals, they are able to improve the educational level of students (Fernandez, 2011; Martínez-Torres, 2006). This requires learning new skills and generating more effective practices that support teaching and learning (Harris, 2011; Hopkins, Reynolds, & Gray, 1999; King & Bouchard, 2011; Murphy & Meyers, 2009). Figure 2 below illustrates the framework developed for this study, which combines the elements of the *Capital Theory of*

School Effectiveness and Improvement, school plan implementation, and formative practices. The component of trust is also enveloped in this framework as it supports social capital. As Hargreaves' (2001) theory suggests, these efforts increase leverage which in turn increases educational output, innovation, and evidenced-based practices.

Therefore, as proposed, participants increase their knowledge of formative assessment practices and share this knowledge within their networks, which allows for increased levels of implementation. This theory informs the practice of the action research cycle in the acquisition, transfer, utilization, and evaluation of knowledge. The conceptual framework below illustrates how the process takes place in practice.

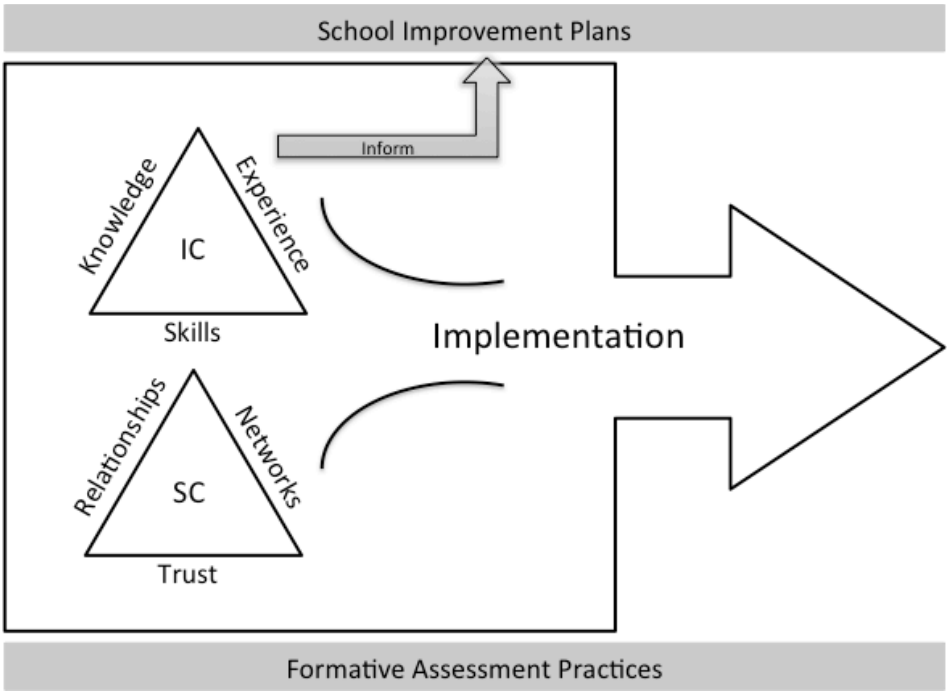

Figure 2. Influence of intellectual and social capital—conceptual framework.

The individual concepts of intellectual capacity, social capacity, and implementation combined in this framework influence formative assessment practices and school improvement plans in general. The framework pulls core elements from each separate concept, and uses these elements collectively as a tool for school improvement. The "practical, experienced-based

knowledge and the theoretical knowledge" (Nahapiet & Ghoshal, 1998, p. 246), along with individual know-how (Bontis, 1998) are elements of intellectual capacity that work in conjunction with the "guanxi" or social influence (Hutchinson et al., 2004) aspect of social capital. Thus, intellectual capacity and social capacity work together as assets that promote implementation, or the carrying out of school improvement objectives. In this particular case, it is the implementation of formative assessment practices.

The implementation component of the framework includes research on the establishment of degrees of implementation, discussion of barriers or obstacles, and best practices in the field (Gross et al., 1971). Fullan and Pomfret discuss the dimensions of implementation as "changes in materials, structure, role/behavior, knowledge and understanding, and value internalization" (1977, p. 336). They also point out the importance of explicitness, staff training, environmental support, and incentives (Fullan & Pomfret, 1977). The power behind implementation in the framework comes from comprehensive professional development (Newmann, King, & Youngs, 2000) and the structure of the PLC, which considers and develops intellectual and social capacity. Lastly, this study utilized this framework as a foundation for methodology and a reference to the analysis of capacity, not just as an inorganic concept, but also as a substantial means to an end.

Action Research Methodology

Action research emerged out of the work of Kurt Lewin, as he searched for a form of research that would provide judgment on "whether an action has led forward or backward…to evaluate the relation between effort and achievement" (1946, p. 45). He desired "a comparative research on the conditions and effects of various forms of social action…that lead to social action" (1946, p. 45). Action research was later defined as a "systematic approach to

investigation" that helps researchers move from problem to solution (Stringer, 2013, p. 1). According to Lewin, action research is based on the relationships, human purpose, and the minority problems (1946, p. 35). Its aim is to understand the individual, the group, and the influence of the wider context. Action research, through the process of inquiry, examines interrelationships and group understanding where the individual or group takes precedence over the procedural.

Action research is also defined as an evolving process of inquiry where behavioral science and organizational knowledge are applied to solve real organizational problems. It is concerned with change at the organizational, individual, and theoretical level (Coghlan & Brannick, 2014). Action research involves real time, and active work by the researcher to make change happen. It requires interaction between the researcher and personnel of the organization to develop a broad view of the system. The researcher brings his or her existing knowledge, and new knowledge derived from data, to the action research work. Action research allows for context-applicable inquiry that includes behavioral understanding, while operating within a pragmatic approach or framework toward corrective action (Stringer, 2013).

Action research begins with the members of any organization, as they develop in their role, they will at some point engage in a mode of inquiry. Depending on the scenario or system, this will manifest itself along a continuum of involvement regarding macro or micro topics. This may include silent, self-reflection at one end, small group conversation and collaboration in the middle, and action at the other. Coghlan and Brannick (2014) describe this as the three audiences of first, second, and third person. This continuum also aligns very closely with the immersion level of the individual as it pertains to the change processes of the organization. For example, the more the members assess both their ability and that of the learning community to

function as agents of change, the desire to be immersed in continuous quality improvement increases. These levels of involvement and immersion define the relationship between the practitioner and the environment.

From a practitioner's standpoint, the use of action research methodology allows the researcher to examine the natural setting, to work with a team through the process of inquiry, and to act in real time to solve problems. The process takes place in two realms, that of active participant and that of observer. As I examined the problem of school plan implementation through the lens of David Hargreaves' (2001) *Capital Theory of School Effectiveness and Improvement*, the design of the research stemmed from a philosophical continuum of a pragmatic and constructivist worldview. As constructive, the research sought to construct meaning, examine social reality, and create knowledge (Creswell, 1994). Pragmatically, this research used techniques that met specific purposes, examined the problem through qualitative means, and determined applicable solutions derived from the social sciences (Creswell, 1994).

In order to proceed from concept to solution, action researchers operate through cycles, or within frameworks to guide and capture the action research process. Action research includes a spiral, which in one form or another involves a cyclical process (Coghlan & Brannick, 2014; Stringer, 2013). The graphic below illustrates one cycle of the action research process. The process begins with "constructing what the issues are" and travels through evaluation. Construction requires the researcher to observe the environment, the interrelationships, and the symbolic language of the research context. It requires examination of the evidence and data to support the existence of the problem. This involves inquiry and attention of individuals within an organization, the environment, and paying attention to what is

said and unsaid. It moves into planning and taking action. It then requires the researchers to evaluate the cycle to determine what should happen next.

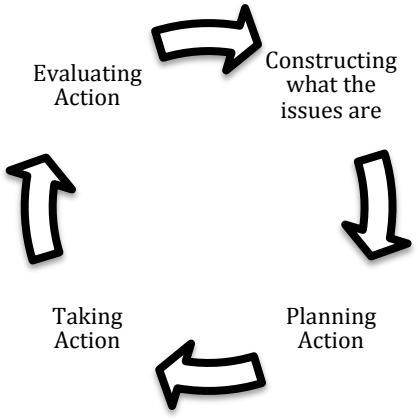

Figure 3. One action research cycle (Coghlan & Brannick, 2014).

The process above provides a framework for action and analysis. Each time a cycle is completed, the data gathered from the cycle is used to move to the next stage. Action research demands that the researcher adopt a general empirical method, while continuously nurturing and understanding fluctuating dynamics within the organization.

The action researcher must develop a consultation group of individuals who function as interventionists within the process (Spaulding & Falco, 2013; Stringer, 2013). This group, with the researcher as the lead facilitator, meets regularly to brainstorm, construct meaning, decide pathways, analyze ongoing activities, and develop courses of action. They act as co-researchers in the process (Stringer, 2013); therefore, they must be invested in the work and believe that their contribution to the group benefits themselves, their constituents, and the organization as a whole. The team functions as a community of inquiry and the role of the members are to look, think, and act through multiple perspectives and different levels of understanding (Stringer, 2013). The action research team does not accept reality as face value. They dig deep into

qualitative inquiry as they help define the issue, plan and enact action, but also evaluate action. It is a cyclical and reflective process.

Action research also involves thorough evaluation. Stringer states that evaluation of action research "is consonant with constructive philosophy…it defines outcomes in ends that are acceptable to stakeholders, rather than those whose degree of success may be measured against some set of fixed criteria" (2013, p. 183). Through action research, this study aims to view capacity as its own entity, but also as a force that influences what happens within educational settings. The stakeholders in this case are the curriculum groups and the school as a whole. It also allows us to understand individuality and group interaction.

Action research is the primary methodology because it allows organizational members to work collectively to solve a real problem by moving carefully through a process of inquiry and evaluation. It is relevant insider research that contributes to the goal of school improvement. Participants, working collaboratively, can act as change agents within the school. Action research is used in conjunction with case study methodology to provide an in-depth analysis of this participant group and their efforts within this context. Case study, as the second component to this methodology is described below.

Case Study Methodology

From a qualitative research standpoint, a case study approach allows the researcher to examine a phenomenon, action, process, policy, or program (Simons, 2009). Case study methods promote qualitative inquiry within specific contexts. These include interviewing, observations, document analysis, and reflexive analysis (Simons, 2009). Case study uses data collected from a specific situation and allows for a higher level of analysis that cannot be achieved with other methods. The design is considered instrumental in that the case is "chosen

to gain insight or understanding into something else" (Simons, 2009, p. 21). Case study is all about context and phenomenon. Yin describes the scope of case study as "an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-world context, especially when the boundaries between the phenomenon and context may not be clearly evident" (2013, p. 17).

Within a specific context lies the phenomenon to be studied, and Stake refers to this as the "quintain" (2013, p. 6). The process of case study includes entry into the field, "quintain" identification, data collection, and data analysis. Defining the case is the first step in a case study. It requires a thorough awareness of what should be studied or examined. The container determines the realm of the study. Once that is established, the case study researcher follows a process of planning, designing, preparing, collecting, and analyzing data (Yin, 2013). This requires the researcher to develop skills in the area of collecting data from participants and settings in the field, including respecting the democratic process (Stake, 2013).

In addition, a case study researcher must be aware of the misconceptions or misunderstanding of case study research. Case study is not about removing the context from the actual learning that is to take place (Flyvbjerg, 2006). The context is where understanding takes place. Flyvbjerb also confirms that generalizations *can* be made from a case study; case study *can* test hypotheses; case study understands the problem of bias; and the narrative of the case study provides the most value (2006). As an empirical method, case study provides a method that can be utilized to gain awareness and understand outcomes.

The quality of case study is dependent on a number of factors. Tracy's work on the "big-tent" criteria for qualitative research nicely aligns to the method of case study. She describes these as the "worthiness of the topic, rigor, sincerity of the researcher, credibility of

the data, resonance or influence, significance, ethics, and coherent purpose" (2010, p. 840). This provides a "common language" which researchers can utilize to ensure validity and the empirical nature of qualitative investigation and reporting (Yin, 2013).

This case study used the conceptual framework described above as we examined the implementation of formative assessment practices within curriculum groups. The "embraceable" boundaries or "quintain" (Stake, 2013) of the case study is the story of the action research team and the corresponding curriculum groups. Therefore, as lead researcher, I interacted with and studied both the action team members' and curriculum groups' acquisition of knowledge, the sense-making of that knowledge, and how this was carried out in planning meetings and direct observations. This allowed me to examine "both the pieces and the whole" or "what is common and what is dissimilar" (Stake, 2013, p. 7). As such, I was able to understand how the action research process impacted the curriculum groups. As a qualitative researcher, I embraced the case study methodology to further understand capacity in practice.

According to Flyvbjerg's (2006) recommendations, I took solace in its practicality, the value of the single case, and the opportunity to generate hypotheses in the study of the action research team within the educational context. In the section below, I describe the design of the study based on the action research and case study approach.

Design of the Study

In order to capture the work of the action research team, I combined action research and case study as a foundation for this methodology. In combination, this action research case study closely examined the application of the conceptual framework with the action research (AR) team and curriculum groups selected as part of the action research process. As the AR team designed interventions to be used with these groups, the case study discusses the process of the

action research team in designing and implementing interventions, as well as the background and mechanisms of the curriculum groups. The case study also describes how intellectual and social capacity influenced implementation of formative assessment practices, but also describes barriers to implementation.

The design followed an action research case study approach. The action research component focused on the action research methodology and the action research team as they learned about and designed interventions for specific curriculum groups at Homer Middle School. The action research case study write up closely examines the application of the conceptual framework with the action research team and curriculum groups' response to the action research interventions.

It is essential for any action researcher to develop a plan that creates sustainable change within an organization that includes support for the team and participants to carry it out in order to produce change. As lead researcher, I had to perpetuate the enthusiasm from the initial planning phase to the action-oriented interventions that were required in the action research process (Stringer, 2013). As the lead researcher, I led the action research team through this process; however, the team members served as consultants and interventionists throughout the project. I provided the structure of the team and the focus for the meetings, while also soliciting team members' ideas around the research purpose. The action research team led the work in designing interventions to be used with the curriculum groups.

Throughout the process, it was of vital importance to embrace the plan, and consider emergent elements. It is difficult to know all contingencies and team members have to be ready to deal with unanticipated events (Stringer, 2013). Therefore, from the beginning, I needed to

have a formalized plan to present to the action research team, and be attentive to their needs and input as we moved through the research process.

A group of individuals was selected as part of the action research team, and they worked closely over a ten-month period through the action research cycles to address the problem of implementing formative practices. The work of the team was broken into three distinct phases: entry and awareness, intervention design and review, and reflection. As shown in Table 5 below, the first phase included the team's introduction and acquisition to the action research process and the problem of plan implementation. During this entry phase, team members and the faculty as a whole, participated in a professional learning session regarding formative assessment practices. The activities of the team ran along two parallel paths. Half of the action research team meetings focused on developing the team's familiarity with the concepts of intellectual and social capacity (inputs) while the other half focused on the design and review implementations (outputs) (Spaulding & Falco, 2013). During learning sessions, the team examined how teachers increased knowledge, how they shared knowledge, and how groups grew and maintained trust networks. This allowed the group to see how capacity influences school plan activities. During the intervention design and review phase, the group developed and reviewed interventions to be used by curriculum groups within the school regarding the implementation of formative practices. The reflection phase consisted of individual team member interviews and reflection on the process of action research.

Table 5

Phases of the Action Research Team

Phase	**Actions**	**Purpose**
Entry and Awareness	School wide professional development on formative assessments, review of previous school plans, introduction to action research.	Develop capacities related to formative practices. Determine commitment levels and build foundational understanding of LSPI.
Intervention Design and Review	Design interventions, IC/SC dialogue session, development of intangible assets used for mapping, formative assessment and curriculum discussions; participate in curriculum group meetings.	Develop skills related to action research process; provide learning regarding IC/SC and formative practices; solve problems related to the process.
Reflection	Reflection on cycle effectiveness; final interviews and review of models.	Opportunity for AR team members to share experience and influence on formative practices in school as well as determine utility of rating scale and network modeling.

These phases coincided with the action research cycle process of constructing, planning action, taking action, and evaluating action (Coghlan & Brannick, 2014). Figure 3 below illustrates one cycle, however, action research requires multiple cycles and multiple stages of evaluation. The action research team and lead researcher spent a significant amount of time in the constructing phase. This was due to the high level of inquiry into practices within the school.

The next section describes sample selection, by describing the site selection, the choice of the action research team members and the choice of the curriculum groups.

Sample Selection

The action research methodology determined sample selection. As lead researcher, I am employed at Homer Middle School and consider myself very familiar with the organization, its members of influence, as well as the school's development over time in the area of school improvement and school plans. Therefore, site selection was more about change agency within my organization and less about site choice. The site and the research design aligned closely, and therefore provided mutual benefit.

Participants on the action research team were a group of selected individuals at Homer Middle School. This school-level action research allowed school administrators and staff to work collaboratively to address a problem. The team was "composed of individuals who have a unique set of skills, content knowledge, and experience (Spaulding & Falco, 2013, p. 33). It was a diverse group of teachers and administrators who had been at the school for three or more years and had teacher-leader experience. There were two administrators on the team who had experience leading a curriculum area in the capacity of an administrator as well as a teacher. The team also consisted of three teacher-leaders, the school technology coordinator, and a Response to Intervention (RTI) coordinator. Some of these action research team members had previous experience as curriculum group leaders, and others were very involved in discussions around school improvement and school plans.

Five curriculum groups were chosen to represent various grade levels and disciplines. Since two of the action research team members were or have been curriculum leaders in their current curriculum group, it made the work of the AR team easily transferrable to those groups. However, not all members were curriculum group leaders. The other groups, which did not have action research team representation, were chosen based on different criteria. One group

had a brand new curriculum leader while the other two curricula had the same leader for more than three years. These five groups allowed for a diverse view of levels of leadership, different disciplines, teaching experience, and the amount of time members of the group remained together.

Table 6 below provides an introduction into the action research team members and background on their competencies. Each member had a high degree of intellectual and social capacity, and his or her value in the school was without question.

Table 6

Action Research Team Members

Action Research Team Members[1]	**Individual Competencies**
Florence	Veteran educator, National Board Certified, Coaching Endorsement, Staff Development Facilitator, Lead District Mentor
Greta	Veteran educator, Curriculum leadership experience
Hilda	Veteran educator, Coaching Endorsement, Teacher-leader, Member of district assessment team
Sam	Veteran educator, Department Chair
Steve	Veteran educator, Strong social capital within school setting
Rose	Teacher-leader, teacher mentor, Instructional coaching experience
Wilomena	Curriculum and school leadership experience, Coaching Endorsement

Data Collection

Action research involves simultaneous data collection methods. Data was collected on the problem, the activities of the action research team, intervention design, and curriculum group response to interventions. The data collection process occurred prior to the first intervention, during the AR cycles, and at the end of the study. Data was collected through

[1] All names are pseudonyms.

qualitative methods such as direct observations, interviews, documents pertaining to the research problem, and researcher reflections. The initial data collected was for the purposes of further defining the problem and gathering information on the problem. This included document analysis, initial teacher interviews, and curriculum group interviews. Document data sources collected at the inception of the study included previous school plans dating back to 2012–2013, and examination of previous professional development materials pertaining to formative assessment. The purpose of this initial document collection was to examine previous school improvement plans, and to review the previous goals set for increasing levels of collaboration in teacher teams and the incorporation of strategies into practice. Those early documents stated that the leadership team viewed implementation of the school's plan to use formative assessment as somewhere between the "not established" and the "starting out" level.

Initial interviews were conducted with teachers and some curriculum groups prior to interventions of the AR team in order to provide data on the school's plan awareness, formative practices, and planning practices. Interviewing is "a reflexive process that enables the interviewee to explore his or her experience in detail and to reveal the many features of the experience that have an effect on the issue investigated" (Stringer, 2013, p. 105). As lead researcher, it was my goal to embrace Stringer's perspective and create a reflexive and comfortable atmosphere for the interviewees. Interview protocols were designed to question teachers about their teacher preparation program, their experience with professional learning, their knowledge of the school plan, and how their curriculum group planned for assessment. Final interviews with the research team utilized the critical incident technique. "The critical incident technique consists of a set of procedures for collecting direct observations of human behavior in such a way as to facilitate their potential usefulness in solving practical problems

and developing broad psychological principles" (Flanagan, 1954, p. 327). With careful adherence to the technique, a researcher can collect qualitative data that can be used for analytical purposes. Interview protocols can be found in the Appendix section.

Data collection on the action research process came from a variety of sources such as transcriptions of action research team meetings, member interviews, notes and reflections. The action research team was extremely productive, and the action research process yielded quality data to address the research questions. Table 7 below illustrates specific data collected and its relation to the research questions.

Table 7

Data Collection

Research Question	**Data Collected**
1. How does the building of intellectual capacity (knowledge, experience, and skills) and social capacity (relationships, trust, and networks) influence the implementation of formative assessment practices?	Action research team meetings (IC/SC workshops); Document analysis (curriculum group meeting notes and formative assessments); Curriculum group observations; Teacher interviews; Teacher observations.
2. How does action research about school improvement plans allow a school to build and strengthen instructional practices?	Action research team meetings; School plan document analysis; Reflections; Field notes.
3. In what ways can intellectual capacity be measured or modeled to inform decision making in educational settings?	Curriculum group observation; IC/SC mapping sessions; Teacher interviews.

Data Analysis

The process of data analysis is the tool by which meaning happens, connections are drawn, data takes shape, and the narrative of the study begins to emerge. Analysis "requires the researcher to be open to possibilities and see contrary or alternative explanations for the findings" (Creswell, 1994). Chaos becomes purpose and the scattered become arranged.

All transcribed electronic data was coded using an online tool called Dedoose. With this program, I was able to import transcribed data, code the data, write memos, and use basic analysis tools. Dedoose has the ability to incorporate quantitative data for use with a mixed methodology; however, for the purposes of this study, I only used the qualitative components. Other data, in the form of notes from documents and reflections, were typed into One-Note and "hand-coded" via the computer. This online and offline approach provided different ways of interacting with the data set. One-Note also served as a tool for my reflections during the action research cycles and I was able to chronicle my own journey as the lead researcher.

Movement from data collection to analysis was as follows. During the problem-framing phase, I examined various documents and conducted pre-interviews with teachers and the team at the school. At that point, a number of predetermined codes were developed. These codes were based on the working conceptual framework and were designed to "harmonize with the framework or paradigm and to enable an analysis that directly answers research questions" (Saldaňa, 2013, p. 61). These initial codes were designed to capture and compartmentalize excerpts based on intellectual and social capacity, and school plan awareness.

The first cycle coding method used was descriptive coding. "Descriptive coding summarizes in a word or short phrase—most often a noun—the basic topic of a passage of qualitative data" (Saldaňa, 2013 p. 88). Additional codes and child codes were added to both

refine and broaden the excerpts. Descriptive codes were acronym-based for simplicity purposes. Sub or child codes were word or phrase-based, as is the case with traditional descriptive coding. The emergent codes came from new perspectives and factors that were revealed during action research team meetings. For example, during this first cycle coding, I noticed that my codes for intellectual and social capital, KES and RNT, needed to be broken up to further and separately analyze aspects related to knowledge, experience, and skills, and relationships, networks, and trust, respectively. After the IC/SC dialogue session, through reflective analysis, it became apparent for the need to code intangible assets (IA), which were factors in the building of intellectual and social capacity. The first cycle which Saldana states, "happens during the initial coding of data", was the first stage of the cyclical process of analysis (2013 p. 58).

Following the first cycle, I was able to see the corpus of the data, as well as its integral parts. It showed where there was congruence and disaggregation, and various paradoxes that emerged and how my own thinking began to change during the research process. The process of memo writing was used to further think about excerpts and the aspects of the action research process. With the codes from the first cycle, the use of focused coding for the second cycle was chosen. Second Cycle coding is referred to as a way to "develop a sense of categorical, thematic, conceptual, and/or theoretical organization from your array of First Cycle codes" (Saldaňa, 2013 p. 207). This development of second cycle coding required examining the array of codes, re-reading excerpts, documents, memos, and reflections in order to put boundaries or containers around concepts and thoughts. Focused coding produced the following gerund-derived categories: application and cultivation of teacher learning, building collaboration through cohesion and continuity, creating positive force through big picture awareness,

evaluating through listening and feedback, and facilitating performance through leadership and coaching. The table below lists the final codes that were used in the first and second cycle coding.

Table 8

Final Coding Table

Symbol	**Code**
RNT	(Relationships, Networks, Trust)
KES	(Knowledge, Experience, Skills)
FAP	Formative Assessment Practice
SPA	School Plan Awareness
SPW	School Plan as a Function of Teacher Work
RL	Response to Learning
ACP	Actions of Curriculum Planning
PLForm	Planning of Formative Assessments
PLComm	Planning of Common/summative Assessments
DT	Data Discussions and Use
NTG	New Teacher to School or Group
ARC	Action Research Cycles
CL	Curriculum Leadership
DB	Discovered Barriers
KB	Known Barriers
IA	Intangible Assets: Equity of voice, Opportunity to contribute, Facilitation, Professional Learning on Assessment, Peer Observation, Vulnerability

The final step of analysis consisted of narrative making and story telling based on the combining and assimilation of these codes and categories, and linking the data back to the specific research questions. Qualitative data analysis involves a process of breaking down, interpreting, making sense, and analyzing the data (Simons, 2009). This process was aimed at developing the story around the case study. In the context of contributing to social science or academic literature, the process of analysis must involve a level of rigor that adds value to human learning (Flyvbjerg, 2006). The process of analysis for this study includes multiple

layers that support the triangulation and validity of the data. The results of this analysis are described in the findings and summary chapters.

Researcher Position

Leading a research team to conduct a study to produce change in an organization requires maintaining the legitimacy of data collection and analysis, and removal of any personal bias. As a school administrator, it is my responsibility to plan and implement professional development. I have also spent a lot of time working with teacher-leaders in the school prior to the study, throughout the study, and afterwards. These duties often clashed with that of being a researcher who was there to collect data, accept scenarios as they were, and allow the process to emerge organically.

Many participants were open and honest during interviews, which was an indication of the trust and social capacity that existed and was built during and prior to the process. Nonetheless, I had to also approach data collection and analysis with the mindset that my position within the context could have influenced participants' responses. Thus, the actions of the team members helped balance out this paradox. I needed to reflect on these biases, as well as examine my close connection to the design, and implementation of previous school plans. To conduct a study on school plan implementation within one's own organization, the researcher must accept the fact that, as a school leader, one may have contributed to the existence of the problem or did not do enough to address the problem prior to the study's inception.

Study Limitations

The main limitation of this study pertains specifically to looking at the process of implementation and the non-use of pupils. This study of implementation and teacher behavior

only took into account the practice or innovation based on the actions of the teacher. In order to follow the implementation of a specific strategy such as formative assessment practices, stopping at the teacher level and not going to the core or student level, limits the context of the study. Formative assessment happens at the teacher and student level. According to Fullan and Pomfret, in their thorough critique of curriculum and instruction implementation studies, "the researchers identified pupils as a main data source on the grounds that it was the pupils' perceptions of teachers' intentions as conveyed by teachers' verbal behavior which would, in part, determine the success or failure of the undertaking" (Fullan & Pomfret, 1977, p. 359). Encompassed in the findings are discussions based on classroom observations; however, use of pupil perceptions or student data as a data source is not included. Although, it would have possibly provided an end-user perspective, I believe that focus at the teacher and group level provides sufficient evidence on actions pertaining to implementation as it relates to the role of leadership and school formative assessment practices.

CHAPTER 4

CASE STUDY REPORT

Thoroughly examining capacity as a concept was one of the driving forces behind this action research project. In educational leadership literature, the term "capacity" is widely used, and expects the reader to conceptualize and to be able to use it in practice. I have not found this to be true, which is why I have decided to break down the concept into intellectual and social capacity, allowing for both a knowledge-based and relational view into capacity in an educational context. The following case study report discusses problem diagnosis, initial inquiry, and the action research team's process of intervention with curriculum groups. This led to the development of pragmatic approaches regarding capacity in school plan implementation efforts. The team meetings were divided between action research team development meetings and intervention design meetings. The development meetings were to provide the background and knowledge needed to design interventions. Table 9 below presents an outline of the action research timeline and process.

Table 9

Action Research Timeline

Action Research Team Activity	Date	Description and Data Collected
Making entry with team	March–May 2015	Introduction to research project and role of AR team members. Professional learning regarding formative assessment practices. -Field notes, previous LSPI, preliminary teacher interviews and school improvement document analysis.
LSPI planning session	July 2015	Building the container, increasing capacity around school plans, and establishing

Action Research Team Activity	Date	Description and Data Collected
		voice. -Documents, audio-recording, field notes.
Intellectual and Social Capital Dialogue	August 2015	Questions protocol regarding IC/SC. Dialogue around acquisition, increase, and transfer of knowledge that creates capacity.
Intervention 1 Design – Cycle 1	September 2015	-Field notes, audio recording Review of formative assessment literature and designing of first intervention.
Intellectual and Social Capital Analysis	Early October 2015	-Field notes, reflection. Analysis of intangible assets and discussion of social capacity and connection within curriculum groups. -Documents, reflection, audio-recording.
Intervention 1 Review – Cycle 1 Intervention 2 Design – Cycle 2	Late October 2015	Review of first intervention, determine obstacles and troubleshoot. Share data from curriculum groups and teacher interviews. -Interview transcripts, documents, audio-recording, and reflection.
Intellectual and Social Capital Mapping Workshops I and II	November 2015—January 2016	Review of teacher interview, IC/SC dialogue, and analysis data. Review and discussion of IC measurement methods. -Documents, audio-recording.
Intervention 2 Review – Cycle 2 Intervention 3 Design Cycle 3	November–January 2016	Review of first intervention, determine obstacles and troubleshoot. Share data from curriculum groups and teacher interviews. -Interview transcripts, documents, audio-recording, and reflection.
Measures and Models with AR Team/Curriculum Groups	January–February 2016	Explore measure and models with team and groups including rating scale and network mapping. -Transcripts from audio-recording.
Action Research Team Interviews	January–February 2016	Conduct final interview with group around group activities and intervention cycles. -Documents, transcripts.

Using the action research process as a guide, this case study will report the journey from construction of the issues through evaluation of outcomes. This occurs through a flow of three action research cycles as the team moved to deeper levels of understanding. This process of unpacking events assists in the learning process in order to find meaning and extend understanding (Stringer, 2013). The story begins with preliminary work done by the lead researcher in constructing what the issues were, and then moves through the action research process. The background described in Chapter 1 provides the context of the case study. Through each cycle, additional information was acquired that required the team to understand the issue and decide on the best course of action. As described below, action did not always produce expected outcomes, but led to further understanding of intellectual and social capacity as resources within this context. As a research team, we began to see that implementation is not a linear process. It oftentimes consists of turning around and retracing steps to view each element in its own light. This was very true for the work of the action research team and the curriculum groups.

The story below describes the multiple layers and levels to formative practices as well as the multiple layers and levels of individual and group capacity. The graphic below provides an overall view of the process. The image on the left represents one action research cycle and the image on the right represents the spiraling cycles that take place within an action research process. As we move from cycle one to cycle three, we are following a concurrent process that includes both the entire project, but also the evolution of thought along the way. As the story is portrayed below, the graphic is used to demonstrate which part of the process is taking place. There are places in the narrative where "constructing what the issues are" may have taken place over the course of two meetings or in a series of constructed occurrences. Likewise, some

sections are combined to describe both "planning and taking action", where the team planned an action and implemented that action into their work.

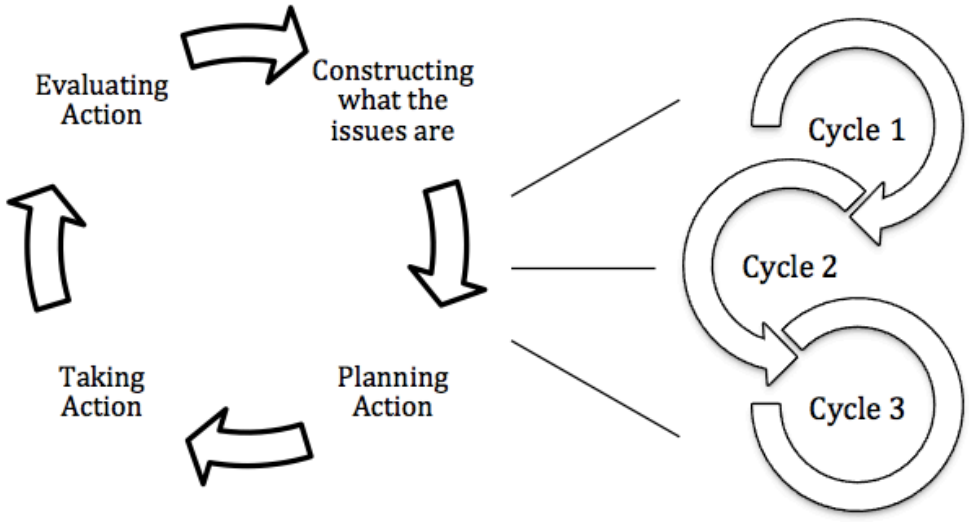

Figure 4: Action Research Process and Cycles

The first part of the case study relates to the work of the action research team and their work in designing interventions for the curriculum groups based on the action research cycles. The responses from some of the curriculum groups are discussed as well. The second part of the case study provides more information on the interworking of the curriculum groups and a brief description of their journey.

Cycle 1: Process of Discovery and Project Launch

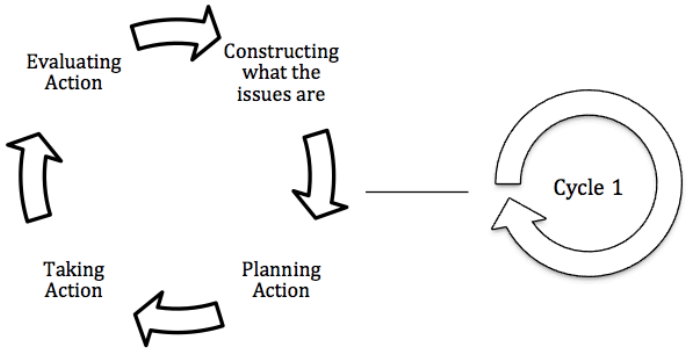

Figure 5: Cycle 1

The first cycle is about the process of discovery and the launch of the project. The journey of school improvement has many moving parts. It involves the interplay of inside and outside forces. This first cycle talks about the journey from examining the recent history of Homer Middle School improvement initiatives to the development of the focus for the action research study to launching the study with the action research team. This process occurred between March and July of 2015.

Constructing: Examining the Past

At the inception of the study, I began by reflecting on the previous school plans and the process of implementation. This process occurred from January 2015 to the inception of the action research team. Although, there was a lot of success that came from previous work, I knew there were also missing elements. While examining previous plans, it was noticeable that a lot of thought went into the plan, but some of the components were not carried out. The preliminary data analysis included previous school improvement plans, implementation rubrics, and action plans. However, I began to notice that each document revealed a different dimension of the process of school improvement. For example, the school improvement plans included

elements that were very successful and others that did not quite get off the ground. Thinking back, I could see where efforts were placed in some areas to ensure success, and other areas that we did not meet the goals set forth.

Action plans and rubrics have different levels of accountability, requiring deeper levels of self-reflection on what I could have done differently in order to get a different outcome. As a leadership team, we believe we knew what needed to take place, but we did not always talk about the capacity within the building in order for the plan to happen. I also reflected on my role and ability as a leader to facilitate the process of growth within the building. This was both exciting and disheartening at the same time. I was thrilled to see where we made great efforts to establish change, but was also dismayed at our ability to monitor specific elements of the plans. This also forced me to widen the scope of the role that I played as a leader in conjunction with curriculum groups. The table below lists a snapshot of the documents and my thoughts on the role of capacity in the process. This established my process of inquiry about school improvement planning and the gaps from plan to action.

Table 10

Preliminary Document Review

Document Title and Date	**Goals/Initiatives**	**Reflections and Questions**
School Improvement Plan 2012-2013	Common core standards implementation, teacher evaluation system, mastery teaching, literacy initiatives	Progress on initiatives: however, plan called for process for monitoring of implementation and role of clear learning targets. Did we effectively monitor implementation? Which curriculum groups implemented and what was successful?
Short Term Action Plan	Establish training to increase collaborative	Formed the Teacher Leader Academy and created processes and structures

Document Title and Date	Goals/Initiatives	Reflections and Questions
February 2013	efforts. Teacher leaders meet monthly to develop processes for collaboration, data analysis, and curriculum mapping.	for collaborative planning. Were structures followed? Did they support the work of the curriculum groups?
Implementation Rubric February 2013	Lists out varying levels of implementation such as not established, starting out, developing, and deepening. Group Rating: Starting out	Rubric included many aspects of implementation from structures and systems to communication to incorporating into practice. Did we consider what we needed in order to move to developing or deepening?
School Improvement Plan 2013-2014	Differentiation, data analysis, collaborative planning framework, high yield strategies, and looking at student work.	Extensive focus on high yield strategies and implementation of teacher evaluation system. Created structures for collaborative planning and data analysis. Do we know which groups were successful with structures?
Local School Plan for Improvement 2014-2015	Mastery targets for new state assessment, clear learning targets and formative assessment, literacy initiatives, and technology initiatives.	Focus on new state assessment, introduction to formative assessment practices and learning targets. Do we know the capacity for implementation of the current initiatives? How do we monitor?

After examining the documents, I noticed the thread to focus on collaborative planning from the 2012-2013 plans. From that point of focus, we were able to establish structures for collaborative planning and a teacher leader academy. I also noticed that, at the onset, we had major initiatives such as teacher evaluation system and common core implementation. Later, goals became more focused on specific elements of instruction such as high-yield strategies and

looking at student work. It was also interesting to see the language of clear learning targets on the 2012-2013 plan long before our training on the formative assessment modules.

Throughout this process of inquiry, teacher capacity was at the forefront. What is the knowledge that is necessary to implement high-yield strategies, and where do our teachers fall on the teacher evaluation continuum? What is the level of knowledge around each initiative listed? Are the structures for curriculum planning being followed, and what role does the curriculum group play in planning success for all? During this time, I read literature on organizational capacity and explored the concept in practice. Based on the analysis of the previous plans, I could see the evolution from implementation of large initiatives such as common core standards to the breaking down these initiatives into specific elements of instruction such as mastery teaching and high-yield strategies. You cannot get to one without the other. It was also evident that without structures in place for collaborative planning, groups either create their structures or the individuals work in isolation. The establishment of the teacher leader academy assisted with this, by providing a framework for collaborative planning to curriculum leaders.

However, I was still at the point of not knowing exactly *how* capacity works in practice and how it influences implementation. It also became clear that the structures put in place required continuous evaluation and reinforcement as new curriculum leaders assume roles and new teachers enter groups. As a school leader, it was necessary for me to know what knowledge, experience and skills existed within the school building and how that knowledge was transferred. This awareness was the missing link. We had the end result in mind, but needed to understand the influence of capacity. This is when I decided to make entry with the

team and hear from teacher leaders at Homer Middle School about this perceived gap between plan and action.

In the spring of 2015, I made entry with the action research team. During this time, the idea of action research was introduced to the members, and we met informally to gather their perception of school plan implementation during the 2014–2015 school year. During the 2014–2015 school year, all of the team members had participated in professional learning (PL) held by the school on formative assessment practices. The professional learning involved five online modules that discussed topics relating to formative assessment including clear learning targets, collecting and documenting evidence of student learning, data analysis and feedback, and student ownership of learning (Battelle for Kids, 2014). It was expected that teachers would watch these modules on their own time and participate in professional discussions at school. Many teachers fully participated in the learning—some only watched two to three modules, and others only took part in the discussion at the school and did not watch the modules on their own. Many curriculum instructors and teacher-leaders did complete all of the modules, and were expected to be familiar with the material so they could facilitate discussions on the formative assessment topics within professional learning communities (PLCs). The action team research team members fell into that category.

The focus for the school plan during the 2014–2015 school year was the use of learning targets in lesson design. According to the Association for Supervision and Curriculum Development (ASCD),

> Learning targets, as their name implies, guide learning. They describe, in language that students understand, the lesson-sized chunk of information, skills, and reasoning processes that students will come to know deeply. We write learning targets from the students' point of view and share them throughout today's lesson so that students can use them to guide their own learning. They provide a common focus for the decisions that schools make about what works,

> what doesn't work, and what could work better. They help educators set challenging goals for what expert teachers and principals should know and be able to do (Moss & Brookhart, 2012).

During that time, teachers were expected to create and utilize learning targets in order to develop better assessments. For example, when teachers deconstruct the standard and examine what the standard is asking, they are better able to align assessment to what students are expected to know and be able to do. Learning targets are tools that teachers use to determine the appropriate method of formative assessment in the classroom. Some learning targets can be answered with questioning, while others may involve performance or written assessment.

The 2014–2015 school year also included the state's adoption of a new, more rigorous assessment. Although the online modules were designed to support teachers in practices that help them assess students at higher levels, the overall changes from the old state test to the new state test required additional and concentrated professional learning to match instruction to assessment. As one of the school leaders, I shared with teachers the necessity to learn more about the requirements of the state assessment in order to determine necessary changes in teaching and assessment practice. Many teachers were having these conversations on their own and spent time realigning the work they do. The component of the 2014–2015 school plan that addressed learning targets helped facilitate that to take place.

It was comforting to know that the action research team members were familiar with the modules, and that some had facilitated discussions around the topic within curriculum groups. These team members also participated in teacher-leader meetings throughout the course of the year that reinforced the concepts taught in the modules. Based on classroom observations and curriculum meeting observations, it became clear that only certain teachers or certain teams were using the learning targets as a tool in classrooms to address student learning. I wondered

why some teacher leaders and action research team members were very comfortable with designing learning targets and using them in the classroom, while others did not.

During this entry phase, my concern was expressed to the team about plan implementation and the school's use of formative assessment practices. Even with the focus within professional learning sessions, some curriculum groups in the school did not fully implement these strategies. At the same time, I was also very impressed with how the language from the module learning became a part of professional conversations in the school and across the district. This brought me back to the thoughts of capacity within the building, and the influence this has on implementation of formative assessment practices.

One of the driving forces behind the development of this research came specifically from those conversations. The fact that individuals gain knowledge or skills in a specific area and depending on their social connections transfer this knowledge to others became interesting. Teachers' intellectual capacity increases through the process of learning and implementing the practices in class. They then share their experience with others, which in turn builds others' capacities. The link between these two attributes is social networks built on trust and relationships. The use of the modules as the vehicle for this knowledge reinforced this idea. However, the use of these modules as a tool for staff development was not mandated from the district. Actually, it was quite the opposite.

Constructing: Background on the Formative Assessment Modules

Leaders in the County Assessment office were asked by the State's Department of Education to use the modules in staff development and then give feedback to the state. The Assessment Department then facilitated this professional learning with some school leaders in the county. They also offered volunteer sessions for assistant principals, and this is how I

became aware of the modules. It is unclear how these concepts permeated throughout the county, but they did. It was not a required professional learning, but those who took part in it felt that there was power in the conversation. This was an interesting phenomenon and reminded me of the literature on "rippling effect" of a grass roots learning initiative (Herriot et al., 2002). Individuals increased their intellectual capacity regarding a focus area, in this case – formative assessment practices, and then shared it with others in their social network. Knowledge and use of formative assessments were shared among leaders and teachers in the county even though it was not a top-down initiative requirement. The training then became a part of schools' improvement plans. Many schools including Homer Middle School began to make formative assessment practices a part of their school improvement plan.

This specific professional learning, other types of staff development, and teacher experience contributes to building teachers' intellectual capacity. When paired with the goals for a school, and in this case goals to implement formative practices, I began to see the value that comes from teacher intellectual capacity, individually, but also the collective capacity that exists in curriculum groups. It was evident from experience that some groups were doing this better than others, and that the focus on formative assessment practices was not something that was going to go away. Teachers often get fatigued with different initiatives and sometimes feel like they attend sessions but do not see the value in their classroom attendance. However, this was different, partly because formative assessment practices are a natural part of pedagogy. Therefore, my entry with the team was focused on the role of capacity in implementation. Based on the rippling effect of this professional learning, I was primarily interested in the intellectual and social aspects associated with learning.

Constructing: Gathering Input

The entry phase conversations came from the desire to see how intellectual capacity and social capacity would influence formative practice. The aim was for the action research team members to develop a sense of inquiry into how this occurs in practice, to know more about how curriculum groups learn and share together; more importantly, how personal connections support this and if this could be used to create value for the school. Based on the time that the members worked at Homer Middle, it was clear that they were invested in the school and the development of the teaching staff. They were aware that improved practice meant improved success for students.

In April and May of 2015, I began conducting teacher and focus group interviews to hear from teachers on how they plan for assessment, work with their groups, what professional learning has impacted their practice, and how the modules on formative assessment practices influenced their instruction. My questions were geared toward gathering data on the intellectual and social capacity of the individuals and groups. Those who completed the modules felt that is was beneficial and it assisted in understanding student learning. I began to see that there were individuals in groups that were continually focused on increasing their capacity with regard to formative assessment. Many of the teachers and groups talked about the use of technology tools to assist with formative assessment practices and shared those resources with one another in meetings. Such technology tools used a question and answer format to assist teachers in assessing students' understanding.

During individual interviews, some teachers commented on the struggle for teams to stay on the same page. Veteran teachers felt that newer teachers were behind in teaching the content, which made collaborative planning of formative assessment difficult. One teacher discussed the social elements of the group and the need to bring the members together. During

the group interviews, all of the teachers were cordial and commented on their support of one another, but very few of them had a history of working together for more than one or two years. This led me to inquire more from the action research team on the relationships within curriculum groups.

Informal action research team discussions during this entry stage revolved around teacher connections—how teachers meet, plan together, and share information with one another. Again, the power was in the conversation. Action research team members would share stories of who on their teams they connected with, and how they would learn something new and organically share knowledge amongst one another. The Hargreaves' model (2001) was shared with the team, with continuing discussions about intellectual and social capital, as it relates to knowledge increase and knowledge transfer. The team discussed the work that was done with professional learning and the school plan's emphasis on learning targets. We knew we came far that year, but there was more work to be done. At the end of the 2014–2015 school year, the team decided to meet over the summer to develop the local school plan together and embark on the action research project. This was an exciting time, partly due to the team members who were going to be a part of this project and also due to the fact that they were going to help plan the trajectory for the next year.

Constructing – The LSPI session

In July 2015, the first formal meeting of the action research team was called the LSPI planning session, which included a schedule for action research team meetings, an introduction to the action research plan, and a brief description of the conceptual framework. This was used as a background to develop the 2015–2016 school plan. This day-long session consisted of a

review of the previous plan, examination of other school plans, and the development of a current plan.

We began the meeting by displaying the implementation plan for the previous year. This plan included the following: Writing Across the Curriculum, Learning Targets, Collaborative Planning of Common Assessments, Building Parent Capacity, Technology to Enhance Learning, and Extended Learning Time. This list was the implementation plan that would result in increased student achievement. After displaying the implementation plan from 2014–2015 and asking the action research team for feedback, Sam stated, *"I think this is something we have to share more often."* Greta followed up by saying, *"I think we have to talk about it, not just view it, but make it a part of our collaborative planning. Such as, how did you use writing across the curriculum last week? It gives people more confidence in their subject."* Hilda chimed in by saying, *"Would it be honest to say that some of these implementations were developed before we had the opportunity to sit down and talk about everything?"* These teachers felt that sharing of the goals created individual ownership. In reflection, maybe the previous implementation plan was just that, a plan. Some of the components were infiltrated within the school, while others just stayed on the page. Sam's statement rang loud and clear. The conversation did not start with how well they felt they did these things, it began with the need to make the plan more prevalent.

The action research team members also talked about how new teachers would be affected by the plan. *"Some subjects have new teachers."* Greta added, *"New teachers are not trained on scoring written and constructed response, (a component of the new assessment)."* Sam stated, *"With the influx of so many new teachers, they are lost."* Rose agreed, but thought the new teachers bring new talent to the school,

> *"I was thinking of that… the new teachers, where are they when they come in. Where are they professionally, where are they on their teaching levels. We are going to have some that are brand new and if you throw all this at them, they are going to have some creative ideas."*

Rose had a great point to make. The key is to know who is coming in the door and think about what they bring to the table. New teachers come in many varieties, and having previous teaching experience does not necessarily equate to increased effectiveness. Homer Middle School has had experience with both. Fortunately, two of the action research team members were prime examples of the value added to the school in terms of being new to education and new to the school. Wilomena started five years ago with no previous education experience, but increased in her capacity and eventually became a leader in the school. Florence transferred to the school five years ago with previous experience at another school and a high degree of intellectual capacity.

This conversation illustrated a number of things. One, these teacher-leaders felt that the goals have to be shared more often, and there has to be teacher involvement in the establishment of school goals. Second, the implementation plan must be part of a collaborative process. Third, new staff will need support in implementing the plan, but may also bring fresh ideas.

After reviewing last year's initiatives, data from the district (summative) assessment from the end of the 2014–2015 year was shared. We examined the variability among grade levels and subject areas, and saw that some subject areas showed less growth than others. Team members provided a lot of feedback with regard to the data. Florence said that in curriculum groups, *"We need to be very transparent in those conversations about how much we are growing. In the past, as teachers, we knew what our data was; we don't really talk about how much we have grown. Monitoring of your own data is lacking."* Others agreed. Some groups share data, but this demonstrated the need to have discussions about the data and to look at

growth. I asked, *"Based on looking at the data, what else do you think we need to focus on?"* The team shared that some curriculum groups showed lower growth than other groups. They also pointed out specific subjects and grade levels within the building that did show growth. Thus, we needed to view those curriculum groups as opportunities to look further into the idea of capacity. The team also needed to determine if the performance was due to changes in the curriculum, changes in the staff, teacher capacities, group collaborative practices or a combination of all of the above, not to mention individual student learning needs. I began to wonder if the teachers with high degrees of knowledge, experience, and skills that worked in groups with strong relationships, networks and trust had higher scores.

The plan for implementation for the upcoming year was vital. Based on the direction of the principal and the team's conversations, only four components were placed on the implementation plan, with formative assessment practices being one of them. Team members expressed concern about staying true to the plan. The meeting ended with defined schools for the year, and implementation plans to support the work in achieving those goals. The team expanded on previous work with learning targets and added the component of formative assessment practices to build upon the work of learning targets from the previous year.

At the end of the session, we decided to design the action research case study around five curriculum groups in the building. As mentioned earlier, some of the action research team members were leaders in the curriculum groups and we knew that would be helpful in conducting the research. Within this case study report, we will refer to these groups by letter: Group A, Group B, Group C, Group D, and Group E. Each group represents a grade level curriculum group within Homer Middle School.

At the beginning of the 2015-2016 school year, in faculty meetings and in smaller sessions with all curriculum leaders, I was able to share the implementation plan developed over the summer and talk about the use of formative assessment practices in the classroom. The communication was there, but there were also other factors that were prevalent which included moving into a new school building, welcoming new faculty, and designing a new process for collaborative planning sessions, all of which consumed the majority of the discussions during teacher planning. In addition, the county introduced a new assessment platform. Thus, many learning sessions focused on the use of the platform, and this detracted from the conversations in collaborative sessions about formative assessment practices. This was evidence to me that we had to be explicit about ensuring that formative assessment practices was a focus for the school year, but first the action research team needed to learn more about intellectual and social capacity. This occurred during the IC/SC session where team members learned more about these concepts.

Constructing: IC/SC Dialogue Session

In the midst of the new school year bustle, the action research team met for the IC/SC dialogue session in late August 2015. The meeting room was set up with four tables and on each table were conversational questions, a graphic of the conceptual framework, butcher paper, and markers. The team was divided into two groups, rotating from table to table to answer the posed questions. The table below lists the questions used during this dialogue session.

Table 11

IC/SC Dialogue Questions

Questions Guiding IC/SC Dialogue Session
What are the experiences that build capacity?
What skills (collectively and individually) exist that support formative practices?

How do teachers form social connections?
How do teachers acquire knowledge?
How can we facilitate and support strong networks with our teacher groups?
What does trust have to do with it?

During the IC/SC dialogue session, information emerged from the questions addressed during the session. With regard to how teachers acquire knowledge, action research team members stated that teachers acquire knowledge in a variety of ways. Some of these include watching master teachers, working with teachers within their team or curriculum area, county-offered staff development, in-house staff development that included practice and re-delivery, informal discussion in non-threatening environments, and individual research. There was a lot of discussion around what some referred to as a "*jumping off point*". For example, someone would introduce a strategy or method with their curriculum group, and others would become curious and begin their own journey into learning more about it. This reminded me of the permeation of the formative assessment modules through the county.

When asked about the experiences that build strong networks, team members shared the importance of having a safe environment, investment in the group, division of responsibilities, outside interactions, and friendly competition. During the dialogue session, Wilomena stated,

> *"We also thought time was such a critical factor. Time together builds trust together. We even looked at some examples who we felt trust with, and it was people with whom we worked with for a very long time. We talked about how we feel time together is beneficial if it is organic, if I choose to be with you at this time. We talked about how we cheerlead with each other—and how it creates a buzz and excitement about certain things that are happening in the school and things you want to be a part of because it has momentum."*

The team talked about how being aware of other teachers' talents builds connections. Rose shared, *"I think people develop fans. I am in both of your fan clubs* (addressing two teachers in the group). *If you spend enough time with someone and learn what he or she is*

doing, you become a fan of it. I cannot tell you how many people over the years I've said…you should talk to so and so."

The goal of the session was to introduce the concepts of intellectual and social capacity in the context of Hargreaves' model. The questions were designed to encourage discussion about intellectual capacity (knowledge, experience, and skills) and social capacity (relationships, networks, and trust) in the school, and to get the team thinking about the components that would be necessary in developing the first intervention. This session demonstrated the individual and collective strength and knowledge that existed among the action research team members. These teacher-leaders all worked at this school for at least four years. They felt comfortable enough to share openly in the meeting and they knew each other's gifts and talents. They all had a shared experience of working at the school and leading curriculum groups. Although some of them did not work closely together prior to this study, they had established relationships from which to build during the action research process. Next, I share how these relationships assisted in designing interventions for the action research project.

Planning and Taking Action: The First Intervention

In early September of 2015, the action research team met again to plan the first intervention. The main question to lead the group was, *"How do we get teachers to collaboratively plan formative assessments?"* The meeting began by reviewing literature materials as a tool to springboard the discussion on formative assessments. The team read the material, highlighted key points, and shared their individual thoughts. Rose stated, *"I think teachers already do this. This is a normal part of instruction."* Florence stated, *"I disagree. Some teachers do not use effective questioning strategies. A lot of focus is on what we are*

teaching, not what the kids are learning." Hilda shared how through teacher observation she was able to learn a lot about formative assessments. In order to gather ideas, we decided to break up into two groups and brainstorm our first intervention.

One group discussed sharing of a strategy called "10 and 2" while the other group talked about the use of rubrics as a formative tool. When we regrouped together, we came to a consensus on introducing the "10 and 2" strategy to the curriculum groups. The "10 and 2" strategy consists of splitting up a lesson into ten minute and two-minute segments. During the ten minutes, the teacher would share information and during the two minutes, students would interact with each other or do something related to the content. The strategy also requires specific questioning by the teacher to check for understanding. The strategy was designed to engage students and allow time within the lesson for teachers to assess student learning based on the learning target. Hilda offered to model the strategy for teachers.

The team also discussed the importance of questioning and how that would be a needed component to the intervention. The team decided to create a toolkit that would provide tips on questioning, questions to guide discussion in curriculum groups, and information on the "10 and 2" strategy. The toolkit included question stems, a print-out of information on the strategy, and guiding questions for the curriculum group. We emailed the toolkit and I followed up in-person with the curriculum leaders on plans for implementation. The teachers responded with appreciation and stated that they would use the tool provided.

The leader in Group A did receive the toolkit and shared the question stems with the group. However, she did not go into further discussion with the group about components of the toolkit. She explained that the group was too busy with developing and reviewing common assessments. The group talked about different formative strategies they may have researched

online and some sharing would take place, but there was limited talk about how it actually worked in their classroom. Some members of the group shared information and strategies more often, but when the whole group was together, the focus was looking at unit assessment questions and getting through the agenda. I did not observe any collaborative planning of formative assessments.

Group B did use elements of the toolkit and had deeper levels of discussion around formative assessments. Group members would readily share formative assessment strategies and also talk about their use in the classroom. Even though they struggled at times with getting everyone on the same page last year, it was evident that they were making improvement in that area. Being on the same page allowed them to share and discuss learning more often. Much of this was contributed to having one of the action research team members on the team and she was able to support the curriculum leader in the facilitated discussion. Curriculum group observations did not reveal perfect harmony within the group, but it did show commitment by all of the group members to solve problems in order to move forward.

Group C's curriculum leader was also on the action research team. She was the driving force behind the "10 and 2 strategy" and she had a high degree of intellectual capacity. She did express concern about having two new members to the group this year and the difficulty of keeping everyone on the same page. She made an effort to lead all group members and provide guidance and mentorship in the curriculum planning process. She was intuitive of each members' talents and utilized those during planning sessions. However, not all group members were accepting of the support or guidance she offered. At that point, she began to develop more connected relationships with those group members who seemed committed to increasing their own capacity.

Group D had a similar situation in which there were some very connected individuals within the group who were committed to learning and sharing. Group D's leader invited all members of the group to observe the "10 and 2" strategy, but only the members who were strongly connected participated. The teachers who participated had high levels of intellectual capacity and had worked together for more than three years.

Group E's leader received the toolkit, but did not attend the classroom observation. This leader had a high commitment to increasing her own capacity with regard to teaching, but was still developing in her capacity to lead her group through the collaborative planning process. When asked about the toolkit, she referred to the entire process from her own standpoint versus from the group's standpoint. Through curriculum group observation, it was evident that many of the members were working in isolation and did not plan the same lessons together. One of the action research team members was a supervisor for this group, and she realized that the group needed additional structural and relational support.

Evaluating Action: Staggered Implementation

With regard to the toolkit intervention, the team began to notice that only a few curriculum groups watched the modeling of the strategy, and the discussion about formatives was not taking shape in the curriculum groups. Some groups were unable to see the modeling and were under the impression that they could not do the toolkit, because they did not observe Hilda's classroom. This was contrary to my reflection after the intervention meeting when I wrote:

> *"This is going to be a challenge of 'breaking' into curriculum groups with this project. However, I don't see it as impossible. I am finding that I have to weave my way into the group and get a feel for where they are. At the last AR team meeting, I felt confident with our intervention plan. When I meet with some of the teams, I can see that some of them are 'willing' to try the intervention."*

We provided timeline extensions, but began to notice other factors that took precedence, such as the planning of summative assessments, which put the toolkit on the back burner. Even though some of the action research team members were leaders or members in a curriculum group, the actual use of the toolkit was very low. Summative planning was of utmost importance and teachers need to be able to see their students' performance, but what I did not realize was the amount of planning time was consumed with the creation of summative assessments.

Thus, it became clear that it was necessary to meet back with the action research team and review the implementation of the toolkit and develop a different intervention. The team realized that we relied too much on the curriculum leaders to drive the implementation and that we needed to have greater and more direct involvement in the intervention. When asked what they think we should do, Sam answered by stating, *"Bring the learning to them to start with; rather than saying, find time…to leave your time and come see this, and do some modeling with them, we can say let's bring it to you."* Rose agreed, *"There needs to be a sign-up time. Okay, I am going to do it on such and such a day; otherwise, we will blow it off…oh it's optional."* We also realized that the intervention required more explicit direction. Wilomena described it this way,

> *"I am giving you this; I have given you a brief example. So it bridges that background knowledge of now I know what I am doing, I know why it is important. I know the difference, truly, between formative work and summative work; and I know that the power is in the formative part and not the summative part, then you are excited about it; go see this teacher, do it."*

Through our discussion and evaluation, we realized that we had to become more involved in the curriculum groups.

With regard to intellectual and social capacity, our team began to more fully understand how these impact the work of the curriculum groups. Those leaders who already had a strong social fabric built within the curriculum group were the ones who participated in the observation of Hilda's classroom. We began to have dialogue around group learning and group sharing. This first intervention allowed us to be more aware of those aspects of our school. The team decided that the second intervention needed to be more focused on each curriculum group.

Cycle 2: Revealing the Layers and Levels

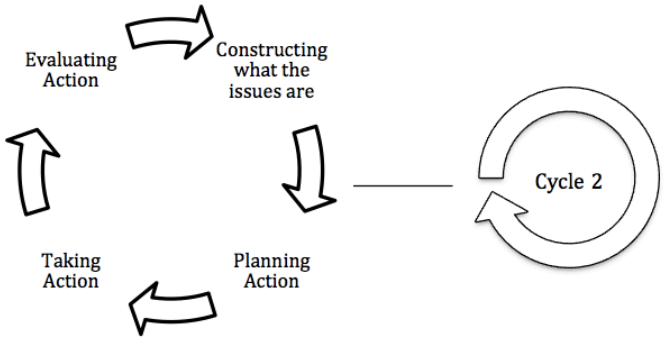

Figure 6: Cycle 2

After cycle one, I was able to see that the implementation of formative assessment practices was not going to happen immediately, nor pervasively. Not only were there barriers and competing initiatives, but we also discovered that formative assessment practices involve more than simple checks for understanding. There are building blocks to effective classroom assessment and there are also high levels of formative assessment, which involves using evidence of student learning to make decisions. As an action research team, we took the approach of examining the building blocks while also looking at the assets that make up capacity.

Constructing: Intangible Assets

In late September 2015, the team met again to discuss the results of the dialogue session, and to further develop our awareness around intellectual and social capital and its influence on teachers and teacher groups. After analyzing the data from the dialogue and intervention planning sessions, reading the transcripts, and re-listening to the sound files, I was able to create a list of some intangible assets. At the beginning of the meeting, I shared the list of intangible assets and sought feedback and discussion around the list. The goal of this session was for action research team members to become familiar with those assets that make up intellectual

and social capacity, and to determine if there were any indicators associated with the assets. The initial plan was to list these assets next to the curriculum groups with which we were working, but most of the time was consumed with the discussion of the assets.

The team confirmed the list of assets developed and were able to review the intangible assets more in-depth. The team thought the ability to build relationships with one another in a curriculum group should be added to the list. When asked about indicators of strong relationships in a curriculum group, the group shared ideas such as sharing of resources and equity of voice. Florence pointed out that equity of voice is ensuring that *"everyone is not saying the same thing at the same time, or you don't have one member who is just not saying anything. You don't have that one member who is grading all their papers, while the rest of the team is planning."*

Some felt that being in a teacher leadership position did not necessarily constitute an asset. *"Like if someone has not been a teacher-leader and they are a part of a curriculum group, we hope that sort of builds capacity and being able to share knowledge."* This was a valid point to consider. Some teachers are not leaders per se, but they have a lot to contribute to a group. Also, some leaders are still developing their capacity. This was true for Group E.

Hilda talked about the importance of *"being teachable"*. New teachers or new group members have to be willing to listen to veteran group members. This comes from knowing who in the group is highly effective in classroom instruction and listening to their advice. This process usually happens in the discussion of assessment data. When a teacher is sharing their assessment data and it is less than favorable, there has to be a degree of vulnerability and safeness in the group. Florence talked about the need for teachers to say, *"I don't think I taught this well, and instead of blaming it on the students, being honest and saying I know I rushed*

through this content and that's why I got these scores or a combination. It is not just one sided." Rose added, *"Vulnerability and being honest about it."* The team began to be able to see how these intangible assets affect group dynamics, and to further understand the capital imbedded within a curriculum group.

We also discussed how having the opportunity to contribute also presents itself as an intangible asset. Members of a group need to feel that they can contribute to the work of the group and make it better. With intellectual and social capital, creating that atmosphere allows for people to share knowledge. When teachers work in isolation, it not only limits capacity, but it prevents awareness of the knowledge that exists within the group. However, groups need to provide opportunities for the capacity to build.

The use of peer observations also stood out as a component that influences capacity and should be viewed as an asset. Wilomena shared her experience with peer observations stating that, *"It [peer observation] arose out of the need to have knowledge of what was happening, but it really ended up becoming a tool just to share resources and ideas."* Wilomena had experience with setting up and participating in peer observations inside and outside of the school.

During the last part of the session, the team was able to take the context of assets and more specifically discuss some of the groups in the school. Florence shared that within her curriculum group, *"if someone shares an idea or whatever, we are at the point where we can honestly say, I think that would be good for your students. We are trying to work through that; I think the relationships are starting to build."*

Sam mentioned that,

> *"I have been in and out of [Group D] for five or six years and what you have there is an incredible group of teachers who have been together all this time. They have a backlog of lessons, but they are also continually innovating. There is an openness and a collaboration and congeniality where everyone is free to give and take."*

The support structure of a group also emerged as an intangible asset. Rose commented on Group C by saying, *"There is a real organized structure of support. When someone new joins the group, I think they feel more secure because of the organized structure to support new teachers."* In the end, the action research team left the session with a greater awareness of what factors influence groups, what intangible assets have to exist within a curriculum group, and also with the goal that the discussion would lead into the work of the first intervention.

After reading the transcript and coding the session, I listed the intangible assets that emerged. Intangible assets make up intellectual capital, and are "assets of an organization that are not recorded in financial statements but which constitute 80% of the market value of an organization" (Martinez-Torres, 2006, p. 617). Table 12 below combines assets discussed in the session as well as others that emerged within the study.

Table 12

Intangible Assets that Build Capacity

Intangible Asset	**Indicators – "Looks like in Practice"**
Teacher leadership	Coaching and group facilitation, awareness of what the curriculum group needs, and finding ways to support.
Group relationships	Sharing of resources, equity of voice, vulnerability, social interaction and body language, asking questions instead of sitting back, honesty.
Peer observation	Required; but with support, use of a form with guided questions that support instruction, conference with teacher afterward, non-threatening.

Group collaboration	Opportunity to contribute, being teachable, safety zone, everyone develops the lesson together, validating others, safety zone.
Professional Learning on Assessment	Must walk away with ready-to-use materials; must be accompanied with group conversation and implementation plan, attended together as a curriculum group.

We ended the session thinking more deeply about the components that make up intellectual and social capacity, and it was apparent that the team members found the conversation useful in their work with curriculum groups. My reflection from the session supports this, but also shows where I was as far as the progress of the team. In regards to my unanswered questions, I wrote,

> *"The team came ready to talk and contribute. Sometimes I feel like I need to get more out of some of the folks. How can I engage all of them in the process of AR? I need some of them to observe curriculum groups, but I am not sure how comfortable they would be with that. Are they comfortable with talking about curriculum teams? Do they see the big picture? Do they see value in this team or this type of research? How do I bring all loose ends into a cohesive unit? Should I have groups self-evaluate their progress? What is the best way to do this?"*

I knew that moving forward, I had to address these questions and assure that the team was able to connect their learning to the action research process. The literature on intellectual capital discusses being aware of how assets influence the achievement of goals. "[W]e only consider those intangible assets that allow us to reach our future strategic goals. These assets constitute the Intellectual Capital and they must be assumed to generate value" (Martinez-Torres, 2006, p. 618). The intangible assets discussed in the session do support Homer Middle School in reaching its strategic goals. However, it is what we do with the assets that will determine how this happens. Bontis stated that, "It requires people to rethink their attitudes on intangible assets and to start recognizing that measuring and strategically managing knowledge may make the difference between mediocrity and excellence" (1998, p. 73).

Planning and Taking Action: The Second Intervention

In early November 2015, after discussing the first intervention and examining the intangible assets that help build capacity, we designed the second intervention. As a team, we felt that the focus for the second intervention should focus on teacher's use of questioning and formative practices. Although questioning was discussed in the first intervention, we wanted to get a sense of the questions that were being asked in class. From the previous discussions of the action research team, we kept going back to the concept of questioning in lessons and how that ties to formative assessments. We decided to script the lessons and facilitate a discussion with the curriculum group on the types of questioning that happened in the classroom, and the types of formative assessments used in class.

Four of the action research team members volunteered to do the lesson scripting and to debrief with the groups. Rose shared that during the debrief sessions, *"If we see someone not kind of buying in or is really drawing back, we may need to have an individual meeting with them."* I agreed, saying *"...and figure out what it is. They are only going to be able to implement the school plan if those other pieces, especially those social network pieces, and those trust pieces, are dealt with."* The objective of the second intervention was threefold. First, we wanted to see the teachers in action and how they use questioning in the classroom. Second, we wanted to see if and how the group talked about and shared formative practices. Third, it gave us the opportunity to interact with the curriculum groups and observe how they interact with one another, especially in a post-observation type of situation that involved a certain level of transparency.

Over the next month and a half, the action research team worked to complete the scripting and debriefing activity with the curriculum groups. During this time, the team would

chat informally or communicate via email about the intervention and how we thought the curriculum groups were responding. I did the scripting activity with Steve. Steve attended the action research team meetings, but many times he sat quietly and listened. I thought this would be a good opportunity for him and me to have conversations about capacity and its effect on formative assessment. As the school's technology coordinator, he sometimes modeled strategies for teachers or teacher professional learning; however, this gave him the chance to observe and discuss classroom practices with an administrator. It was also helpful for us to visit teachers in the same curriculum group and observe the similarities and differences in each classroom based on the shared lesson. We were also able to see which teachers were on the same page as far as the lesson, and who seemed behind on the curriculum calendar.

Evaluating Action: Power in the Conversation

In late January 2016, the action research team met again to discuss the intervention cycles and decide the best course of action moving forward. All of the data from the scripting exercises were compiled, and we were able to review and comment on the intervention as a team. From the team's perspective, the scripting of lessons provided information on how teachers were doing in daily formative assessments. We discussed each curriculum group's response to the activity. It showed the similarity and variability within curriculum groups. The team saw evidence of formative practices such as use of white boards, peer feedback, graphic organizers, clarifying questions, quizzes, assessment review, and students' self assessment. The debriefing sessions provided additional opportunities to discuss the implementation of formative practices within the school. We also reviewed this study's research questions in light of the intervention, and discussed the data that supports these questions based on the work we had accomplished.

The scripting and debriefing activity provided data on the how formative assessment practices were being implemented within the school and the degree to which curriculum groups were collaboratively planning them. The observation of Group A illustrated that three of the five teachers were teaching similar lessons, but using different modes of assessment throughout the lesson. During the debriefing session, teachers commented on the varied level of questioning in each of their lessons, but there was limited discussion from the members on what they could change or how collaborative planning influenced their work in the classroom. However, it was clear that each member had developed their own intellectual capacity with regard to assessment practices in his or her class. Group B also had different lessons, but was more open to the discussion about one another's practice during the debriefing session. Group C also had different lessons and it was clear that some people were behind the others in teaching the curriculum. Group D's three connected members utilized the same resources in the lesson, which had formative assessments built in. Delivery of the lesson may have been different, but the content of the lesson was similar. The debriefing session for Group D seemed disjointed between the members who regularly shared and the new members to the group. Action research members did the scripting for Group E, and were able to talk to them about collaborative planning practices.

During discussions on the intervention, the team talked about the challenge of teacher turnover. Hilda mentioned that in the past she had a strong group and they would readily share, but with new teachers she stated, *"It feels choppy, and I personally don't feel like releasing."* Sam had concerns about new teachers to the group, people out on leave, and long-term subs. He pointed out that collaboration was more difficult in these situations, *"When you have people come in mid-year, it is easier to say 'here you go' as opposed to being more collaborative."*

Florence talked about the importance of the social capacity piece as well. She shared, *"They knew my scores were going up and they trusted me. We have the cohesiveness and that trust, but again, we haven't had much turn over, and that makes a difference."* Wilomena asked a pertinent question, *"Do we think that our teachers in the building understand the value and the importance of cohesiveness within a curriculum group?"* This led to further discussion on the elements of trust and the needs of new teachers.

We concluded the meeting by deciding that the scripting intervention, while beneficial, did not completely solve our problem of implementation on formative practices. It did shed light on types of questions teachers were asking, and it also allowed us to see how curriculum groups discussed topics related to formative assessment. We also discussed some of the barriers we faced in regards to the school plan implementation. The team felt like we understood the concept of intellectual and social capacity at a deeper level and its affect on formative practices.

Cycle 3: The Value of Reflection

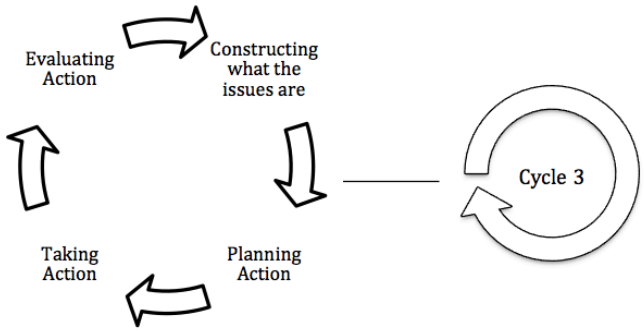

Figure 7: Cycle 3

Constructing: Mapping Session II

In February 2016, the final learning session for the team was solely based on the third research question, "In what ways can intellectual capacity and social capacity be measured or modeled to inform decision-making in educational settings?" As a team, we decided to use

what we learned about the intangible assets to explore measures or models that could be used with curriculum groups and assist with decision-making in schools. I brought two draft samples to the action research team meeting. One was a rating scale designed from the intangible assets and preliminary results of the research. The team provided input on the scale components and then we used the scale to examine each of the curriculum groups. I asked Florence about transparency of talking about data in her group, which was one of the questions on the rating scale. I inquired, *"Are there any issues? How does everyone feel about that?"* Florence reflected on her group by stating,

> *"No…you know, I was looking at group stability pretty much being together…I think it is a matter of… we don't look at it like, you're not doing well, or like you are supposed to or whatever…I have different students, they have different students and there are different situations going on, so… whether there is a discrepancy of one teacher or something, we usually just sit down and ask…you know, what are you doing, why are you teaching this concept, or whatever. I don't think we have an issue. We did at the beginning, but now we understand that it's all about trying to make the group better. It was hard at first, but now they understand it and we just go with it."*

When the action research team discussed the data transparency with Group A, Rose commented, *"It is not like your group, Florence, if someone's data is lower, you guys address it in a caring way. I don't know if they [Group A] addressed it yet."* The action research team rated Group A at a two out of five on group creation of formative assessments, but Hilda mentioned,

> *"Teachers were always asked by administration to make sure you plan your common assessments. That's just what we always heard… make sure you plan your common assessments. And for a group that has had some changing, you kind of have to have the common in order to do the formative. So you are ready to do the formative, so you know where you are going. That's the design. You have to know where you are going before you get there. So I think now that group is ready to start shifting into…we have our commons…now what are we doing with questioning?"*

Another rating scale question inquired about sharing of resources, and this is where it was talked about the strength of resources for Group D. Group D had a few long-term subs during the course of the year, so it was difficult to keep everyone together, but they had a strong intellectual capacity and quality resources. Sam mentioned, *"I know with resources they are great – especially with the subs. They came in and did every PowerPoint to try to keep them on the same page."* Afterward, we discussed how the rating scale could be used. Rose stated, *"The value is doing this activity at multiple times in the year to get a pulse for what is happening in the group."*

The second tool that I shared with the group was a network mapping activity in which we drew different color lines from member to member based on sharing of knowledge and resources. We decided that the second tool would be best done individually. In other words, when the mapping activity was done, each member would privately draw with whom they shared connections, and the leader or a third party would analyze the connections. This would ensure anonymity. Group members would draw a green line with someone they shared regularly with, and a yellow line with someone they shared with intermittently. The arrows show the recipient while two-way arrows showed back and forth sharing. We all agreed that was a needed change in the tool. A sample figure detailing the network mapping activity is shown in Figure 8. The directions for use of the network-mapping tool are included in the Appendix.

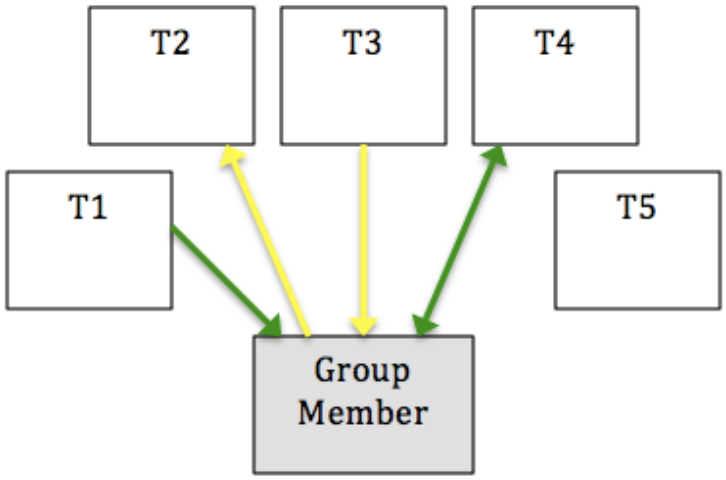

Figure 8: Sample of Network-Mapping Tool

This mapping session and sharing of the tools allowed the group to more fully discuss intellectual and social capacity within curriculum groups. The team shared thoughts on how both tools could be used, and we were also able to analyze social and intellectual connections between members in the curriculum groups. We were able to make connections between capacity and the implementation of formative assessment practices. It was also noticeable that sometimes there may be individual capacity that resulted in implementation in one teacher's classroom, but that does not necessarily lead to group capacity.

Planning and Taking Action: Bringing the Tools to the Groups

After this action research team mapping session, the team decided it would be beneficial to utilize these tools with the curriculum groups as the final intervention. This occurred from early February to early March 2016. We believed that going through the practice of discussing how the group learns and interacts with each other would allow the members to see how intellectual capacity and social capacity influence formative assessment practices. As the administer and lead researcher on the team, the action research team members thought it would

be best if I went to the curriculum groups and facilitated the sessions using these tools. We believed the final session would allow the groups to examine their intellectual capacity and social capacity as well as provide feedback on the action research process. This activity was used to provide closure with the groups so they could understand how the first and second intervention led up to this third stage. As stated earlier, many of the action research team members were a part of these curriculum groups, so their understanding led to a deeper conversation in these sessions. In addition, they were able to see where their teams had progressed, and where they needed to improve regarding the influence of intellectual capacity and social capacity in implementing formative assessment practices. Table 13 shows the results from curriculum groups' use of the rating scale. Each group is discussed in the following section.

Table 13

Results of Rating Scale Activity

	Group A	**Group B**	**Group C**	**Group D**	**Group E***
Transparency of teacher data in curriculum meetings	4	5	3	5	4
Lesson/Unit planning same curriculum calendar	4	5	5	5	3
Lesson/Unit planning same/similar daily lessons	3	5	3	4	2
Collaborative planning of formative assessments	2	5	2	4	2
Group creation of common assessments	5	4	5	5	3
Group reflection on assessment results	2	5	3	5	3
Group participation in professional learning at school setting	5	5	5	5	4
Individual/Group participation in PL outside of school setting	1	3	4	3	2
Sharing of strategies	3	5	4	5	4
Sharing of resources	4	5	5	5	4

	Group A	Group B	Group C	Group D	Group E*
Ability to solve communication problems	3	4	3	3	3
Member use of shared strategies	3	5	3	4	2
Member use of shared resources	4	5	4	4	2
Curriculum Leadership	4	5	4	5	3
Member opportunity to contribute	5	5	5	4	4
Group stability	3	3	3	2	3
Groups ability to address and solve student learning concerns	3	5	5	5	2

* Group E results were completed by the AR team.

Group A rated themselves lower on planning formative assessments and group participation in professional learning outside of the school setting. They felt that they made significant progress during the year on their common assessments, but agreed that they needed to find better ways for the group to reflect on assessment results. Group B rated themselves higher on most of the scale, and felt that less turnover in the group would lead to increased stability. Group C felt that they had strong structures in place for lesson planning and summative assessments, but needed to improve on communication and collaborative planning of formative assessments. Group D created a culture of sharing, problem solving, and creation of lesson plans using the curriculum calendar. However, they felt that, at times, members were not doing the same lessons, which impacted their ability to collaboratively plan formative assessments. Action research team members completed the rating scale for Group E, and the group consensus was that Group E was still in the forming stage and was just beginning to make strides on the process of collaborative planning. Individual members of Group E had a great deal of knowledge, experience, and skills, but not everyone was aware of each other's capacity.

Each group participated in the networking mapping activity. Feedback from curriculum group participants was positive. Most enjoyed being able to share some of their concerns with the planning process. I noticed that some may have been reluctant to share out during the

sessions, but it was clear to me that the rating scale provided an overall perspective on which they could reflect. It would then be the job of the group to make changes as they saw fit. I ensured them that this activity was for research purposes and to provide information to the action research team on its value in making decisions.

Evaluating Action: Gaining Perspective

I then shared the results of the curriculum group meetings with the action research team and we scheduled our final interviews. They confirmed the results from the rating scale and provided feedback on use of the network mapping as well. The adjourning of the action research team and process ended in the final interviews. As the lead researcher, it was my job to follow the journey from the preliminary work of the study to evaluating the work of the team. The "evaluating action" component also takes place in the final interviews. During these interviews, we were able to reflect on the interventions and learning we did as a team. These final interviews were very insightful and affirmed the value of this research study. They are further discussed in the Findings section.

The final section of this case study report discusses the curriculum groups in more detail. The section below provides more detail on the five groups that the action research team worked with during the study and further assists with the understanding of the overall findings.

Curriculum Groups and Action Research Cycles

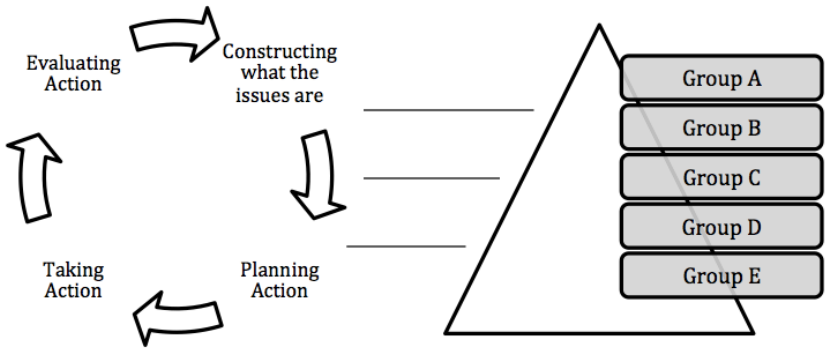

Figure 9: Action Research Cycle and Curriculum Groups

The action research team designed interventions for five curriculum groups. Each group added a different dynamic to the process, and the data collected from each group added depth to this study. I share the story of these groups in order to further understand the implementation of formative practices and their perception of this action research project. The groups are described here generically as an added element of alias to the study. Each of the groups contained five teachers that represent teacher teams within the school. Each group meets weekly for a required curriculum planning session. Some of the groups contained additional support teachers, which also attend the group meetings; however, a few of the support teachers could only attend curriculum meetings with the group depending on their schedule.

Group A

Group A included five teachers and one support teacher. These teachers all worked together for the last two years with the exception of one, who was hired mid-year. There was concern about the stability of the support teacher position by members of the group. At the beginning of the study, the group had limited awareness of the school plan, and a few of them

participated or completed the online modules the previous year. Teachers in the group respected one another and attended curriculum meetings faithfully.

During most of the meetings, the focus was on building more rigorous common assessments, based on the team's recent participation in professional development. Some of the members contributed more than others, and at times this lack of equitable contribution led to unspoken bitterness within the group. However, the group pressed on and remained focused on the task at hand. The leader's primary concern was to get through the entire agenda, to avoid confrontation, to do exactly what was asked by administration, and end promptly at the designated time.

The leader received the toolkit, shared the question stems, but did not facilitate the discussion on collaboratively planning formative assessments. Although the group did discuss and share formative assessments with one another, their primary focus was designing unit assessments. When analyzing the data from these unit assessments, discussions were mainly around teacher averages as compared to the county averages. Each group member could see how other teachers performed on the common and district assessments; however, the conversation linking instruction to assessment was rarely approached. Individual members did have knowledge and experience with using formative practices in the classroom. However, each teacher used their own, and their intellectual capacity in this area was not readily shared with one another. One teacher in particular had a number of formative tools that were frequently used in the classroom, and had a reputation in the building as the go-to person for daily formative assessments. This member's social capital was stronger outside of the curriculum group rather than inside of the group. When asked about formative assessments, the leader responded,

> *"I think some teachers do them. I do them. But we don't really plan them collaboratively. Jones and I would plan, but Jones is not a part of the group now. We plan things together, but we are so busy planning common assessments that we have to do. But we don't talk about formative assessment, we share lessons."*

The leader either did not see the value in the collaborative planning of formative assessments, or felt that the group did not have the time to talk deeply about them.

With regard to the second intervention, four of the five teachers participated in the scripting and debriefing activity. The observations showed that all teachers were on the same page as far as teaching the same standards at the same time. This was an indication that they were all following the same curriculum calendar. During this activity, the group was able to see how questioning supports the work of formative assessment, and each teacher was able to share more about the strategies they used in their classroom. The leader was also able to see the value in setting aside time to talk about formative assessments. It was evident that the new member was obtaining resources and support from the group leader. The group viewed the new teacher as a great addition and someone who was willing to learn. Although the new teacher was learning a lot from the group, he/she was also contributing to the group as well.

During the last session with this group, the group was able to reflect on their individual capital as well as the capacity of the group. They were very honest in rating the work of their group. As the facilitator, I was able to view the strengths of the group, changes in the group over the course of the study, and areas that needed to be strengthened.

Group B

Group B also included five teachers. Of the five members, two of them worked together for three years, two were second-year teachers, and one teacher worked at the school, but had joined this particular group this year. One of the members of the group was the former

curriculum leader, but handed over those responsibilities to another teacher in the group. This new leader was able to develop skills and lead the group with the mentorship of a veteran teacher-leader with a high degree of intellectual capacity, both in the content and in curriculum leadership in general. Curriculum meetings involved planning, sharing, and supporting one another in teaching the curriculum. Data was transparent in the meetings and teachers reflected on student learning and instruction. The group would meet together at least twice per week. The group did receive the toolkit, but did not use it in the curriculum group. The leader shared with me that this group also focused primarily on designing common assessments. However, other formative practices were regularly discussed, planned, and used amongst the group members. After one of the assessments and discussion about a weak standard, the leader shared, "*So then we talked about the results and what can we do in class to re-teach this. And that is when we decided to use the 'level study guide' from [a recent professional learning]. Use of the strategy is helping them find the text evidence*." All members used the strategy and later reflected on its benefits. This was a great example of how intellectual and social capacity work within a group. Members in the group had experience in formatively assessing students' use of citing textual evidence with a specific strategy. They discussed its value, shared it amongst each other, and debriefed on its use afterwards.

All members of Group B participated in the scripting and debriefing activity. One teacher gave a quiz, two reviewed a previous assessment and used it as a teaching tool, and the other two taught different skills related to the content. Therefore, it was difficult to have a discussion about formative assessment as it pertains to specific standards, but the group was able to share how they used formative practices in each of their specific lessons. They were also very open and honest with one another on how they felt the students responded to the

lessons. The group was able to discuss and to learn from one another, specifically a strong veteran teacher who was able to share how her use of questioning required students to communicate and correct their misconceptions.

During the final intervention, Group B was very proud about the progress they made as a curriculum team and discussed how they connected and shared with one another, and how they built relationships and trust within the group. They rated themselves on the higher end on most components of the rating scale, and viewed themselves as a team with regard to teaching the content to students.

Group C

Group C also included five teachers. Three of the teachers worked together for two years while two of the teachers were new to the school. The group leader had led this curriculum group and other groups during her tenure at the school. In addition, she had attended many different types of professional learning sessions and is a part of the county's leadership teams. She has a strong intellectual capacity as it relates to content and curriculum leadership and was able to build relationships with group members. This leader has often mentored new teachers inside and outside of her curriculum group. The leader previously created most of the materials and assessments and these were shared with the group. Curriculum meetings involved planning of assessments, discussion of formative practices, collectively reviewing and fine-tuning the lessons, and sharing of data. The group received and discussed the toolkit, however, most members of the group watched modeling of the "10 and 2" strategy.

All of the teachers participated in the scripting session. The classroom observations of Group C did not show alignment among the group members with regard to teaching the content,

which could be attributed to the newness of some of the teachers. The debriefing session did not occur immediately following the scripting, but the group talked regularly about questioning and formative strategies and reflected on their use in the classroom. Similar to Group A and B, Group C spent a lot of time on increasing rigor in common assessments over the course of the year. The group did discuss the importance of formative strategies and often shared various daily assessment tools with each other.

Four of the five teachers attended the final session and openly discussed how they worked as group. The new teachers appreciated the support of the leader. They gave themselves fair and accurate ratings, and shared where they felt they were strong and how they could further develop as a group. The leader believed that the group was building their social capacity, even though some of the members were new to the group that year. However, the leader also expressed the difficulty of helping teachers in the group that are new to the profession and want to work in isolation. She felt that influenced the total social capacity of the group.

Group D

Group D included five teachers and two support teachers. One of the support teachers met regularly with the group, and the other met mostly with the curriculum leader during convenient times. Three of the teachers had worked together for at least seven years, one for three years, and two of the teachers were new. Of the two new teachers, one joined the group mid-year. One teacher held curriculum leadership, but many leadership responsibilities were shared amongst the veterans in the group. Similar to Group C, this group had a strong foundation of lessons aligned to the standards and was continually working to improve summative assessments. The curriculum leader had attended various professional learning

sessions outside of the school and programs held during the summer. The group leader felt that a focus on formative strategies with supports for increased rigor would allow them to better prepare students for summative assessments. The purpose of lessons and assignments designed throughout the year was to provide opportunities for students to show mastery on the standards assessed in the summative assessment. All of the materials for lessons included learning targets, which was a direct result of the previous year's professional learning.

The curriculum leader provided opportunities for other members to assist in designing formative assessments in which the group would use. Most members appreciated this task and were able to add to the plethora of in-class daily assessments. The leader would closely examine what was created and determine the applicability to the curriculum. The leader was able to assess the skills of the member in this process, and determine if what was created was aligned to the standards and was at the appropriate level of rigor for student learning. During that process, the leader provided feedback and offered suggestions for improvement. The expectation for the leader and the veteran members of the group was for the new member to incorporate the feedback in future contributions. The leader and team members knew that this was a learning process and would often sit one-on-one with other teachers in the group; however, if the member did not make any improvements in the planning with the group or assessment process with the students, the group shared their concerns with administration.

Most of the group members participated in the toolkit intervention. They went as a group to watch the modeling of the "10 and 2" strategy and the leader facilitated the discussion with present members of the group. The activity was recommended specifically to one of the teachers in the group as an opportunity to learn, but was not accepted. The other members were

able to see where they could apply the new strategy, and the process allowed them to change a specific component of their classroom instruction.

During the second intervention, AR team members scripted the lessons and debriefed with the teachers afterwards. We were able to get a sense of the types of questions asked in class and the assessments used. It was evident during direct observations that many of the group members shared the lesson and used the same resources. Delivery may have been different in each of the classrooms, but the content and types of questions were similar. During the debriefing activity, teachers were able to openly share and learn from one another. As the facilitator, I was able to share my view of each of the teacher's strengths and validate their planning process.

At the final session, the group rated themselves based on the intangible assets that influence intellectual and social capacity. The group, which included a new mid-year hire, discussed their strengths in planning and implementing formative assessments. New group members shared the high level of support they received from veteran teachers, and that they felt the support helped them tremendously in their classroom instruction and in becoming acclimated to the school. At the end of the session, the members completed the mapping activity developed by the AR team members.

Group E

This group was comprised of five teachers and two support teachers. One of the support teachers planned with the group on a regular basis and the other usually consulted with the group leader. Only one of the teachers in the group taught the grade level and curriculum area during the 2014–2015 school year. Three of the teachers were new to the school, one was from a different grade level, and the other was new to the content. The teacher who taught the

content the previous year, by default, became the curriculum leader. This leader consulted with the administrator on the agenda items for curriculum meetings, and shared with the members of the group the tasks that needed to be completed each week. Curriculum meetings consisted of members sharing what they were teaching at the time and how it was going in their classrooms. Data talks included sharing of data and discussions of weak strands. The team did not develop common assessments together at the beginning of the year, but improved on this process later in the year.

The group leader did not share the toolkit with the group, but did share the question stems. The group leader felt that, as a relatively new teacher, she did not feel comfortable in leading the discussion around formative practices. She also felt that it was necessary for her to lay the foundation, prior to using specific strategies.

> *"I am working now with partner work and think pair sharing, and cold call. It is all working a lot better now that I have laid the foundation down. One of the things that I was concerned with was being pushed to use tools or strategies rather than laying the foundation to use them to be successful. We jump into something without necessarily prepping our students for it. But now that I think my students are prepared for it, they are using it to their advantage. And it is coming off a lot more successful."*

The feedback was valuable for the action research team; however, the leader did not share her own experiences or the toolkit with the other members of her group. It seemed as though the focus of formative assessment was specifically within her classroom and not necessarily the thoughts and practices of the team.

Discussions around the value formative assessments were limited; however, one new teacher, with previous experience at another school, shared many assessments with the group. Other group members often used these shared resources and commented on their efficacy in the classroom. During curriculum meetings, this teacher would often take notes and then, often

nonchalantly, offer a strategy or formative practice. She did not force her opinion on anyone, but would say, "*Here, see if you can use this*." The other group members found this teachers' formative assessments to be quite beneficial, but there was limited facilitated discussion on the value and use of these assessments within the group even though members recognized the intellectual capacity of the teacher.

Action research team members completed the scripting activity with Group E. Use and level of questioning, as well as content, differed in each classroom. The activity confirmed the belief that teachers in this group were planning lessons individually. Based on previous observations of curriculum meetings, the group members were working in isolation and not planning together. Lessons and formative strategies were shared in meetings, especially by one of the new teachers, but they may or may not have been used based on what each teacher was teaching at the time. Curriculum meetings mainly focused on moving through the agenda items and opening up the floor to what each teacher was doing on their own.

During the mid-year data discussion in this group, it became clear to the administration and to the members of the curriculum group that the team needed to be on the same page when it came to planning of common assessments. Unlike other groups, there was not a backlog of lessons or rigorous assessments that served as a foundation. Each member of the group had their own lessons, assessments, and formative tools. Although the group had friendly working relationships, they were not collectively working together to align curriculum, planning, and assessment. Each teacher had valuable contributions (IC) to make to the group, but needed to come together to share responsibilities and be on the same page to reduce variability amongst lessons and assessments. The team knew they needed to work smarter, not harder.

The action research team decided that it would be difficult to debrief the intervention with the group based on the changing dynamics of the group. Therefore, we decided to facilitate a group discussion on ways in which the group could strengthen their planning processes. This session allowed members to identify the intellectual capital within the group and determine how they could work better together. Subsequent meetings included outside assistance from other leaders in the school in planning common lessons and common assessments.

Group E had a series of factors working both favorably and adversely within the group. It was clear that each member of the group had valuable experiences, knowledge and skills to produce favorable results, especially as it related to instruction and formative practices. The group also had some signs of social capacity among specific group members. This was evidenced by one member in particular who had a vast knowledge of specific formative practices in the content area and would casually infuse their use into conversations. The individual members' intellectual capacity and social capacity were not fully utilized in the collective capacities of the group. This combined with the fact that the group needed support coming together for effective collaborative planning lessons and summative assessments demonstrated that the group was not in a place to jump into collaboratively planning formative assessments. Administration decided on the use of instructional coaching to bring the group together, and start to build upon the assets that existed within the group.

At this point, the group began a more intense process with an instructional coach. This required additional meetings and sessions throughout the week. As a result, the final intervention was not used with this group. This was due to the other interventions that were

being put in place with the group. As lead researcher, I was able to determine resource sharing and connections based on observations and member interviews.

Conclusions

The intention of this chapter was to describe the process of the action research team in exploring the concept of intellectual capacity and social capacity within curriculum groups, and how that influences ways in which teachers implement formative assessment practices. The aim was to describe the work of the action research team and the curriculum groups separately in order to see how one may have impacted the other. The curriculum groups evolved in many ways, but the action research team members also evolved. They became more empowered with the understanding of the capacity that lies within the school. It was sometimes easy to yield to those conversations about the known barriers, but as a leader, I remained steadfast in moving the team through the process of action research and the goal of this research study. The action research team meetings, learning sessions, and curriculum group observations yielded quite a bit of qualitative data. The findings from this data are presented in the next chapter.

CHAPTER 5

FINDINGS AND ANALYSIS

The purpose of this action research study was to examine the role of intellectual and social capacity within curriculum groups in the implementation of formative practices, a component of the school improvement plan. In addition, the study aimed to explore how intellectual and social capacity could be measured and modeled to assist schools in making decisions. The three research questions guiding this study were: (1) How do intellectual capacity (knowledge, experience, and skills) and social capacity (relationships, trust, and networks) influence the implementation of formative assessment practices? (2) How does action research about school improvement plans allow a school to strengthen formative assessment practices? (3) In what ways can intellectual capacity and social capacity be measured or modeled to inform decision-making in educational settings?

This chapter discusses the findings based on these research questions and the qualitative data collected, and are the result of extensive analyses based on the efforts of the action research team and curriculum groups. The findings are organized by each research question.

Table 14

Findings Table

Research Question	Findings/Themes	Supporting Data
(1) How do intellectual capacity (knowledge, experience, and skills) and social capacity (relationships, trust, and networks) influence the implementation of formative assessment practices?	Intellectual and social capacity influences implementation based on the degree to which each individual's knowledge is known, shared, and is also utilized as a factor that contributes to group collaboration.	Observations and transcripts demonstrating the elements of intellectual and social capital.
	Trust, cohesion, and continuity set the stage for increased implementation.	Teacher and AR team interviews explaining the role these play in building capacity.
	Implementation depends on the levels of capacity in groups, leadership structures, and an understanding of the scope of formative assessment practices.	Observation, transcripts, document analysis, and reflections illustrating the variance based on knowledge and capacity.
(2) How does action research about school improvement plans allow a school to strengthen formative assessment practices?	Action research strengthens formative practices by creating a positive force through big picture awareness.	Action research cycles, interview transcripts, and AR team meetings
	Action research strengthens formative practices through listening and feedback.	Action research cycles and interview transcripts
(3) In what ways can intellectual capacity and social capacity be measured or modeled to inform decision making in educational settings?	The use of rating scales and mapping of intangible assets allows teams and leaders to capture elements of intellectual and social capacity within teacher groups.	Interview transcripts, teacher and team response to rating scale and networking tool.

R1: How do intellectual capacity (knowledge, experience, and skills) and social capacity (relationships, trust, and networks) influence the implementation of formative assessment practices?

Intellectual and social capacity influence implementation of formative practices based on the *degree* to which each individual's knowledge is known, shared, and is also utilized as a factor that contributes to group collaboration. Each teacher's knowledge from previous professional learning has to be acknowledged and applied for implementation to occur. In addition, groups that are cohesive in nature, have a history of continuity, and have developed trust are more likely to implement formative assessment practices. Limited teacher turnover and the fact that the same teachers taught the same subject for more than three years led to cohesion and continuity, which strengthened capacity. Findings also illustrate that curriculum groups with leaders who were able to establish structures and facilitate group learning were farther along the continuum of formative assessment practices than others. Implementation of formative assessment practices depended on the possession and utilization of the elements and dimensions that make up intellectual and social capacity. These are revisited in detail below.

The makeup of intellectual and social capacity

Before describing how these elements and dimensions impacted the curriculum groups, we must revisit the components of intellectual capacity and the dimensions of social capacity and understand how they appear in practice. According to Bontis, intellectual capacity is made up of human capital, relational (or customer) capital, and structural capital (1998). By breaking up these elements, we can see how capacity is utilized in practice. In this context, human capital is considered teacher knowledge and previous training on formative assessment practices. Relational capital is the ability of teachers to relate to their students, to colleagues,

and the ability to facilitate conversations around formative practices with their curriculum group. Structural capital is the internal structures that exist in order for formative practices to occur. This includes school-based professional learning, curriculum group processes that allow for the planning of formative assessment practices, and established group routines.

The dimensions of social capacity are similar. They include the structural dimension, the relational dimension, and the cognitive dimension (Chua, 2002). For the purposes of this study, structural includes the actual structure of curriculum groups within a building, the strategic placement of individuals within those groups, and the social structures established by the group members themselves. The relational elements of social capacity are similar to intellectual capital in that it is the ability to form relationships and gain trust with others for mutual benefit. The cognitive dimension encompasses the overall shared meaning, shared language, and shared understanding of a group.

The highest degrees of implementation would require teachers *and* groups to possess and utilize all three elements of both intellectual and social capacity. For example, all of the teachers within a group would have an extensive background in formative assessment practices (human), have learning and sharing conversations with their curriculum group on a regular basis (relational), and have strong curriculum group structures where all teachers were on the same page in regards to curriculum, planning, and assessment (structural). Conversely, social capacity would appear the same. Curriculum groups would have a history of working with highly effective individuals and would have created structures within their group that allow for success (structural). Teachers and leaders within a group would be able to solve problems and be able to support one another based on establishment of trust (relational). Lastly, a common language and understanding would exist as it pertains to formative assessment strategies

(cognitive). This would include a full understanding of both the building blocks of formative assessment, such as learning targets and questioning as well as the use of evidence of student learning to make instructional decisions. These high degrees of intellectual and social capacity would be the factors that would allow for successful implementation of formative assessment practices in any school setting.

With this in mind, I will share how the action research team came to this understanding and where the groups fell in relation. All three elements of both intellectual and social capacity must be present in order for this to occur. Absence of one of these three elements or dimensions of intellectual and social capacity limits the full utilization of the capacity to create value for the organization. It is also important to understand that individual and group capacities differ. Group capacity is the sum of individual capacity (Nahapiet & Ghoshal, 1998). Each member needs to possess and utilize their own capacity in order for the group to benefit. With each group, we can see this in action.

Intellectual and social capacity within the curriculum groups

In Group A, there were some teachers with higher human capital in relation to using formative assessment practices. This human capital was not shared with the group mainly due to relational dimensions. The group was, however, improving their structural capital with regards to assessments. They had structures in place for the development of summative assessments, but needed to expand that into the planning of formative assessments. When asked about the work of the group in planning assessments, one member stated, *"I think in [our group], we really upped the rigor. Especially, compared to common assessments (summative) last year and this year, it is like night and day."* The leader felt that, with regard to planning

formative assessments, *"We will be in a better place next year."* This will of course depend on the group's ability to strengthen their social capacity.

Group B had individuals with high levels of human capital as it relates to formative assessment practices. The leaders created structures within the group for planning of formative and summative assessments, and all members developed improved relations over the course of the study. The group also had high levels of relational capital, which took time to develop. This allowed them to implement formative assessment practices and delve deeper into learning targets, checks for understanding, and questioning. The following exchange between members of the group illustrates how the group worked together and shared resources. When asked how they formatively assess students, a teacher in Group B shared:

> "*I think I can always learn new ways to assess. I know they say exit tickets are taboo, but I have been doing it and it has been helping. I can see what they don't know and what they do know. I also do a lot of questioning. I would like ways to learn more about that."*
> One of the leaders interjects and says, *"I'll send you a document with a number of strategies."*
> Another chimes in by saying, *"I would like that, too."*

The development of individual and group elements of intellectual and social capacity will allow them to further this work into discussions around instructional shifts based on evidence of student learning and student work.

The leader and some members of Group C had a high degree of knowledge of formative assessment practices, and they also developed structures that acted as a strong foundation for group planning. With new members and lack of continuity in the group, some members of the group had limited relational capital, but this was changing as time progressed and strong relationships were being built. The leader stated*, "We get our work done, but try to have fun at the same time. We have found ways to make each other laugh, but we also have planned some*

really good assessments. We rely on each other." The group used formative practices that demonstrated students' knowledge of the material, but did not extend that into the use of feedback and corrective action. For example, they shared a lot of technology resources and question websites with one another, but did not extend formative practices to higher levels.

Group D had three strong teachers that had all elements of intellectual and social capacity. They had one new teacher also with a high degree of intellectual capacity, but was still adapting to the group and the school. They had strong planning structures in place, knowledge on formative assessment practices, their use in increasing student mastery, and a high level of trust built over years of working together. However, these strengths did not transfer to the group as a whole. This was mostly due to turnover within the group. Most of this was primarily due to external elements out of the groups' control. As new members came to the group, the leaders shared resources and provided support. One member commented on this sharing of resources and benefited from the strong intellectual capacity of the group. When asked about the ability of groups to do more together, she stated, *"For someone new like us, they help us with the resources and how it has been done before, so we don't have to try again, fail and then come back to the problem. From their experiences shared with us, we are right on the way for the goals for the school."* The leaders also knew that the lack of stability in the group added a degree of difficulty with regard to implementation, but were definitely making strides despite this.

All of the teachers in Group E were experienced teachers with high degrees of human capital. Although they did not all participate in the module training, they used formative assessment practices within their rooms. The structural elements of intellectual capacity and the dimensions of social capacity were limited for this group. They did develop relationships with

each other and were beginning to build trust, but due to lack of structures in collaborative planning, new curriculum leadership, and complications in solving communication problems, they were unable to benefit from one another's capacity. Members began to see that there was value in learning from one another. One teacher in this group commented on a shared resource, *"From her, I learned quite a lot. She is a seasoned teacher and from her I learned quite a bit of things. She has helped me in knowing that I can use formative assessments in a way to scaffold as I bring students to a higher level of rigor."* With the right structural elements, this group has great potential with regard to capacity and implementation from a group standpoint.

Each group had a different experience and had different degrees of implementation. When members were aware of each other's knowledge and possessed the elements and dimensions of intellectual and social capacity, they were more likely to share practices with one another. Previous experience and professional learning played an important role in intellectual capacity.

Awareness of and levels of capacity

Our findings show that awareness of capacity and the level of capacity influenced the implementation of formative assessment practices. For example, what professional learning has the teacher participated in that support improved practice in assessment? And, what professional learning needs exist? Moreover, how are groups utilizing these assets to work collaboratively? Table 15 below lists the professional learning that has most supported teachers in their profession, and has built the human capital element of intellectual capacity. Many of the teachers who had high intellectual capacity attended these types of trainings. This assists in understanding how teachers use their learning to change their instructional practices, implement formative assessment practices, and facilitate learning within a curriculum group.

Table 15

Capacity Building Professional Learning

List of Capacity Building Professional Learning as Reported by Teachers
Higher Order Thinking Skills
Reading Assessment and Instruction
Literacy Leadership Team
Vertical Teams
MAX® [Reading] Strategies
Peer Observation
Vocabulary Strategies
Formative Assessment Strategies
Formative Assessment Modules
Critical Friends
Math Summer Institute
Technology in the Classroom
Professional Conferences
Common Core Professional Learning
Differentiation

Action research team members were able to see how capacity plays a role in implementation in their work with curriculum groups. Wilomena talked about this development,

> *"I think we all have different strengths. Everyone has some intellectual capacity. And then you have to figure out how to develop those who don't have as much. I think it is based on our experience and what backgrounds we have, and what we bring to the table—and working with people, you find out what they are good at and what needs to be developed."*

There were groups that had differing levels of intellectual capacity in the content and formative practices with limited or developing social capacity, such as in Group A and E. In these cases, it was evident based on observations and interviews that some teachers were using formative practices, but there may have been limited sharing of practices due to the social capacity of the group. Most members in Group A and Group E did not participate in the online modules, or did not have extensive professional development in linking formative to summative

assessment. Specific individuals in the group may have had a deeper understanding, but due to limited collaboration or collective group learning, those intellectual capacity assets were not transferred. One teacher in Group A rated themselves low on planning formative assessments, *"We didn't get to planning formative assessments; we didn't have time."* There was also limited attendance to professional learning outside of the school. Only the group leader had attended additional professional development.

Rose shared,

> *"We talked about social capacity being that we teach every kid in the building, they are all of our kids. So every 6th grade kid belongs to the 6th grade [subject] team and so if they don't have that capacity to work together, they are not going to meet the needs of all the kids, even if they have all the information at their fingertips. But a group of people that have really strong social capacity and no intellectual capacity, also they are not going to get it done, because they don't have the information…they don't have the knowledge of formative practices. So you have to have that balance of both, and they have to work together."*

This was in contrast to Groups B, C, and D which had members with various levels of intellectual capacity in formative assessment, but had stronger social capacity. This was despite some of the barriers such as teacher turnover or competing initiatives. In these groups, a stronger group effect allowed for the sharing of formative strategies. These group leaders also had strengths in assessment based on prior experiences in leading professional development on assessment, membership on assessment leadership teams, individual research on assessment strategies, and collaborative planning and application of strategies. Although there were members of these groups who were new to teaching or new to the content or grade level, and in some cases member's non-use of strategies, it was the combination of the leader's strong intellectual capacity combined with continuous efforts in the development of social capacity that allowed for a shared understanding and discussion of formative assessment. A teacher in one of the groups shared,

> *"I think just being as a group and sharing and exchanging of ideas helps me. Yesterday, we were talking about FANBOYS and a group member threw out the idea that on the test it is called coordinating conjunctions and that is what it is on the learning target. I went back and changed that on my board and it led to a more aligned formative assessment. Having these discussions help."*

In addition, these group leaders were always thinking of ways to improve the assessment process and incorporating the thoughts of their group to strengthen practices. The leader of Group D stated,

> *"We still need work on putting the rigor in our actual assessments, just because of where they are. They are not skills or thinking skills that get built in one unit to the point where I feel comfortable assessing them at the level. We are trying to build 'that level' into our instruction and formative practice with the hopes that by the end of the year, we can work them into an assessment fairly."*

Wilomena summed it up nicely by stating, *"I think that in areas where you have the greatest social and intellectual capacity, the more effective and stronger formative assessments exist."*

Awareness of such capacity, and the levels to which intellectual and social capacity exist within groups is the key to implementation. Being aware of how members of teacher groups learn and share information around formative assessment practices greatly assist in determining group success.

I argue that the absence of these concepts in educational contexts has led to gaps in understanding school plan implementation practices and results. The economics of intellectual capital as a valuable resource comes from external elements, in terms of new hires and internal elements in terms of professional development within an organization (Nahapiet & Ghoshal, 1998). Such resources should be cultivated to create leverage for improved outcomes. In addition, the social capital resources in terms of the ability to build relationships and trust create

professional networks that bring together individual and group efforts to produce action (Coleman, 1988; Lin, 1999).

Trust

Trust also emerged as a necessary element to building social capital, and our findings show the importance of trust in building strong teams. All of the groups had different concerns and issues related to trust. There was trust that when someone was asked to do something for their group, that they followed through with it. But there was also the element of trust that came from trusting the expertise of the person offering advice. For example, in Group E, one of the teachers had very strong knowledge on the use of formative assessment strategies in the classroom. Although the group may not have known it, the other teacher who successfully incorporated her strategies, developed a deeper level of trust. Sam highlighted this by stating,

> *"Well to try anything new, you have to feel safe. And you have to trust the source it came from. So I am not going to try new formative practice if I did not hear about it from someone who I trust or if I don't feel safe in doing it, if I fail. I think a lot of people build that trust with their teachers and are trustworthy, and so they are getting a better response."*

Trust also comes from seeing teacher results and having open and honest conversations about data. In groups where teachers showed higher results on common and district assessments and their curriculum meetings approached data discussions as a form of group learning, teachers gained trust from their peers based on what they shared in meetings and what the test results showed. This was true for teachers who demonstrated high results, however, it was also true for those whose results were less than favorable. Hilda brought this to light by stating, *"I have a hard time trusting that person's intellectual capacity…I mean not that they are not smart, or the content or how they are teaching it, even though, I try to step back…but that for me influences that whole social capacity."*

Cohesion and continuity

It is not just enough to be aware of the influence of intellectual and social capacity on implementation, leaders must acknowledge the value cohesion and continuity in building intellectual and social capacity that leads to implementation. Continuity is the length of time groups worked together, and the length of time members in the same group taught the same subject over a period of time. Cohesion is the ability of the group to adapt, change, and to solve communication problems. As groups continue to work together and build their cohesive structure, the more likely they are to plan and implement formative practices. Steve reinforced this by linking it back to the culture of the school,

> *"I think we are in a better position now. We have more people—the team—who know how important formative practices are, how to build trust, so that people will listen to them. We have more strides, but I see many more strides that need to be taken. We need continuity. We need to stay in power. We need people in those positions to stay long enough to build a culture within their groups. And a culture, once it is built, can be self-sustained."*

Hilda and Wilomena shared their own experience. Hilda said "*A few years ago, when I worked with Joe, Tammy, and China—we were all a group and it flowed".* Wilomena chimed in, *"Yeah, they were the Beatles! That doesn't happen very often."* If new people did come into the group, they wanted the new members to be able to contribute to the great work that was happening in real time. This was especially true for Group D, where strong structures and knowledge existed and teachers within the group wanted new members to contribute to that level of capacity. New members of a group have to be able to fit into the culture. This is even more important with a diverse and high-functioning group. One of the group leaders expressed concerns with having to *"go back to basics"* with new teachers whose pedagogy did not include checks for understanding, when the rest of the group was at a different place.

Leadership structures and the scope of formative assessments

A strong factor in implementation had to do with curriculum leadership and structures put in place by teacher and administrative leaders in the school. Effective curriculum leadership led to group cohesion. These leaders knew how to facilitate conversations, confront tough issues, and coach the group through the curriculum, planning, and assessment. Not only were these leaders fully aware of their standards and effective teaching methods, they were also very aware of group dynamics and thus focused on the culture of the group.

It is also necessary for school and curriculum leaders to understand the scope of formative assessment practices in order to determine implementation. If teachers are to increase their intellectual capacity with the use of formative assessments, we have to ensure they have a full understanding of the scope of formative assessments. This includes use of learning targets and questioning strategies in class, but it also involves a discussion about testing without grading, data analysis that involves tracking mastery versus scores, making decisions based on formative data, and building in the deconstruction of standards to the design of formative strategies. It involves feedback and corrective action. There were teachers who were attaining that level of formative practice, but the strategies that were shared were more for simple checks for understanding. Based on the finding above, we can see where there is potential to increase capacity in relation to the implementation of formative assessment practices.

In summary, increased intellectual and social capacity creates value for groups to be more effective in implementing the school plan. The goal of this research question was to take the strategic goals associated with improvement, implement formative practices in this case, and closely examine the knowledge, experience, skills, relationships, networks, and trust that exists. To that end, we must see that this does not happen accidentally, and it must be continually

managed and reinforced by leadership. The elements that make up capacity must be present and utilized by individuals and groups accordingly.

R2: How does action research about school improvement plans allow a school to strengthen formative assessment practices?

In applying the action research process of planning, implementing and evaluating (Stringer, 2013) to the analysis of school plan implementation, the action research team was able to strengthen formative assessment practices through the process of inquiry and problem-solving. Our findings show that the process of action research provided the group with awareness of the big picture—members were able to see the link between the established plan and the capacity to carry it through their involvement with the project. The cycles of action research required listening and feedback among action research team members as they worked together, as well as between members of the team and members of the curriculum groups. After developing their own learning, the team was able to design implementations that focused on collaborative practices relating to formative assessments and the value of questioning in formative assessment. Through evaluations, the team was able to see how the plan aligned with practice particularly within curriculum groups.

Big Picture Awareness: From the plan to action

Upon reflection, the action research team believed that they were able to make change happen because of their role in creating the school plan, working with other teacher-leaders, and participating in relevant conversations about formative practices in the school setting. These elements create big picture awareness, and allow teachers to contribute and have a role in strategic change within a school. This allows school plan awareness to be a function of teacher work. Action research puts the plan into action, and team members were able to see positive

results. Critical incident interviews with the action research team members illustrated this effect. Sam described his experience like this,

> "*I am walking away with the benefit of seeing how, if you bring a bunch of teachers together, who want to learn and be a positive force, they can actually do that if they get together with other teachers of like mind. That they actually can go out and make a difference in that school, and help change the culture of the school."*

Hilda added that, this experience *"has made me aware of problems at the school. I was assuming that if Florence and I were doing them, they were being done. It has definitely made me more aware."*

Wilomena shared,

> *"So just by getting together and regularly talking about formative assessment, keeps it at the forefront of everyone's mind, which I think is valuable. And in a lot of our sessions where we are forced to reflect on how things worked and I think the process of reflection also helps us keep that spotlight on something that we are trying to improve."*

This positive force began with the LSPI planning session as AR team members were able to review previous plans and data to see how the school performed overall. Although data is shared regularly with the school, the action research team was able to examine previous data and discuss the link between previous results and previous implementation plans. In creating the plan, Steve mentioned, *"Nothing we should do during the year should be apart from what is here. So this needs to be all-inclusive, everything we want to do this year needs to be here."* The members were able to see the role they played in goals of the school. They were also able to see how the process of improving formative assessments fit into that view. Steven knew that his part on the team led to this positive force, *"So it starts with us…with leadership. Formative assessment in everything we do."* Greta viewed the process as a way in which we constantly improve,

> *"The more accountability there is with regard to high-stakes testing, the more formative assessment there is going to be—and examined and tweaked, so yes, I see us more and more looking at these and trying to determine what works, what is the best practice for our students, how we can get our goal always is to show mastery. So, in order to do that, we have to re-visit and re-visit, and look at different assessments and determine which measure skills best."*

Overall, the action research team believed that they had strengthened formative practices at the school, which also included their own personal growth in this area. Florence talked about teacher's increased use of strategies,

> *"They are starting to do more. They realize you have to have checks in between summatives. It doesn't always have to be 3-2-1 or Think Pair Share; there are other ways to do it, and I think they are doing that. Also because of our ability to get along, our social capacity has increased…they trust what people say and will try it. People who have not done any kind of formative assessment have tried some strategies and are using them."*

I also found evidence of action research team members increasing their own intellectual capacity with an increased knowledge of formative strategies. Hilda commented on Florence saying that, *"She has become more of an expert on formative assessment through this process and her team sees her as a go-to person."* Other action team members also noticed the growth within the curriculum groups, but see more work to be done. When asked about the work of formative assessment practices within the school, Steve replied, *"Strengthened as in it is better than it was…I think we have. But what I really got is a sense of how far we have left to go."* Hilda concurred by saying, *"It has been a step in the right direction."*

Listening and Feedback: Necessary ingredients

Not only does action research produce a positive force through big picture awareness, it also requires those who are a part of the process to focus on attentive listening and feedback. It was through the listening and feedback that real understanding took place. Action research is not a linear activity. It requires members of the team to listen and accept feedback about

assessment planning and the interventions designed. Listening and feedback occurred in a number of directions. Action research team members had to listen to what was happening in the curriculum groups and provide the feedback to the action research team. The team needed to listen to teacher concerns as it related to school plan implementation. It was through listening that we were able to see where groups currently were in the process. In addition, action research team members provided feedback on the implementation of formative practices to their curriculum groups. This occurred through the debriefing sessions where teachers could see the influence of their questioning and formative assessments in class. Without these feedback loops, the cycles of action research would have remained stagnant.

As lead researcher, I found that it was through listening and feedback that formative practices were strengthened. Rather than setting an agenda and progressing forward, the team was able to take in information from teachers and one another in order to adapt and change along the way. This reciprocal flow (Downing Murley, Keedy, & Welsh, 2008) between leadership and teachers created a two-way communication that improved practice and also improved the work of the action research team.

After the first intervention, the action research team went back to the curriculum groups to understand why they did or did not fully utilize the toolkit. By doing so, we were able to see that school-wide the focus was specifically on the creation or improvement of common summative assessments. One of the curriculum leaders shared, *"We have come to a road block that we don't have other tests beside our common assessments. We are focused on common, we are focused on that data that has to get on the shared drive."* This teacher and many others provided specific feedback to the AR team. First, we could see that teachers needed to create summative assessments and were spending the majority of planning sessions to do so. We were

also able to see that the time spent on summatives, although extremely important, left less time to focus on formative assessments. Groups that had been through the process of creating summative assessments prior to the beginning of the year, spent more time on formative practices collectively. Teachers also participated in professional learning on increasing the rigor in assessments during this time as well. Group A's leader said,

> "*We have had training from the county on how to make really great test items for common assessments. The lady from the county told us about question distracters, the structure of tests, really dissecting each question, and the use of pictures. It was a good training. We really have to step up our game in the creation of common assessments. Just because questions are out there doesn't mean that they are the best questions. We have to dissect each question."*

This process of soliciting feedback allowed the action research team to see that summatives take precedence, but it also illustrated that the creation of common or unit tests and the focus of entering the data demonstrated the disconnect, in some groups, between instruction and assessment. Without this feedback loop, we would have assumed that implementation was going as planned.

The second and third intervention reinforced this finding. The action research team members were able to share what was happening in their curriculum groups and teacher response to the debriefing activity, which in itself created a platform for communication. Teachers were sharing their formative practices with one another. Some of the responses about their use of questioning and formative tools used were:

> *"I wanted to see again why they [the students] are doing certain steps…leading them to where they have to be."*

> *"I like when we meet as a group, because I can find out exactly where I am. If they are teaching something a little bit different than the way I am doing it, then I can say, you know, maybe that is a better way, maybe I should try that. Especially if my students are not learning it currently, then I get to try a different way of doing things. We meet and we discuss what is going on."*

"The scripting formative assessment is so interesting to me, because it is so… it seems like such a mental…but reading it like this… then you feel like putting it into words…gets out everything that is happening in that room…like, it is just interesting to see what comes out of my mouth and what the students sees compared to what I think I am doing…or whether I am noticing it or not."

This process of listening to teachers and group members and soliciting feedback to each other generated new ideas and confirmed where people were in the process. It also demonstrated the importance of being aware of what is happening in classrooms and in curriculum groups as it pertains to implementation. Soliciting feedback allowed the action research team to see exactly where each group was regarding formative practices, but also how they were increasing in intellectual and social capacity.

"Action research is a collaborative approach to inquiry or investigation that provides people with the means to take systematic action to resolve specific problems…It is a means for people to more clearly understand their situations and to formulate effective solutions to problems they face" (Stringer, 2013, p. 8). The loops or cycles of action research require constant evaluation. Action research strengthened formative assessment practices, because members were able to see how all of the pieces fit together with school improvement plans. The action research cycles provided a framework that allowed listening and feedback to influence instructional practice. The graphic below provides a visual of these findings.

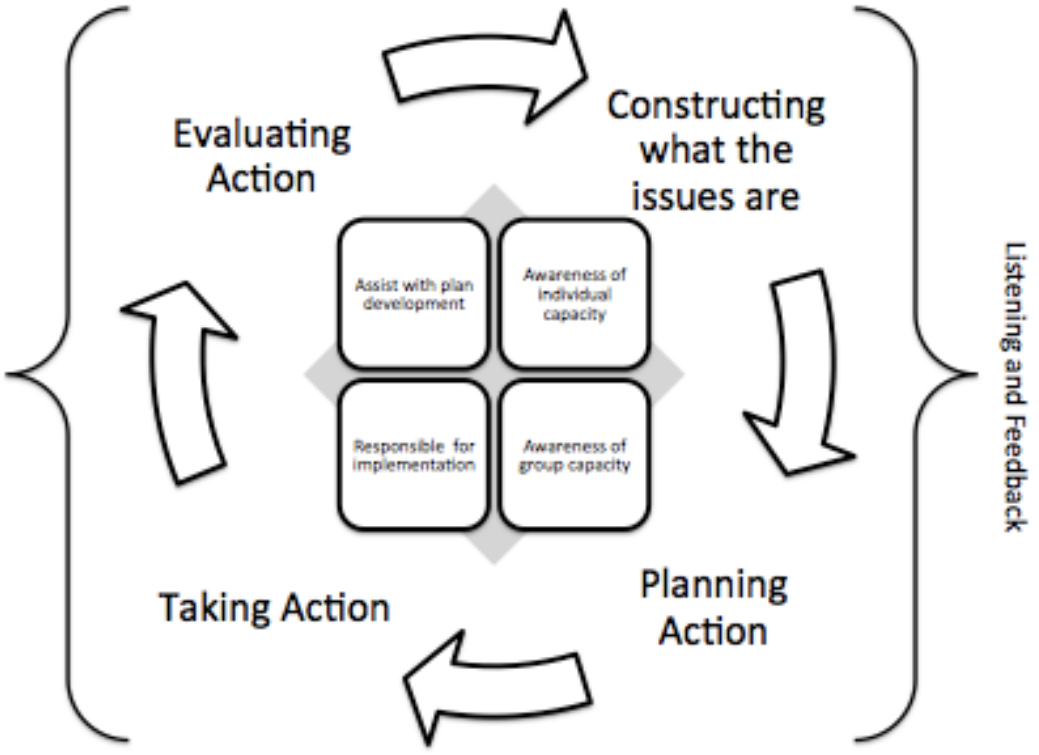

Figure 10: Action research and school plans

R3: In what ways can intellectual capacity and social capacity be measured or modeled to inform decision-making in educational settings?

The third research question was designed to explore how measures and models of intellectual and social capacity could inform decisions that are made in school settings. As these two concepts were introduced to a K–12 educational setting, the goal was to explore ways in which to assess and visualize them. The use of rating scales and mapping of intangible assets allows teams and leaders to capture elements of intellectual and social capacity within teacher groups. As our findings suggest, such tools may be better suited for group reflection and evaluation as it relates to the structural and relational elements to capacity. This could be due to the limited exposure and use of models by the action research team, but it also attributed to feedback from teacher-leaders on the use of the tool.

As a specific component to the study, this research question's aim was to explore intellectual capacity and social capacity models as additional information to further understand the new concepts. This was certainly limited by the duration of the study and the limited exposure to the vast array of intellectual capacity and social capacity tools that could possibly be used in this context. This led us to consider two diverging positions. On one hand, measures and models add depth to the understanding of group dynamic complexities that exist within curriculum groups. By doing so, it allows group leaders or others to make concerted efforts in the development of relationships or skills. On the other hand, which is more directly related to the literature on added value, the design and use of measures and models can assist schools, through quantifiable means, in determining the degree to which capacity aligns to strategic plans. Our findings focus on the former with understanding the benefits of future research for the latter.

The findings for this third research question came from the final mapping session with the action research team and the third intervention of the curriculum groups. During this time, the team as well as the curriculum groups explored the use of a rating scale and mapping activity in evaluating practices. The purpose of these activities was to determine their usefulness in making decisions. The ratings were not a part of the data collection and analysis, although they did support some of the findings from research question one. Their primary use was for the action research team to consider the usefulness of a tool that addresses capacity. When formulating the statements on the scale, the lead researcher included the list of intangible assets that came out of the initial IC/SC dialogue session and other AR team sessions.

The concept of the mapping activity emerged out of research on IC/SC modeling that utilized various tools to conceptualize capacity in practice. Nick Bontis, in his 1998 study,

Intellectual Capital: An Exploratory Study That Develops Measures and Models, produced models that would assist with further understanding of what makes up intellectual capital and provide insight into its development. Other scholars contributed to this method with use of concept mapping and visual models (Martinez-Torres, 2006; Nahapiet & Ghoshal, 1998). With this as a backdrop, the study explored the use of network mapping as a tool for understanding connections and resource sharing within network groups.

Based on the action research team's feedback, members felt the tools to be valuable for purposes of reflection and to provide support. Some felt that using the tools as an evaluative measure would reduce its value in that respondents would be less likely to be truthful in their ratings or mapping of connections. Steve felt that the tools could be used to find those who do something well, so they could in turn help others.

> *"First, correctional. A thing they need to do is sit in with a group, who not only does that well, but is specifically to do something a particular day just to demonstrate, and I think they should know why they are there. Sharing…We have a group here who is the bomb in sharing. So go watch them, take notes, maybe even debrief on what you saw. How did they share, how did they react to sharing? But, they need to be open. If we are aware of our weaknesses, then we are more willing to accept correction."*

Steve also felt that the network mapping activity could be used in a supportive way, saying,

> *"It is difficult to force inter-personal connections. If they feel forced at all, or if they feel contrived at all, there are not going to be connections. That is not to say we sit back and watch and wait, because we have been sitting back, watching and waiting and nothing has happened. But our interventions should be subtler, when you are dealing with inter-personal connections and missed connections. If the person does not connect we will lose them."*

Sam agreed with Steve on the networking tool, *"The thing that helped me more than anything, which is why I liked that activity, is when we drew the lines going from one teacher to another teacher, you got to see visually how the information flows, or the potential for it to flow."* Rose offered suggestions on future use, *"I think that's a perfect way to do a pre- and*

post-assessment for whatever you are looking at, especially if you are looking at how does my building deal with something." Wilomena shared that these tools could be used in the development of relationships.

> *"We can make sure all of our adults are supported and corrected, and we are creating environments where relationships can form. Organically, not: Oh, you are going to be someone's mentor now. I don't think that's always effective. But saying: Hey, will you work with someone on this project? You are creating an opportunity for them to form a relationship. Not forcing a relationship, but creating a relationship. And you are creating an environment where that can form."*

Hilda confirmed the above statements, but also thought that these tools should not be used in a punitive way. She felt that it may be best to use the tool from a coaching perspective rather than an evaluative perspective. If an evaluator collects the information and uses it for evaluative purposes, then not only does it diminish the value of the tool, it could lead to further isolation of members of the group and possibly deteriorate the social capital that exists.

The findings for this research question show that these tools are valuable for decision-making, and they allow teams and leaders to capture elements of intellectual and social capacity within teacher groups. They could evolve into quantifiable tools that lead to better decision-making from a talent management standpoint, but users should tread lightly between tools used for improvement and tools used for evaluation purposes.

Conclusion

The findings to the three research questions were based on the cycles of action research and the analysis of themes that emerged through the coding of qualitative data. The themes related to the influence of intellectual and social capacity on formative assessment practices revealed the relationship between individual and group capacity. The themes that emerged from the role of action research on implementation plans revealed the significance of a macro view

that includes listening and feedback. Lastly, the findings on the use of measures and models demonstrated that context and use dictate how we use the tools to make decisions in educational settings.

The final chapter will provide a summary of the study, conclusions drawn, and implications for education and research.

CHAPTER 6

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

The purpose of this research was to examine how a school becomes aware of the intellectual and social capacity within their environment, and how that capacity influences the implementation of the school plan, specifically formative practices. Through an action research case study approach, I worked collaboratively with an action research team to answer three research questions: (1) How do intellectual capacity (knowledge, experience, and skills) and social capacity (relationships, trust, and networks) influence the implementation of formative assessment practices? (2) How does action research about school improvement plans allow a school to strengthen formative assessment practices? (3) In what ways can intellectual capacity and social capacity be measured or modeled to inform decision-making in educational settings?

Through data collection and analyses, I found that there are a number of ways that intellectual and social capacity influence formative assessment practices. Intellectual and social capacity influences implementation based on the degree to which each individual's knowledge is known, shared, and is also utilized as a factor that contributes to group collaboration. Therefore, not only do we need to be aware of teacher knowledge, but we must also keep groups of teachers working together over a period of time to improve outcomes. Continuity and consistency make a difference in the collective capacity to meet school goals.

The methodology of action research also contributed to the findings of this case study. Through action research, team members were able to strengthen their own and their team's formative practices. Team members became involved in school planning and intervention

design. This process created awareness of the big picture of school reform and school improvement, and team members were able to witness their contributory role in making change happen. They were also able to see facets of growth and development within the school setting. This understanding occurred while taking the time to reach out to curriculum groups, listen to their needs, and create a feedback loop between the groups and the action research team. Action research strengthened formative practices through listening and feedback. This included two-way listening and feedback between teacher and evaluator, curriculum leader and group members, and between teacher-leaders in the school.

Lastly, the action research team explored the use of measures and models to gain a deeper understanding about intellectual and social capacity within a school. This research shows that the use of rating scales and mapping of intangible assets allowed teams and leaders to capture elements of intellectual and social capacity within teacher groups, but found that it is more conducive as a reflective tool versus an evaluative tool.

These outcomes demonstrate the importance of the awareness of existing intellectual and social capacity in schools, and that we have to be familiar with our teachers and groups. We have to know where they are in terms of their learning, in terms of their experience, and in terms of their skills. We also should know how trust is being built and how relationships are affecting the group. As leaders, we have to apply and cultivate existing and new knowledge in teacher groups. Newmann, King, and Youngs describe "this as collective power to improve student achievement" (2000). When schools develop plans, it is necessary to analyze the elements that make up intellectual and social capacity and their influence within groups. For example, schools must examine the human, structural, and relational aspects of curriculum groups. Issues with one element could limit expected growth; therefore, individual and groups

must possess all of the elements for successful implementation to occur. School leadership has the greatest influence over structural elements and they should establish structures to ensure success in other areas, such as relational and human capacity.

There are implications to the field of education based on the conclusions of this study. From a school leader's perspective, there are a number of things to consider. School capacity cannot be left to chance. Not only must schools incorporate professional development plans that address capacity (Martínez-Torres, 2006; Nahapiet & Ghoshal, 1998), they need to be intricately involved in the life of curriculum groups in order to become familiar with the capacity that already exists. School leaders must also stay abreast of the existing supply of professional development programs as it pertains to formative assessment practices. When schools or district leaders assess the learning needs of their staff, they must know what is available to meet those needs.

There are also implications related to school staffing decisions. With regard to cohesion and continuity, school leaders do not have complete control over a group's ability to stay together, nor are school leaders able to predict cohesive units. As needs arise and changes occur, sometimes it is not always easy to keep the "Beatles together", so to speak. However, as leaders we need to keep this in mind, especially if the goal is to move the school along a continuum. When interviewing potential candidates, principals should seek to know what new hires bring to the table. When placing a new hire within a group of individuals, there has to be an assumption of mutual benefit.

Future research in this area could include further exploration of measurement methods that allow schools or districts to assess the overall capital structure of a school. This area of research could also benefit from the use of talent management efforts in human resource

literature. At the school level, future research could focus more closely on the scope of formative assessment practices. In addition, this study investigated formative assessment in its entirety, but we were able to see that some teachers who began with simple strategies such as "ticket out the door" began to expand into more thorough levels of formative assessment. Another opportunity for further study would be to examine the rippling effect of the use of the modules that were used as the initial staff development of formative strategies for the school. More so than other forms of staff development or learning series, this organic and exponential growth of the Battelle for Kids product proved that effective staff development is contagious.

In conclusion, I would be remiss not to share the transformations in my own intellectual and social capacity. This program, with the inclusion of the study and dissertation process, has increased my own knowledge, skills, and experience. As a strategic and visionary thinker, I found that the study contributed to my ability to view things from a macro level. The process has further developed my ability to inquire into the pedagogical aspects of teachers and team collaborations. Through inquiry, I have been able to develop relationships with teachers and leaders at the school and within the district. This has allowed me to build trust that has ensured my colleagues that my desire is to support them in their own efforts to improve. I found myself on a number of occasions increasing my own knowledge and sharing that knowledge with others.

From an economics standpoint, I believe I have increased by ability to add value to an organization. Though, the real value and true knowledge that was gained, was a deeper and more profound respect for educators. I began this journey with the understanding of the inherent value of teacher knowledge and that if listed on a financial statement, would prove to be the top-producing asset of an organization, which is precisely why I chose to explore the

concepts of intellectual and social capacity. I end the journey with a more defined road map on how these concepts operate in practice, which begins first and foremost with a respect of the education profession and respect for individual educators. From my initial days in methods classes to my work in school administration, my ideological outlook has not changed. I still believe teachers can change the world, they do so everyday and it is an honor to work alongside them.

REFERENCES

Barker, Vincent L., & Duhaime, Irene M. (1997). STRATEGIC CHANGE IN THE TURNAROUND PROCESS: THEORY AND EMPIRICAL EVIDENCE. *Strategic Management Journal, 18*(1), 13-38.

Battelle for Kids (Producer). (2014). Formative Instructional Practices. *Battelle for Kids*. Retrieved from http://www.gadoe.org/Curriculum-Instruction-and-Assessment/Assessment/Pages/GeorgiaFIP.aspx

Bessell, Ann G., Burke, Marisa Collett, Plaza, Miriam Pacheco, Okhee, Lee, & Schumm, Jeanne Shay. (2008). The Educational Reform Rating Rubric: Example of a New Tool for Evaluating Complex School Reform Initiatives. *Field Methods, 20*(3), 283-295. doi: 10.1177/1525822X07313838

Black, Paul, & Wiliam, Dylan. (2010). Inside the Black Box.

Bontis, Nick. (1998). Intellectual capital: An exploratory study that develops measures and models. *Management decision, 36*(2), 63-76.

Chua, Alton. (2002). The influence of social interaction on knowledge creation. *Journal of Intellectual Capital, 3*(4), 375-392.

Coghlan, David, & Brannick, Teresa. (2014). *Doing action research in your own organization*: Sage.

Coleman, James S. (1988). Social capital in the creation of human capital. *American journal of sociology*, S95-S120.

Copland, Michael A. (2003). Leadership of inquiry: building and sustaining capacity for school improvement. *Educational Evaluation and Policy Analysis, 25*(4), 375-395. doi: 10.2307/3699583

Corcoran, Thomas, & Goertz, Margaret. (1995). Instructional capacity and high performance schools. *Educational Researcher*, 27-31.

Cosner, Shelby. (2009). Building organizational capacity through trust. *Educational Administration Quarterly, 45*(2), 248-291.

Creswell, J. (1994). *Qualitative and quantitative approaches*.

Cuganesan, Suresh. (2005). Intellectual capital-in-action and value creation: a case study of knowledge transformations in an innovation project. *Journal of Intellectual Capital, 6*(3), 357-373.

Demartini, Paola, & Paoloni, Paola. (2013). Implementing an intellectual capital framework in practice. *Journal of Intellectual Capital, 14*(1), 69-83.

Downing Murley, Lisa, Keedy, John L, & Welsh, John F. (2008). Examining school improvement through the lens of principal and teacher flow of influence in high-achieving, high-poverty schools. *Leadership and Policy in Schools, 7*(4), 380-400.

Earl, Lorna, & Lee, Linda. (2000). Learning, for a change: school improvement as capacity building. *Improving schools, 3*(1), 30-38.

Edvinsson, Leif. (1997). Developing intellectual capital at Skandia. *Long range planning, 30*(3), 320-373.

Edvinsson, Leif. (2013). IC 21: Reflections from 21 years of IC practice and theory. *Journal of Intellectual Capital, 14*(1), 163-172.

Edvinsson, Leif, & Sullivan, Patrick. (1996). Developing a model for managing intellectual capital. *European management journal, 14*(4), 356-364.

Fernandez, Kenneth E. (2011). Evaluating school improvement plans and their affect on academic performance. *Educational Policy, 25*(2), 338-367.

Flanagan, John C. (1954). The critical incident technique. *Psychological Bulletin, 51*(4), 327.

Flyvbjerg, Bent. (2006). Five misunderstandings about case-study research. *Qualitative inquiry, 12*(2), 219-245.

Fullan, Michael G., Bennett, Barrie, & Rolheiser-Bennett, Carol. (1990). Linking classroom and school improvement. *Educational Leadership, 47*(8), 13.

Fullan, Michael, & Pomfret, Alan. (1977). Research on curriculum and instruction implementation. *Review of educational research*, 335-397.

Gross, Neal, Giacquinta, Joseph B, & Bernstein, Marilyn. (1971). *Implementing organizational innovations: A sociological analysis of planned educational change*: Basic Books New York.

Gulikers, Judith TM, Biemans, Harm JA, Wesselink, Renate, & van der Wel, Marjan. (2013). Aligning formative and summative assessments: A collaborative action research challenging teacher conceptions. *Studies in Educational Evaluation, 39*(2), 116-124.

Guskey, Thomas R. (2005). Formative Classroom Assessment and Benjamin S. Bloom: Theory, Research, and Implications. *Online Submission*.

Hargreaves, Andy, & Fullan, Michael. (2012). *Professional capital: Transforming teaching in every school*: Teachers College Press.

Hargreaves, David H. (2001). A capital theory of school effectiveness and improvement. *British Educational Research Journal, 27*(4), 487-503. doi: 10.1080/01411920120071489

Harris, Alma. (2001). Building the capacity for school improvement. *School Leadership & Management, 21*(3), 261-270.

Harris, Alma. (2011). System improvement through collective capacity building. *Journal of Educational Administration, 49*(6), 624-636.

Herriot, A, Crossley, M, Juma, M, Waudo, J, Mwirotsi, M, & Kamau, A. (2002). The development and operation of headteacher support groups in Kenya: A mechanism to create pockets of excellence, improve the provision of quality education and target positive changes in the community. *International Journal of Educational Development, 22*(5), 509-526.

Hopkins, David, & Reynolds, David. (2001). The past, present and future of school improvement: towards the Third Age. *British Educational Research Journal, 27*(4), 459-475. doi: 10.1080/01411920120071461

Hopkins, David, Reynolds, David, & Gray, John. (1999). Moving on and moving up: confronting the complexities of school improvement in the improving schools project. *Educational Research and Evaluation, 5*(1), 22-40.

Hutchinson, Judy, Vidal, Avis C, Putnam, Robert, Light, Ivan, de Souza Briggs, Xavier, Rohe, William M, . . . Woolcock, M. (2004). Symposium: Using social capital to help integrate planning theory, research, and practice. *JOURNAL-AMERICAN PLANNING ASSOCIATION, 70*(2), 142-192.

King, M Bruce, & Bouchard, Kate. (2011). The capacity to build organizational capacity in schools. *Journal of Educational Administration, 49*(6), 653-669.

Lewin, Kurt. (1946). Action Research and Minority Problems. *Journal of Social Issues, 2*(4), 34-46.

Lin, Nan. (1999). Building a network theory of social capital. *Connections, 22*(1), 28-51.

Martínez-Torres, M Rocío. (2006). A procedure to design a structural and measurement model of intellectual capital: An exploratory study. *Information & Management, 43*(5), 617-626.

Mintrop, Heinrich, MacLellan, Ann Merck, & Quintero, Margaret Fee. (2001). School improvement plans in schools on probation: A comparative content analysis across three accountability systems. *Educational Administration Quarterly, 37*(2), 197.

Moss, Connie, & Brookhart, Susan. (2012). Learning Targets: Helping students aim for understanding in today's lesson. doi:http://www.ascd.org/ASCD/pdf/siteASCD/publications/books/learning-targets-sample-chapters.pdf

Murphy, Joseph, & Meyers, Coby V. (2009). Rebuilding organizational capacity in turnaround schools: Insights from the corporate, government, and non-profit sectors. *Educational Management Administration & Leadership, 37*(1), 9-27.

Nahapiet, Janine, & Ghoshal, Sumantra. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of management review, 23*(2), 242-266.

Newmann, Fred M, King, M Bruce, & Youngs, Peter. (2000). Professional development that addresses school capacity: Lessons from urban elementary schools. *American journal of education*, 259-299.

O’leary, Michael. (2008). Towards an agenda for professional development in assessment. *Journal of In‐service Education, 34*(1), 109-114.

Picucci, Ali Callicoatte, Brownson, Amanda, Kahlert, Rahel, & Sobel, Andrew. (2002). Driven to succeed: High-performing, high-poverty, turnaround middle schools. Volume I: Cross-case analysis of high-performing, high-poverty,turnaround middle schools.

Sadler, D Royce. (1989). Formative assessment and the design of instructional systems. *Instructional science, 18*(2), 119-144.

Sergiovanni, Thomas J. (1998). Leadership as pedagogy, capital development and school effectiveness. *International Journal of Leadership in Education Theory and Practice, 1*(1), 37-46.

Simons, Helen. (2009). *Case study research in practice*: SAGE Publications.

Spaulding, Dean T, & Falco, John. (2013). *Action research for school leaders*: Pearson.

Stake, Robert E. (2013). *Multiple case study analysis*: Guilford Press.

Stiggins, Richard J. (1999). Evaluating classroom assessment training in teacher education programs. *Educational measurement: Issues and practice, 18*(1), 23-27.

Stiggins, Richard J, & Bridgeford, Nancy J. (1985). The ecology of classroom assessment. *Journal of Educational Measurement, 22*(4), 271-286.

Stringer, Ernest T. (2013). *Action research*: Sage.

Torrance, Harry, & Pryor, John. (2001). Developing formative assessment in the classroom: Using action research to explore and modify theory. *British Educational Research Journal, 27*(5), 615-631.

Tracy, Sarah J. (2010). Qualitative quality: Eight "big-tent" criteria for excellent qualitative research. *Qualitative inquiry, 16*(10), 837-851.

Watterston, Jim, & Caldwell, Brian. (2011). System alignment as a key strategy in building capacity for school transformation. *Journal of Educational Administration, 49*(6), 637-652.

Wiliam, Dylan. (2011). What is assessment for learning? *Studies in Educational Evaluation, 37*(1), 3-14.

Wiliam, Dylan, Lee, Clare, Harrison, Christine, & Black, Paul. (2004). Teachers developing assessment for learning: Impact on student achievement. *Assessment in Education, 11*(1), 49-65.

Yin, Robert K. (2013). *Case study research: Design and methods*: Sage publications.

APPENDIX

Interview Protocol

Research Study: The role of intellectual and social capital in implementing the school improvement plan. #1631

Interviews will be conducted before, during, and after discussions or trainings around implementation practices. Various interview techniques will be utilized. Interviews will be audio-recorded and later transcribed.

Critical Incident Interview

1) During the Critical Incident Interview, interviewees will be presented a prompt designed to elicit information around a specific subject.

Prompt:
Describe your understanding of the school improvement plan and how it pertains to your classroom practice. How does this align with your goals for instruction throughout the school year? Discuss the people that also play a role in this process.
Prompt:
Talk about your assessment strategies in your classroom. How do you formatively assess students? What have you learned or do you feel you need to learn about formative assessment?
Prompt:
After learning about _____, how did you implement that practice in your classroom. Discuss possible obstacles to implementation and the role of your curriculum group in designing the lesson and/or overcoming those obstacles.
Prompt:
Has being a part of this team allowed you to influence your intellectual and social capacity? Describe your experience and provide specific situations if you can.

Interview Questions

Some interviews will be conducted using the following questions. Questions will be different based on when they are asked: before, during or after the specific intervention.

1) How long have you been teaching?
2) Describe your teacher preparation program?
3) What subjects and grades have you taught?
4) Who do you have professional conversations about student learning with at this school?
5) What assessment techniques have you learned in your teacher preparation program?
6) What professional learning has most supported you in your profession?
7) What do you know about the school improvement plan?

8) What do you know about formative assessment practices?
9) How do you use clear learning targets?
10) Have you completed any of the online modules about formative assessment practices?
11) How does your curriculum group plan for assessment?
12) Does your curriculum group examine student work? Discuss.
13) After trying one of the formative practices, how do you feel this has informed your instruction?
14) After trying one of the formative practices, how do you feel this has impacted students' understanding and mastery of the content?
15) Are there aspects with this team that has allowed you to be a better teacher?

Focus Group Interview Questions

Teachers of the same subject area

1) How does your curriculum group plan for instruction?
2) Describe your assessment planning process.
3) What role does reflection play in your curriculum planning?
4) How do you support one another in planning and implementation?
5) What obstacles have you encountered with regard to planning for formative assessment?
6) Given this statement - groups can do more together, how does working in this group allow you to accomplish your goals and the school's goals? Is there a difference?
7) What knowledge and resources have you shared?
8) What common experience have you had and how has they helped your team?

Action Research Team Protocol Questions

Critical Incident

Prompt:
Describe your overall experience as being a part of this action research team.
Has being a part of this team allowed you to influence your intellectual and social capacity? Describe your experience and provide specific situations if you can.
Prompt:
How do you feel intellectual and social capacity influences the implementation of formative assessment practices?
Prompt:
Describe how this team has strengthened the use of formative assessment practices at our school.
Prompt:
Describe the process of examining how models can influence decision making in schools.

After each interview all responses will be collected and stored for coding and analysis.

Network Mapping

1. Lay out the curriculum members in a circle on the chart paper. Label curriculum leader.
2. Using a pencil draw arrows to people who share resources or information. Use arrows to show to and from or both.
3. Please a box or index card next to each person's name to record the professional learning (group or individual) that each person has participated in. Determine what or if the learning was shared.
4. Then, using colors draw connections between group members signifying interaction
    a. Green – close collaboration
    b. Yellow – intermittent/limited

Interaction includes but is not limited to:
Sharing resources
Mentoring
Providing support/answering questions
Sounding board for assessment/formative strategies
Data sharing

Further analysis will include the IC component.