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The Impact of Principal Leadership and Teacher Formative Assessment Practices on Student Intellectual Engagement

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The Impact of Principal Leadership and Teacher Formative Assessment Practices on Student

Intellectual Engagement

by

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Abstract

The purpose of this design-based research study was to explore with a few principals the impact that focused student-centered principal leadership would have on working with teachers that would employ particular formative assessment practices that could more deeply engage students intellectually in their school work. The rationale for this study originated from my desire to see more students intellectually engaged in their school work than presently. It was my assumption that student intellectual engagement could be strategically improved by leveraging the combined impact of principal leadership and teacher formative assessment practices. The purposeful sample included four principals from schools with varying grade configurations from the same district. The primary data collection was from two in-depth interviews of the principals. Secondary data sources were from teacher and student self-report surveys. The interview data were transcribed, shared with principal participants to determine accuracy, coded, organized by themes and questions, compared again to the original transcript, and then linked to the conceptual framework to arrive at the findings. The study has shown that student-centered principal leadership is at the heart of building principal capacity. Principal leadership was found to have positive effects on teacher formative assessment practices. Student intellectual engagement measures revealed a negative relationship in intellectual engagement perhaps due to the timing of the student data collection, or student push-back resulting from changes in teacher classroom practice, or established teacher competency. Recommendations are offered for principal leadership development, teacher formative assessment practices, and student intellectual engagement.

   Key Words: design-based research, student-centered principal leadership, teacher formative assessment practices, student intellectual engagement

Dedication

This work is primarily dedicated to the too many students that have attended our public schools and have endured years of instruction without ever experiencing intellectual engagement. For those of you who made it through the system despite not being engaged intellectually: good for you. For those of you who were not as fortunate, there are so many educators who are trying so very hard to make school a better place for all students. This work is for you.

This work is also dedicated to my very first administrative team, Principal Gary Wesner and Vice-principal Dr. Lloyd Nelson. This administrative team exemplified student-centered leadership long before the term was ever used. Their professional examples have been my professional north star. If I have done half as good a job as the two of them I will have done alright.

Finally, to the small number of colleagues in my school and school district, whom I have worked closely with every day, and that have been largely responsible for inspiring me to see the very real need to learn more about leadership, teacher formative assessment practices, and student engagement because of the power these can have for students, this is for you.

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Chapter One: Introduction

The purpose of this study was to explore the impact student-centered principal leadership and teacher formative assessment practices could have on student intellectual engagement. Student disengagement, predominantly academic and intellectual, is a major concern for public education systems in the 21st century (Dunleavy, Willms, Milton, & Friesen, 2012; O'Connor, 2002; Pope, 2001; Taylor & Parsons, 2011; Willms, Friesen, & Milton, 2009). A substantial body of research suggests that consistent use of formative assessment practices deeply engage students intellectually (Askew, 2000; Black & Wiliam, 2001; Black, Harrison, Lee, Marshall, & Wiliam, 2004; Brookhart, 2008; Chappuis & Stiggins, 2002; Clarke, Hattie, & Timperley, 2003; Hattie & Timperley, 2007; O'Connor, 2002; Stiggins, 2008). Following this argument, this study explored how principals, while building their own capacity, could create the conditions in a school to support teachers in building their own capacity by applying formative assessment practices that lead to deeper student intellectual engagement. Using a design-based research process and four school principals, a focussed leadership and teacher formative assessment implementation process was implemented. This research has shed light on how principals can build their own leadership capacity and the capacity of their teachers to be able to improve their formative assessment practices with the hope of possibly engaging their students more intellectually. This work can be used by principals and teachers interested in building their capacity to impact their own practice and applied to schools and school districts to help support systemic change towards more effective principal leadership, teacher formative assessment practices, and student intellectual engagement.

This chapter provides a very brief overview of the importance of systemic change, the roles of principal leadership and the teacher in impacting student success, the state of student intellectual engagement in Canada, and the importance of motivation as it relates to engagement. The research

problem is outlined and the purpose statement delineated. Following this, the research questions are identified, the methodology briefly introduced, and the significance of the study is explained. Significant terms particular to the study are defined and the researchers perspective and assumptions identified. The chapter concludes with the significance, rationale, and an outline for the study.

Background and Context

In this section, school leadership, and teacher formative assessment practices and how these impact student motivation and student achievement are briefly reviewed. In recent times, research has attempted to identify what helps students to be more successful in school than ever before (Sawyer, 2007). Global forces in the 21st century have impacted educational systems so much so that school system leadership has come to realize that systemic change is the most powerful approach to create overall system improvement (Harris & Chrispeels, 2008; Hopkins, Harris, & Mackay, 2010; Mourshed, Chijioke, & Barber, 2010). It is now clear that when education departments, educational jurisdictions, district offices, principals, and teachers are aligned with the same vision, mission, and goals, school systems can and do demonstrate significant improvement as measured by student academic achievement (Mourshed et al., 2010). Adopting some of these research findings, one school district embarked on a system wide change in assessment philosophy and practice by implementing a new district wide administrative assessment procedure. Some aspects of this change required all teachers to clearly identify learning outcomes for their students, to provide clear descriptive feedback as part of the teaching learning cycle to enhance student learning, and to move from reporting learning in percentages to a four level reporting system that included the levels beginning, developing, achieving and excelling.

System alignment is a desired and necessary state to create overall system improvement, however not all parts of the system contribute equally to that improvement. Teacher practice is the most important direct influence on student achievement (Friesen & Lock 2010; Leithwood & Louis, 2012;

Robinson, 2011). What the teacher does matters, both good and bad (Barber & Mourshed, 2007). Effective school systems and teaching engages students at multiple levels: social, academic, and intellectual. The second major systemic, although indirect, influence on student achievement is principal leadership (Hallinger & Heck, 2010; Leithwood et al., 2012; Robinson, Hohepa, & Lloyd, 2009; Robinson, 2011). This study has combined and leveraged these two research findings to determine if principals and teachers working together can influence student intellectual engagement by paying attention to the role of formative assessment practices, specifically descriptive feedback (Hattie et al., 2007).

Research Problem

Research indicates that significant numbers of students are intellectually disengaged from their school work for the majority of their public school life, yet most are able to graduate from high school at one level or another, though intellectually disengaged (Dunleavy et al., 2012; Pope, 2001; Willms et al., 2009). Despite the vast amount of time, energy and resources dedicated to student education, public education systems are unable to capture the minds of its students and deeply intellectually engage them and the vast majority of older students endure their last school years as something they must do, instead of school being something they want to do. Traditional assessment practices play a role in this disengagement process. There has been little discussion as to why this phenomenon occurs.

Much work has been done to determine the levels of student engagement in schools across Canada (Willms et al., 2009). In general, current student academic success is measured against the existing backdrop of very low student intellectual engagement levels across Canada (Willms et al., 2009). Considering school systems measure system success by measuring student achievement it would serve school systems well if they were able to change the conditions that create this undesirable reality. It stands to reason that increasing student intellectual engagement in their school work would increase

student achievement across all levels. Because what effective teachers' do, and how effective principals' lead influence student achievement more than any other factors, it is by involving these two principle groups that greater gains should be made with increasing student intellectual engagement.

Student intellectual engagement is in part a motivation issue and is key to students enjoying their school experience and in particular the learning process, thus a focus of this study (Deci, 1971; Harlow, Harlow & Myer, 1950; Pink, 2009). It is clear from the research that the type of assessment and grading practices, the external reward structures built into current education systems, are responsible for demotivating many students (Deci, 1971; Harlow et al., 1950; Pink, 2009). According to Butler (1988) the traditional extrinsic reward approach to providing summative feedback, in other words marks and grades, to students about their work does not support developing the intellectually engaged, high achieving student, school systems now want to develop (Alberta Education, 2011, 2012, 2013). Butler's work clearly illustrated that rich descriptive feedback is more intrinsically motivating, focused more on student learning and practice, and included more student input that lead to greater student achievement across the entire student population. These well-known findings underscore the importance of making fundamental changes to current school system assessment practices that shift the assessment focus from that of marks and grades, summative measures, to student practice and learning, formative measures.

The work of Robinson (2011), Leithwood et al. (2012), and Hattie (2009) clearly illustrate the importance of principal leadership and teacher practice on impacting student achievement and to where the most promise is for increasing student intellectual engagement. The question that can be asked as a result of this research is if principal leadership and teacher practice focused on formative assessment processes, specifically descriptive feedback, would student intellectual engagement increase? The current research reality does not address this question.

To summarise, this study aimed to demonstrate how principals working with teachers that focused more on using formative assessment practices including descriptive feedback for student work could impact student intellectual engagement, and as described above student motivation, and ultimately student achievement. Focusing principal leadership on transitioning current teacher assessment practices would be necessary for these aims to be realized (Willms et al., 2009; National Research Council, 2003).

Purpose Statement and Research Questions

The purpose of this study was to examine the impact that student-centered principal leadership and teacher formative assessment practices have on student intellectual engagement. It was anticipated that a clearer understanding of the impact formative assessment practices have on student intellectual engagement, the better principals and teachers, thus school systems, will be able to more effectively organize, plan for, and implement formative assessment practices that intellectually engage students in their school work so that the student school experience is more rewarding. Further to this, principal leadership can then more confidently support changes in teacher assessment practice with respect to creating a shift from assessment practices that disengage students to assessment practices that intellectually engage students based on the new findings. The following research questions drove the study.

Research Questions:

1. How do principals create the conditions in a school under which teachers change their assessment practices to intellectually engage students?

2. How do principals support teachers in gaining the requisite knowledge and skills they need to be able to achieve the school goal of implementing formative assessment practices that more deeply engage students intellectually?

3. What can principals do to remove barriers that teachers experience in implementing formative assessment practices that support students in becoming more deeply engaged intellectually?

4. To what degree do principals utilize a theory of engagement, as described by Robinson (2011), when working with teachers to bring about changes in assessment practices that more deeply engage students intellectually?

In addition to these four central questions about student-centered principal leadership, measures about the impact of principal leadership on teacher formative assessment practice, and the impact of teacher formative assessment practice on student intellectual engagement are also central to the studies conceptual framework and findings.

Significance and Rationale

Previous research has clearly described the problem of student intellectual disengagement from school (Willms et al., 2009). The question yet to be answered is why are so many students intellectually disengaged from their school experience? One of the goals of this study was to determine if there was a link between student intellectual disengagement and the type of assessment practices being used at school. Do summative assessment practices demotivate many students and thus disengage students intellectually while at school? If so, what role, if any, can a principal play in transforming teacher assessment practices within a school from a focus on summative assessment practices to formative assessment practices? If there is a link established between the type of assessment practices and student disengagement then this link can be used to help principals to support teachers in changing from traditional summative assessment practices to more formative assessment practices to more deeply engage students intellectual.

While some research has explored classroom practices and their impact on student intellectual engagement, the connection between assessment practices and descriptive feedback cycles and student

intellectual engagement has not been examined in any detail particularly as these apply to how principals lead this kind of change. As principal leadership and teachers have the greatest impact on student achievement, can they work together to create changes in assessment practices that deeply engage students intellectually?

Researcher

I am currently a principal working within a school district that had been deeply involved in bringing about change in assessment practices across the district and consequently within my own school. This change was one that required me to make a philosophical movement from assessment practices focused primarily on marks and grades and reporting student learning, a summative reporting system, to a different assessment practice focused more on formative assessment practices, where assessment is used as an essential tool to engage and support students in their own learning. I have been involved in education for over three decades and have historically focused on summative assessment practices over the course of this time and I have lived experience with how students have reacted to this approach to assessment. That said, I was not convinced of the need to change my assessment philosophy, but because it was mandated by my school district I had little choice but to learn about it as quickly as I could as I was tasked with helping my teachers to make this shift in their practice and was ill equipped to do so. That said, formative assessment practices were not foreign to me. Having a central focus on this approach was. Like me, many of my teachers were not convinced a change was necessary, and as the instructional leader of the school, I needed answers on why change was needed and began my inquiry with Ken O'Connor's (2007), *A Repair Kit for Grading: 15 Fixes for Broken Grades*, which led me to Black & Wiliam's (2001), "Inside the Black Box". These reading were enlightening and invigorating and encouraged me to continue the process of uncovering the why and how of formative assessment. From this inquiry, I came to believe that assessment practices needed to support student

learning by helping to encourage and motivate students to be engaged more deeply in their learning long before the summative mark was applied. Encouragement and motivation could only be offered to students if teachers had the skills to be able to provide more specific feedback to them than the traditional uninformative direction to study more or try harder. Providing students' with supportive feedback related to task clarity, process clarity, and self-regulation clarity allows them to be able to take the next steps in their learning with certainty and this in and of itself is supportive, encouraging, and motivating for students. With this revelation, I determined to learn all I could about principal leadership, teacher practice, change processes, and formative assessment practice, and how to impact student intellectual engagement.

Surprisingly, some of my teachers, and others across the division, as well as some students and parents, did not share my enthusiasm for this new assessment focus. The professional and political opposition experienced within my school, and within the school division from some teachers, students, and parents had been unexpected and unplanned for. The political opposition quickly became so volatile that in the 2013 trustee election 6 of 8 board members were replaced, which quickly led to the replacement of the superintendency and a renunciation of parts of the new assessment procedure. This event highlighted the critical importance discussed by Mourshed et al. (2010) regarding the importance of understanding and reading the political context to determine the readiness of those anticipated to support systemic change.

As a principal of a grade 1-12 school that worked extremely hard to understand the rationale for the changes in assessment philosophy and practice, this Board decision was discouraging because it has been my lived educational experience to witness so many young children come into the public school system, excited and engaged in learning, only to see that excitement change to either compliance, disengagement, or a complete focus on the external reward of marks, as manifested in the often repeated

question by students, "Is this for marks?" that almost every educator is repeatedly asked. If the answer to this question is "No." then it is not worthy of student engagement in the eyes of these extrinsically motivated students (Pope, 2001). To engage in a school task for the sake of just learning is a perplexing experience for too many students. Students motivated by marks can do well in the system, but too many students are not motivated by marks, particularly in a system where there is very limited room for those at the top (Willms et al., 2009). Many students in the later grades are satisfied to just get through their course of study and get their passing mark with little real academic or intellectual engagement required of them. It has become very clear to me that too many participants in the school system are quite prepared to maintain the status quo, despite the overwhelming evidence recommending movement towards something better for all students. For positive change to continue to take place within schools and school systems strong research and skilful leadership is required to navigate this turbulent context. As a school principal, how could I help my teachers move their school practice from the traditional summative focused assessment philosophy towards a new approach in support of student learning and intellectual engagement wherein students found themselves intrinsically invested in their own school work?

Definition of Terms

This section defines the terms used in the study to define student engagement. Student engagement is multifaceted and subtle distinctions need to be made so that confusion about what student engagement is and what it is not is avoided. Thus, student engagement, for the purposes of this study, can be described as occurring within three major domains: social, academic, and intellectual. Student engagement and its subsets are defined for the purposes of this study as (Willms et al., 2009):

Student engagement: The extent to which students identify with and value schooling outcomes, have a sense of belonging at school, participate in academic and non-academic activities, strive

to meet the formal requirements of schooling, and make a serious personal investment in learning.

Academic engagement: Students' participation in the formal requirements of schooling – for example, completing assignments, attending classes, and accumulating credits for graduation.

Intellectual engagement: A serious emotional and cognitive investment in learning, using higher-order thinking skills (such as analysis and evaluation) to increase understanding, solve complex problems, or construct new knowledge.

Social engagement: A sense of belonging and participation in school life. (Willms, et al., 2009, p. 43)

Student intellectual engagement is the focus of this study because it is at this level of engagement that student learning is centered.

This section defines the terms used in the study to define assessment practices. Assessment is also multifaceted and subtle distinctions need to be made so that confusion about what assessment means is avoided. Thus, definitions with regards to assessment practices for the purpose of this study are defined as follows (Cooper, 2010):

Assessment: gathering data about student knowledge and/or skills, either through informal methods, such as observation, or formal methods, such as testing.

Assessment as learning: assessments as a metacognitive process involving students' setting their own learning goals and reflecting on and adjusting their own learning.

Assessment for learning: assessment designed primarily to promote learning. Assessment for learning includes both initial, or diagnostic, assessment and formative assessment. Early drafts, first tries, and assignments used as practice are all examples of assessment for learning.

Assessment of learning: designed primarily to determine student achievement at a given point in time. Summative assessments are assessments of learning. Report card grades should be based on a summary of data from assessments of learning.

Criterion-referenced assessment: assessment that measures students' performance against a set of predetermined performance criteria.

Formative assessment: assessment that occurs during the learning process and provides feedback to both students and teachers to help improve learning; one element of assessment for learning.

Norm-referenced assessment: assessment that compares students' performance with a normed sample of student performance; achievement is measured by comparing one student's work with the work of other students.

Summative assessment: assessment that occurs at the end of a significant period of learning and summarizes student achievement of that learning. (Cooper, 2010, pp. 253-254)

Definitions with regards to motivation for the purpose of this study are defined as:

Intrinsic motivation: involves engaging in a behavior because it is personally rewarding; essentially, performing an activity for its own sake rather than the desire for some external reward. Examples of behaviors that are the result of intrinsic motivation include:

- Participating in a sport because you find the activity enjoyable
- Solving a word puzzle because you find the challenge fun and interesting
- Playing a game because you find it exciting

In each of these instances, the person's behavior is motivated by an internal desire to participate in an activity for its own sake, for the enjoyment.

(http://psychology.about.com/od/motivation/f/difference-between-extrinsic-and-intrinsic-motivation.htm)

Extrinsic motivation: occurs when we are motivated to perform a behavior or engage in an activity in order to earn a reward or avoid a punishment. Examples of behaviors that are the result of extrinsic motivation include:

- Studying because you want to get a good grade

- Cleaning your room to avoid being reprimanded by your parents

- Participating in a sport in order to win awards

- Competing in a contest in order to win a scholarship

In each of these examples, the behavior is motivated by a desire to gain a reward or avoid a negative outcome, the punishment.

(http://psychology.about.com/od/motivation/f/difference-between-extrinsic-and-intrinsic-motivation.htm)

Plan for the Dissertation

This dissertation is organized into six chapters that explain the research. Chapter 1 outlines the process of the study, provides a context for the research, explains the problem and the rationale for the study, presents the research questions that will be examined, shares the researchers perspective, experience, assumptions, and the significance of the study. Finally, the definitions of terms of the study are delineated. Chapter 1 outlines the plan for the dissertation.

Chapter 2 reviews the critical literature relevant to the role of principal leadership, teacher practice connected to formative assessment practices, and the impact of these on student intellectual engagement and student motivation.

Chapter 3 presents the methodology used for the research study. The methodology is introduced and the research questions are revisited. The method and rationale for the research is explained. The three cornerstone principles and the four phases of the design-based research process are described. The research population is described as well as the research setting. The processes of meetings and interviews, questionnaires, interventions, and data collection and analysis are explained. Ethical considerations designed to protect the participants are outlined and the steps taken to comply with the Research Ethics Board are clarified. Issues of trustworthiness are clearly identified and the delimitations and limitations of the study are reviewed. Chapter 3 frames the entire research process for the study.

Chapter 4 presents the five findings of the study based on the four research questions and the conceptual framework of the study. The findings are organized around the conceptual framework and each category of the framework is addressed with supporting data from the study, and the processes used to obtain the data are clearly delineated. The major categories presented from the conceptual framework are: principal leadership practice, teacher assessment practice, and student intellectual engagement.

Chapter 5 offers the interpretation of the findings presented in Chapter 4. The discussion is organized into four sections derived from the four research questions. These are principal leadership practice, teacher assessment practice, student intellectual engagement, and researcher assumptions.

Chapter 6 summarizes the research, draws conclusions, and makes recommendations in the categories of principal leadership, teacher formative assessment practices, and student intellectual engagement, and makes recommendations for further research in each of these groups.

Chapter 2: Review of the Relevant Literature

Overview

Four bodies of literature are presented in this chapter. The first section outlines the significance of the role of principal leadership as it indirectly impacts student achievement. The second section reviews the importance of the tool of formative assessment practice as it influences student engagement. The third section appraises the topic of student engagement and the widespread educational challenge it is to engage students intellectually. The forth section examines how critical intrinsic motivation is to student intellectual engagement. These bodies of literature have been reviewed with a focus on examining the possible relationships that exist between principal leadership, teacher formative assessment practices, student intellectual engagement, and student motivation.

Principal Leadership

Central to this study is principal leadership. Each research question is focused on the role of the principal. For the purposes of this study, the research questions provide the framework for the literature review or this section.

1. How does a principal create the conditions in a school under which teachers change their assessment practices to intellectually engage students?

2. How do principals support teachers in gaining the requisite knowledge and skills they need to be able to achieve the school goal of implementing formative assessment practices that more deeply engage students intellectually?

3. What can principals do to remove barriers that teachers experience in implementing formative assessment practices that support students in becoming more deeply engaged intellectually?

4. To what degree do principals utilize a theory of engagement when working with teachers to

bring about changes in assessment practices that more deeply engage students intellectually?

It is more likely that formative assessment practices will be implemented within a school teaching

community when the school principal makes it a priority for the school. As well, school leadership must

be able to give room for the possibility that formative assessment practices must include self and peer-

assessment as these practices are most likely connected to student motivation and student engagement,

particularly student intellectual engagement, and that these connections are worth pursuing (Black et al.

1998, 2001; Hattie, 2009; Hattie et al., 2007).

Let us begin with what we know about school leadership related to the above questions. We

know that school leadership is second only to what teachers do in their classrooms in improving student

achievement (Hopkins et al., 2010; Leithwood, Harris & Hopkins, 2008; Leithwood et al., 2012;

Robinson, 2011). Thus what principals do with teachers is particularly important. Both Robinson, and

Leithwood and Louis identify common leadership practices that principals must focus on for school-

wide improvement to occur. As these findings relate to this study, they are: first, the capacity for setting

direction or establishing goals and expectations; second, the capacity for developing people or leading

teacher learning and development; third, the capacity for ensuring quality teaching or improving the

instructional program (Leithwood et al., 2012; Robinson, 2011). Each of these capacities will be

reviewed.

Establishing goals and expectations, when implemented appropriately, has a moderate effect size

of 0.42 when it comes to impacting student achievement (Robinson, 2011). This mechanism works

indirectly when it is used to focus the work of teachers on promoting learning and student achievement

(Robinson, 2011). For a group to achieve a particular set of goals they need to feel personally committed

to the goals and believe they have the capacity to achieve them. Herein lays the challenge as Black et al., (2001) report with regards to implementing formative assessment practices.

> Most of the teachers in this study were caught in conflicts among belief systems, and institutional structures, agendas, and values. The point of friction among these conflicts was assessment, which was associated with very powerful feelings of being overwhelmed, and of insecurity, guilt, frustration, and anger…. This study suggests that assessment, as it occurs in schools, is far from a merely technical problem. Rather, it is deeply social and personal. (p. 11)

This challenge takes place on both fronts as teachers who are very comfortable with traditional assessment methods cannot commit to a goal they do not desire, and because they see no need for changing their assessment practice, they see no need to develop their capacity to do assessment differently. Lacking commitment to a goal leaves little room for moving teachers ahead with their practice in an area they are not committed to. Elmore (2000) suggests one strategy that may encourage forward movement which he describes as follows:

> People make these fundamental transitions, by having many opportunities to be exposed to the ideas, to argue them into their own normative belief systems, to practice the behaviours that go with these values, to observe others practicing those behaviours, and, most importantly, to be successful at practicing in the presence of others (that is, to be seen to be successful). (p. 31)

Black et al. (2001) recommend the same strategy of creating and using "living examples of implementation" (p. 10) by respected, confident teachers as a part of their four-point scheme for implementing steps for improving formative assessment practices.

Robinson (2011) also provides strategic advice to create goal commitment, and summarizes very specific mechanisms to use to achieve this, depending on the challenge to the goal. Each of these centers around three understandings, the first of which is to focus on creating a discrepancy between the current

reality and the desired reality. In other words, establishing that past assessment practices have not been accurate and are not supportive of student learning, while the new assessment practices are more accurate and more supportive of student learning and these are the reasons why. The next is to motivate persistent goal-related behaviours, then focus attention and effort on the goal to be achieved. Continuing to come back to how the new assessment practice is better for students and their success, helps to keep the goal out front. Needless to say, the more the new goal takes reluctant learners out of their comfort zone, the more time it will require to imbed these strategies and for goal achievement to be accomplished. Thus maintaining goal commitment is integral to goal achievement. Focussing on the overall goal with an emphasis on how this new practice is better for students helps to move people forward.

Leading teacher learning and development has an effect size of 0.82, the largest of all leadership capacities (Robinson, 2011). Elmore (2002) declares, "For every increment of performance I require of you, I have a responsibility to provide you with the additional capacity to produce that performance" (p. 5). Elmore clearly establishes the responsibility that leaders have to those who have to be able to perform what is required of them. Successfully implementing this leadership capacity goes a very long way towards gaining commitment of all those required to achieve the goal, and the most important way for this to be accomplished is for school leaders to be involved in the very same training that the teachers are receiving (Robinson, 2011). Perhaps this is in line with Levin's (2011) finding that when teachers are asked about what influences their beliefs about their practice more, they rank personal experience and colleagues above research. It is possible that principals who are involved in the same professional development as their teachers are seen as more credible colleagues, and what is better is if these leaders are familiar with the research and are using it in staff professional development decisions and training.

Robinson (2011) offers practical approaches on how to implement this leadership capability. Building teacher capacity is best done as a collaborative process, that builds the school's instructional program coherence, focusses teacher practice on student improvement, including meaningful content and processes, and provide multiple opportunities to learn, to name a few of these approaches. The most useful recommendation pertains to a method identified as theory engagement that helps to shift teacher resistance to teacher engagement moving goal commitment forward in a powerful way (Robinson, 2011, pp. 115-122). This is an important practice to consider for implementation purposes, particularly if it is a school goal to impact every teachers' practice in every classroom, across all grades and subjects in the school and this applies equally for school districts. Many teachers struggle with formative assessment practices (Black et al., 2001) and many have not developed the capacity to implement a formative assessment practice goal.

The effect size for ensuring quality teaching (Robinson, 2011) is 0.42, another moderate influence of school leadership. It is well understood and widely accepted that what the teacher does in the classroom is the single most important factor impacting student learning. Principal leadership impacts the quality of teaching. Principals that lead, in terms of coordinating a coherent instructional program, by providing useful feedback to teachers, and using data to improve the instructional program, can impact the quality of instruction in a positive way (p. 83). Creating a coherent instructional program requires the development of a common instructional framework, centered on one or more fundamental academic goals, such as formative assessment practices, and organizational and resourcing procedures need to focus on these goals to achieve them (p. 84). A coherent instructional program allows a learning program to reinforce similar vocabulary, teaching and learning strategies, ideas, and similar assessment practices that are the results of teachers collaborating and students being the recipients of similar approaches. Quality teaching focuses on linking the essential learning and skill outcomes, to student

learning activities, that socially and intellectually engage students, and to appropriate formative assessment practices, that support students in achieving success in their learning (Black et al., 2001; Cooper, 2010; Robinson, 2011). Lastly, principals help to build the capacity of teachers to analyze local student data that is relevant, easily accessed, and timely given the goal of instructional improvement. Teachers need to foster the habit of inquiry about their own practice and to develop methods to go deeper into this inquiry process, possibly incorporating Robinson's ladder of inference approach (pp. 97-101).

This section introduced the importance of principal leadership on indirectly influencing student learning and achievement. The research questions were used as a framework for outlining the focus of the work required by school principals in developing an optimal learning environment. The commonalities between Leithwood et al. (2012) and Robinson (2011) were noted and the work of Robinson was drawn upon to provide the framework for the leadership discussion. School principals can have a measurable impact on student outcomes if they successfully navigate setting school goals and expectations, lead and be involved in teacher learning and development, and ensure quality teaching. These processes prove to be useful tools and practices for moving all teachers towards the school goal of implementing an assessment process centered on informing students about clear learning targets, providing rich descriptive formative feedback about where they are in relation to the learning targets, using outcome related feedback rather than mean average scores, and providing appropriate student practice prior to recording summative marks. Knowing how to implement these processes can help principals to achieve school goals more efficiently and effectively by helping to support and engage teachers in accomplishing the school goals with an eye on greater student success.

Formative Assessment

      This section will first introduce definitions for terms connected to the topic of formative

assessment, for the purposes of this study, and will briefly explore controversy over what the definition

of formative assessment is. Next, a brief review of the foundational, Black and Wiliam (2001) *Inside the*

Black Box and their three central conclusions offered therein are explored. Obstacles to the

implementation of formative assessment strategies are then presented, including my own personal

challenge as a school principal attempting to implement a new district assessment procedure. Following

this, the Scottish assessment experience is compared to the United States experience with a connection

made to the province of Alberta. It concludes with a brief review of what the critics of the research

conducted by Black et al. (2001) and others have to say about formative assessment findings.

      Assessment today is a controversial topic as old assessment practices stubbornly give way to

new. Definitions pertaining to this section are provided below:

      Assessment: gathering data about student knowledge and/or skills, either through informal

      methods, such as observation, or formal methods, such as testing.

      Assessment for learning: assessment designed primarily to promote learning. Assessment for

      learning includes both initial, or diagnostic, assessment and formative assessment. Early drafts,

      first tries, and assignments used as practice are all examples of assessment for learning.

      Formative assessment: assessment that occurs during the learning process and provides

      feedback to both students and teachers to help improve learning; one element of assessment for

      learning.

      Summative assessment: assessment that occurs at the end of a significant period of learning and

      summarizes student achievement of that learning. (Cooper, 2010, pp. 253-254)

For the purposes of this study these definitions will apply though there is some controversy as to what formative assessment means (Black & Wiliam, 2009; Dorn, 2010; Shepard, 2005; Wiliam, 2004; Young & Kim, 2010). Dorn, and Young and Kim promote standardized measurement practices as a form of formative assessment, while Black and Wiliam, Wiliam, and Shepard assert that formative assessment is immediate in the teaching learning process so as to guide students in their understanding in the moment that new learning is required. This is the position I support. Black et al. (2001) "Inside the Black Box" became the pivotal formative assessment report of our time. Their research, "Assessment and Classroom Learning" (1998), a meta-analysis that began with a review of about 580 articles or chapters on assessment was narrowed to about half of those and when completed offered three authoritative conclusions reported in "Inside the Black Box" (2001).

First, Black et al. (2001) found that improving formative assessment practice raises standards as described above, like no other practice can, across all grade levels including post-secondary, across several school courses, and several countries. Solid formative assessment classroom practice "helps the (so-called) low attainers more than the rest, and so reduces the spread of attainment whilst raising it overall" (Black et al., 2001, p. 3). With regards to this first finding, Black and Wiliam summarize four characteristics across the studies surveyed:

All such work involves new ways to enhance feedback between those taught and the teacher, ways which require new modes of pedagogy—which will require significant changes in classroom practice.

Underlying the various approaches are assumptions about what makes for effective learning—in particular that students have to be actively involved.

For assessment to function formatively, the results have to be used to adjust teaching and learning—so a significant aspect of any programme will be the ways in which teachers do this.

The ways, in which assessment can affect the motivation and self-esteem of pupils, and the

benefits of engaging pupils in self-assessment, both deserve careful attention. (p. 3)

Second, there is a poverty of practice with regards to assessment for learning as Black et al.

(2001) reveal how formative assessment practices are unfocused or too generous, offer little information

for student next steps, is inadequate in the sciences, and how, "the criteria used are virtually invalid by

external standards" (p. 4). Black and Wiliam conclude this section with comments regarding the

difficulties with effective teaching focused on lower level testing, the lack of teacher sharing with

regards to questioning and teaching methods, and an over emphasise on quantity of student work, rather

than quality of student learning.

Third, there is sufficient know-how about how to do formative assessment more effectively.

Formative assessment practice is primarily for the student and their learning. Underperforming students

who have been in the school system for any period of time will already be suffering from the effects of

assessment practices, gone awry, that include rewards such as gold stars, grades, and class ranking

(Black et al., 2001, p. 6), consistently giving these students the message that they cannot be a high

achieving student. These students, and there are many of them, avoid the more difficult learning tasks,

spend their energy looking for the 'right answer', select the lower streams when given a chance to do so,

and avoid failure at almost any cost because of their fear of failure. Their school assessment experience

has taught them that they are inadequate, that being successful is something that they cannot do, and

they learn to avoid investing further energy in their education as they see themselves caught in the 'low-

attainment trap' (Black et al., 2001). Herein is the central link between student intellectual

disengagement, student lack of motivation, and poor assessment practices. Teachers need to be sure

students are clear on what the learning target is, that they know where they are in relation to that target,

and that they are able to provide the student with scaffolded strategies to enable them to get closer to the

target (Sadler, 1989). Black and Wiliam summarize that, "for formative assessment to be productive, pupils should be trained in self-assessment so that they can understand the main purposes of their learning and thereby grasp what they need to do to achieve." Utilizing formative assessment properly enhances student self-esteem, the student self-assessment skill set, and teacher practice (Hattie et al., 2007).

Teacher practice needs to include the following to be considered formative feedback, which is at the center of student improvement as cited in Clark (2011):

Feedback becomes formative when students are provided with scaffolded instruction or thoughtful questioning that serve as prompts for sustained and deeper discussion. This instructional approach closes the gap between their current level of understanding and the desired learning goal. Simply telling a student to 'try again' or 'reconsider your work' does not possess the qualities of formative feedback because it does not strategically guide (or scaffold) learning by telling the student how or why they need to do this. Feedback, therefore, becomes formative when learners: a) are engaged in a process which focuses on meta-cognitive strategies that can be generalized to similar problems of varying degrees of uniqueness; b) are supported in their efforts to think about their own thinking; c) understand the relationship between their prior performance, their current understanding, and clearly defined success criteria; and d) are activated as owners of their own learning. (p. 162)

Clark's (2011) discussion clearly defines the direction teachers must go to improve their practice if they desire to unlock the potential in students described over a decade and a half ago by Black et al. (2001). Providing students with clear, rich, specific, descriptive feedback as described above and as clearly laid out by Hattie et al. (2007) is central to providing formative assessment and impacting student performance.

Formative assessment practices have been met with a number of obstacles to implementation that underlie the complexity of the issue of implementation. First is the reaction of teachers to implementing the practice. Johnston, Guice, Baker, Malone and Michelson (1995), introduce this conflict by declaring:

> Most of the teachers in this study were caught in conflicts among belief systems, and institutional structures, agendas, and values. The point of friction among these conflicts was assessment, which was associated with very powerful feelings of being overwhelmed, and of insecurity, guilt, frustration, and anger…. This study suggests that assessment, as it occurs in schools, is far from a merely technical problem. Rather, it is deeply social and personal. (p. 359)

As a principal intimately involved in a school district initiative to implement formative assessment practices in the last five years this statement could not be more valid today. Many teachers have experienced great difficulty in abandoning practices founded upon the historical beliefs that the,

> Prevailing scientific rationalism ('scientism') requires the clear definition and measurement of an instructional process in order to establish its validity. …standardized assessments went from being a method of determining the academic achievement of the student, school or district to being the only metric that mattered" (Clark, 2011, p. 160).

This clearly resonates with Alberta teachers, with whom I have had discussions with regarding the provincial reality, who are deeply influenced by Provincial Achievement Tests in grades 6 and 9, and grade 12 exit Diploma Exams. For students planning on entering university, the number of Diploma Exams they are expected to write can be as few as two or as many as seven. It is my experience, as one of these teachers, that those who are teaching one of these grades or courses feels heavily the weight of the expectation of acceptable performance. While in policy these tests are not a measure of teacher performance, in practical and political terms this is not the case. While the *Inspiring Education* (2010) document signals a change in direction within Alberta Education with regards to some of these exams

the political, and practical classroom climate will continue to be impacted upon negatively because of them, unless they change.

As Clark (2011) describes, standardized testing practices have negatively impacted school systems by unduly creating unnecessary anxiety and dissatisfaction amongst students, by constricting the political educational focus to a set of unproductive numbers that move education towards infertile ground, and by damaging teacher professionalism and development as teachers are forced to focus on barren pedagogical practices sacrificing course depth for course coverage and not spending sufficient time on dealing with higher order thinking skills and related activities because these are time consuming and not pertinent to high stakes year-end exams. While teachers continue to face high stakes testing and old assessment practices continue to impede the adoption of new assessment practices, formative assessment implementation will continue to be a challenge for schools and systems until policy and practice mesh philosophically. Recently Alberta Education discontinued grade 3 Provincial Achievement Tests and have decreased the weighting of grade 12 Diploma Exams from 50% of the total course mark to 30% of the total course mark. While this movement is welcomed and encouraging is it sufficient?

Clark (2011) contrasts two assessment realities by comparing the Scottish experience to that of the United States. Scotland engaged in a very promising study that provides a strong case for what could happen if high stakes testing and teacher issues related to formative assessment were dealt with in a different manner. The Scottish 9 year, 1500 school study produced very convincing results with 100% of teachers increasing their understanding of the role of formative assessment with impact on their own motivation, 91% of teachers changing their classroom practice, 92% of teachers changing their assessment practices, and 97% of teachers improving their focus on student learning needs, to name just a few results (Clark, 2011, p. 169). Certainly the mood and confidence of teachers in Scotland is

something to be envied. Meanwhile, in the United States nothing could be further from the Scottish experience as the United States continues down the road of high stakes standardized testing at the dismay of Dr. Mary Sommers, former President of the National Association of Elementary School Principals, who stated, "As in current law, standardized test scores are raised to a level of importance that education research and practice indicate is unwarranted," (as cited in Clark, 2011, p. 164). Furthermore, the impact on students and staff of this United States assessment direction is unsettling as the research demonstrates clearly the negative impact of high stakes testing on low achievers and students of low self-efficacy, the very group this high level of accountability is supposed to be supporting (Bishop & Glynn, 1999; EPPI-Centre, 2002; Harlen & Deakin Crick, 2003; Harlen, 2006; McKinsey Report, 2009) (as cited in Clark, 2011). High stakes testing in the United States is comparable to high stakes testing in the Alberta experience. As summarized by Black and Wiliam, "The final irony is that it is precisely the demand for accountability, which has produced unprecedented pressure to improve education systems that is likely to be the biggest impediment to achieving that improvement" (as cited in Clark, 2011, p. 173).

Apart from teacher adoption obstacles which are complex, Bennett (2011) and Dunn and Mulvenon (2009) call into question the claims of formative assessment research, particularly that of Black et al. (2001) and Black et al. (2004). Dunn et al. claim that combining studies of mixed methodology and issues of internal validity are serious concerns to the claims that can be made regarding the successes reported on student motivation and achievement. Bennett also raises questions about the lack of clarity about an agreed upon definition of formative assessment within the education profession, how to effectively measure its impact or effect on student achievement, and implementation issues concerning teacher understanding and expertise in employing formative assessment practices. Despite these issues and concerns that Wiliam et al., (2004) acknowledge and caution readers about,

Bennett and Dunn et al. declare that the future of formative assessment practice looks *promising* and that the *potential* despite their issues with definitions, methodology, and practice is encouraging. Bennett and Dunn et al. collectively encourage researchers and the education community to continue to move this work forward by coming to terms with an agreed upon definition of formative assessment, by creating a stronger framework for doing the science of formative assessment, and by tempering the claims about its effectiveness. That said the work of Hattie et al. (2007) and Hattie (2009) and the Scottish experiment strongly support the direction and the work of Black et al. and Wiliam et al.. These foundational research papers and critiques reinforce the importance of conducting more thorough research that examines the connection between teacher formative assessment practices, student motivation, and student intellectual engagement.

In summary, this assessment section reviewed three questions introduced by the Black et al. (2001) report concerning evidence that improving formative assessment raises standards, that there is room for improvement in teacher practice with formative assessment, and that there are clear and useful ways for teachers to improve formative assessment practices. Next it examined the obstacles to formative assessment implementation that are connected to teacher belief systems and conflicts with educational policy and high stakes testing. Thirdly, it reviewed a case study of teacher formative assessment practice in Scotland and compared that to the United States and to a lesser degree the Alberta experience. Finally, criticisms directed towards issues related to mixed-methods design and internal validity, disagreements about the definition of formative assessment, the creation of a clearer framework for conducting studies, and being clearer about the claims that can be made from these studies were introduced and briefly commented on.

Student Engagement

Student engagement has a long history in educational research literature that began with a focus on the disengaged and marginalized student and has evolved to a more recent focus on student engagement as learning for all students, and as an accountability outcome (Taylor & Parsons, 2011, p. 4).This evolution will be reviewed. Historically, student engagement has focussed on finding ways to engage the attention of "at-risk"[1] students: the poor, the learning disabled, the physically and mentally handicapped, those with behavioural problems, and minority groups. It has emphasized finding ways to keep these students in school to avoid the predictive drop-out impact if interventions were not put in place (Finn, 1989; OECD, 2003; Willms, 2002). Without appropriate interventions and programs, these vulnerable children's chances of completing school successfully were greatly diminished (Willms, 2002). Finn (1989) explored two types of student drop-out: the first, a frustration self-esteem model that saw poor student academic performance as a cumulative driver of student disengagement and finally drop-out. Finn's (1989) research reported the following:

> This research confirms that dropping out, absenteeism and truancy, disruptive behavior in class, and delinquency are frequently exhibited concomitantly by the same individual. The behaviors are problems because they disrupt or vitiate the school routine, especially as it affects the particular youngster. And they may all be seen as outcomes of earlier patterns of withdrawal from the daily classroom and school routine. To this extent, this research can illuminate the processes that lead to complete withdrawal, dropping out. (p. 119)

Thus the student school experience directly contributed to school drop-out as their need to feel successful was not met and their only recourse, as they saw it, was to "oppose the context that is seen as responsible" school (Finn, 1989, p. 119). From Finn's work, a number of approaches on how schools

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[1] This term is used here as it was by Finn and his contemporaries in 1989 connecting to the development of the disengaged student.

could combat this predicted outcome were recommended, such as creating separate schools for at-risk students, rethinking discipline policies to help keep students in school, adapting curricular demands to the needs of at-risk students, developing and maintaining positive teacher-student relationships, and finally, changing teacher practices from teacher-centered instruction to more student-centered approaches (Finn, 1989). All of these approaches are seen in educational practice today, each with the goal of engaging students more deeply so they achieve graduation.

The second process, a participation-identification model, postulated that if students did not become involved in the life of the school by participating in school activities, or by identifying personally with the school, they are more likely to drop out of school. Finn (1989) defined school identification as thus: "First, students who identify with school have an internalized conception of belongingness-that they are discernibly part of their own experience. And second, these individuals value success in school-relevant goals" (p. 123). The opposite of participation and identification with the institution of school are feelings of alienation, isolation, and being disengaged and disconnected. School success requires minimum levels of participation for learning to occur. Finn (1989) outlined four levels of student participation. The first level begins in the first grades of student experience wherein the student needs to attend, be prepared, and respond to directions and questions from the teacher. The second level requires that the student initiate questions and dialogue with the teacher and that they display some enthusiasm by spending extra time in school, before, during, or after doing more than is required. This engagement level can develop to the third level wherein students involve themselves in school clubs and sports, and may even move into community participation over time. The final level is where students are able to engage themselves in school governance connected to goal setting, decision making, and input into the school's disciplinary and other policies. Each of these levels describes a deeper level of student engagement in their school life. Students that do not engage in this cycle of

participation and identification development find themselves more at risk of dropping out of school (Finn, 1989).

Historically, these cognitive or behaviorist frameworks were the foci of student disengagement models and schools began to address the issue of dropping out by finding ways to address student frustration and self-esteem issues and ways to create a participation-identification environment for all students. This work, while foundational and important to the study of student engagement, was very narrow in scope as it was confined to understanding only the extreme results of student disengagement – the drop-out. Today student engagement includes a much broader scope, including many students who attend school regularly, but for all intents and purposes, are as disengaged from their school experience as a student that has dropped out.

From this earlier student engagement work focusing on students at risk of dropping out, it became more evident that students that were considered successful academically were not necessarily engaged in their school work as described so viscerally by Denise Pope (2001) in her work, *Doing School: How we are Creating a Generation of Stressed Out, Materialistic and Miseducated Students.* Pope clearly described how academic success in school work did not equate to student engagement in school and from her work the phrase "doing school" became popularised, indicating how too many students managed to be academically successful despite their intellectual disengagement from school. Pope's work was foundational in that students revealed their inner most thoughts about their school experience and what motivated them to do what they did in school and why, and this revealed how high achieving students were more intellectually disengaged from their school experience than first understood. A limiting factor about Pope's work was the small number of participants involved in her work. Pope's findings begged the question of just how wide spread student disengagement was in the general student population.

As Pope's (2001) work came forth, Douglas Willms was commissioned by the Organization for Economic Cooperation and Development (OECD) to conduct a multi-nation study on the topic of student engagement, participation and belonging resulting in the 2003 report called, *Student Engagement at School: A Sense of Belonging and Participation: Results from PISA 2000*. Expanding Pope's work, this study included over forty nations and thousands of students aged 15 years old. The scope was enormous, but its focus was only on two areas specifically – sense of belonging and participation in school as revealed through the survey questions. Pope's and Willms' studies instigated a shift towards broadening the scope for the topic of the disengaged student that would become much wider and deeper than the term student drop-out. Willms' OECD report further developed this work on student engagement by providing a definition for the term student engagement and reporting multinational findings on the topic of engagement that were new to the field.

Willms' (2003) provided a much needed broad explanation and definition of student engagement described below:

> Researchers have recently used the term *engagement* to refer to the extent to which students identify with and value schooling outcomes, and participate in academic and non-academic school activities. Its definition usually comprises a *psychological* component pertaining to students' sense of belonging at school and acceptance of school values, and a *behavioural* component pertaining to participation in school activities (Finn, 1989, 1993; Finn & Rock, 1997; Goodenow, 1993; Goodenow and Grady, 1993; Voelkl, 1995, 1996, 1997; Wehlage *et al.*, 1989). The psychological component emphasises students' sense of belonging or attachment to school, which has to do with feelings of being accepted and valued by their peers, and by others at their school. Another aspect of the psychological component concerns whether or not students value school success – do they believe that education will benefit them personally and economically

(Johnson et al., 2001). Students who do not feel they belong at school, or reject school values, are often referred to in the literature as *alienated* or *disaffected*. The participation component of engagement is characterised by factors such as school and class attendance, being prepared for class, completing homework, attending lessons, and being involved in extra-curricular sports or hobby clubs. In this report, the term *student engagement* is used in this broad sense to refer to students' attitudes towards schooling and their participation in school activities. (p. 8)

Thus the shift from the term drop-out to the terms engaged or disengaged student begins to define the work of describing how connected students are to their school and their school experience and expands the scope of the disengaged student beyond the at-risk student to include those attending but not engaged (Csikszentmihalyi, 1990, 1991, 1998; Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003).

Willms' (2003) findings from the OECD report moved student engagement research in new directions. First, any claims about students "who are disaffected depend on how the construct is defined and measured and on where the critical cut-point is set for determining who is at risk and who is not" (p. 53) suggesting a need for uniformity in these measures for comparisons sake. Second, student self-reports of their sense of belonging indicate that there are a high number of disaffected students. Third, the numbers of disaffected students varies greatly from school to school indicating that school policy and practice can contribute significantly to reducing student disaffection. Forth, schools that have strong engagement indicators tend to have strong literacy performance or in other words student achievement. Fifth, the relationship between a sense of belonging and participation are not strongly related to each other at the individual level. Sixth, "only about one-quarter (26%) of all students have high levels of engagement and strong literacy skills" (p. 53) and surprisingly, about 20% of all students have a low sense of belonging, but fairly high literacy performance, about 10% of students are regularly absent with moderately low levels of literacy performance, and about 17% of students have very low literacy

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performance but average levels of engagement, challenging the then popular notion that poor literacy performance and disaffection were closely linked. Seventh, Willms' results determined that there were "three dominant risk factors for student disaffection: living in a family of low socio-economic status… living in a single-parent family and being foreign-born", (p. 53), and students attending schools in low socio-economic neighbourhoods suggesting the influence of context. Willms' concludes that where schools had a strong disciplinary climate, good student-teacher relations, and high expectations for student success they had higher levels of student engagement, again suggesting the importance of context, this one being the culture of the school, as determined by the school's administration and impact of teachers' relationships on students. Because of its size and scope, this OECD study most certainly elevated the topic of student engagement and, more clearly defined the topic, and the factors impacting student engagement. That said, the definition of student engagement was still limited to student sense of belonging and student participation in school, as described in Finn's (1989) work.

In 2009, Willms, Friesen, and Milton released the first ever, *What did you do in School Today? Transforming Education Classrooms Through Social, Academic and Intellectual Engagement*, report that further developed the definition of student engagement in new ways, and contained new measures for examining student engagement. The definition of student engagement was broadened with this study as identified in Chapter 1 and reviewed below:

> Student engagement, for the purposes of this study, can be described as occurring within three
> major domains: social, academic, and intellectual. Student engagement and its subsets are
> defined for the purposes of this study as the following (Willms et al., 2009):
> **Student engagement:** The extent to which students identify with and value schooling outcomes,
> have a sense of belonging at school, participate in academic and non-academic activities, strive

to meet the formal requirements of schooling, and make a serious personal investment in learning.

Academic engagement: Students' participation in the formal requirements of schooling – for example, completing assignments, attending classes, and accumulating credits for graduation.

Intellectual engagement: A serious emotional and cognitive investment in learning, using higher-order thinking skills (such as analysis and evaluation) to increase understanding, solve complex problems, or construct new knowledge.

Social engagement: A sense of belonging and participation in school life. (Willms, et al., 2009, p. 43)

Willms et al. expanded the scope of engagement to go far beyond the constructs of sense of belonging and participation to include measures of academic or institutional and intellectual engagement (Dunleavy et al., 2012). These three areas of student engagement have provided a more complete picture of engagement and an opportunity to explore areas heretofore unexplored.

One focus of this research is the construct of student intellectual engagement. Intellectual engagement is precisely conceptualized by Willms et al. (2009) as they adapt Csikszentmihalyi's (1991) theory of flow defined as deep absorption in an activity that is intrinsically interesting, the culmination of concentration, interest and enjoyment, as opposed to boredom or apathy (Shernoff et al., 2003). In their work on student engagement, Willms et al. conceptualize intellectual engagement as a measure of two factors: skill and instructional challenge. When these two factors, skill and challenge are balanced, students experience flow or intellectual engagement in their school experience. This relationship is described below:

Applied to education, Csikszentmihalyi theorized four general relationships between skills and instructional challenge in students' experience of learning:

• High-Skills/Low-Challenge–students are more likely to feel that the challenges of learning are too few in relation to their skills, and they are not able to identify how they can make the experience more challenging. This leads to b o r e d o m , and to students disengaging because they see little relevance in what they are asked to learn.

• High-Skills/High-Challenge–students generally feel that their skills and the challenges of the tasks they are asked to perform are in b a l a n c e . These are the students that would frequently experience *flow* in the sense described by Csikszentmihalyi.

• Low-Skills/Low-Challenge–students are more likely to feel apathetic about learning because they find themselves in learning situations where they have low skills and the tasks they are asked to perform are of low-challenge. These are students who tend to give up because school work is inconsequential.

• Low-Skills/High-Challenge–students are more likely to feel worried or apprehensive (anxious) in learning situations because they have low confidence in their skills and the tasks they are asked to perform are perceived as too challenging.

This relationship between skills and challenge is said to be symbiotic, where skills are neither too low nor too high in relation to the challenge at hand. (p. 12)

This expanded, more developed definition of student engagement opens up new avenues of research that look promising; it may help us answer questions such as: In an effort to intellectually engage students in their schooling, instead of having so many students endure their school experience or drop out of school, what can principals and teachers do to address this unintentional negative impact of schooling and seriously engage students intellectually?

As stated above, it is well documented that students can do well in school and not be intellectually engaged in their schooling (Pope, 2001; Dunleavy et al., 2012). Willms et al. (2009) point to two significant considerations for such a study, the first being:

> Disengagement from school – whether a student leaves or struggles through to graduation – is also a significant source of inequity in Canadian society, not only because it places a large number of students at a disadvantage as they move into adult roles, but because disengagement is disproportionately experienced by students living in poverty, students with disabilities, and students from ethnic minority and Aboriginal communities (Audas & Willms, 2001; Caledon Institute for Social Policy, 2006; Community Health Systems Resource Group, 2005; Richards & Vining, 2004). (p. 7)

Thus student engagement is as much an equity issue as is gender, racial, or other forms of discrimination. Arguably, this issue is systemic in nature and needs to be addressed at this level. The second research consideration is as germane as the first in that students' time is as valuable as any adults, but unlike adults, students have no legal choice and must attend school as compelled by law. However, when in school many students find themselves enduring school instead of being engaged in it because it is so irrelevant to their lives, as described again by Willms et al. (2009) here:

> A great deal of thinking about educational change as it relates to student achievement and engagement is framed in terms of preparing students for their future after graduation from high school – to help students toward a good job or in the transition to post-secondary learning. However, we also have to recognize that young people's engagement in school affects not just their future, but the quality of their daily lives and experiences *now*.
>
> It is important to remember that young people are not just adults-in-training; their lives as they experience them now are as valuable and meaningful as those of the adults they will

become. How they feel about school and their own achievement is, for most young people,

central to their daily lives – whether they feel good about themselves and cared for at school;

whether they are frustrated, anxious, bored, or depressed; whether they feel vibrant and excited

by what they are learning; and, for that matter, whether they are learning at all. (p. 7)

Student intellectual engagement allows students to become involved in a world that has meaning for

them here and now where they can be successful contributing members to a society that they very much

need and that very much needs them. Given that we know intellectual engagement creates a sense of

purpose for students should we not pursue this goal? This idea will be connected to the review of the

topic motivation.

This section has provided a brief review of the development of student engagement as a research

topic. It began with a focus on the disengaged and marginalized, the student drop-out as described by

Finn (1989), and two models of student disengagement. Next, I described how the 2003 OECD Willms,

report elevated the level of interest in the topic of student engagement and the beginnings of an

expanded definition of the term. This section concluded with a review of the influence of the work of

Dunleavy et al. (2012) and Willms et al. (2009) and how it more clearly defined student engagement and

expanded the definition of student engagement, and how the construct of flow, as developed by

Csikszentmihalyi (1990, 1991, 1998) was incorporated into the construct of student engagement

(Dunleavy et al., 2012) helping to clearly define student intellectual engagement. Thus the discussion of

student engagement has moved from its beginnings from a focus on students in the margins (Meyer &

Rose, 2005) to focusing on its present state, student engagement as learning for all students and as an

accountability outcome (Taylor & Parsons, 2011, p. 4). I now ask: How is student intellectual

engagement connected to motivation?

Motivation

Motivation is either intrinsic or extrinsic (Harlow et al., 1950; Deci, 1971). It is driven by external rewards and punishment, or an internal personally satisfying drive. Intrinsic motivation involves engaging in a behavior because it is personally rewarding, essentially, performing an activity for its own sake rather than the desire for some external reward. Extrinsic motivation occurs when we are motivated to perform a behavior or engage in an activity in order to earn a reward or avoid a punishment. Csikszentmihalyi's (1991) construct of flow, as it pertains to personal, deep engagement in any activity, is a great model of intrinsic motivation. To reiterate, the theory of flow is defined as deep absorption in an activity that is intrinsically interesting, the culmination of concentration, interest and enjoyment, as opposed to boredom or apathy (Csikszentmihalyi's, 1991; Shernoff, et al., 2003). The optimal circumstance that describes student intellectual engagement, according to Willms et al. (2009), is in instructional challenge: student skill and student challenge are both high, and the student's efforts are absorbed in the task and this involvement is the reward, thus being in a state of flow. The available data reveal that relatively few students experience flow while participating in school (Dunleavy et al., 2012; Willms, 2003; Willms et al., 2009) leading to the conclusion that school systems provide very little intrinsic motivation for most students and that there is room for improvement.

This conclusion appears to be obvious in light of the way school systems are set up to reward student achievement, which is through the use of an external reward system, grades and marks. Knowing that an external reward system does very little to promote the kind of learning that is seen as desirable for 21st century learning, that is creativity, problem solving, collaboration, and conceptual thinking (Friesen, & Jardine, 2009; Friesen, & Lock, 2010), and that student intellectual engagement is promoted by creating learning tasks that match student skill with student challenge (Willms et al.,

2009; Wilms & Friesen, 2012), it would lead us to conclude that the prevalent grading, marking, and reporting system used in schools is deleterious to student intellectual engagement and that an assessment system that contradicts what we know about intellectual engagement needs serious revision.

It is understood through the early work of Harlow et al. (1950), and Deci (1971), that external rewards have limited value when creativity, problem solving, collaboration, and conceptual thinking is required and that what matters most for this type of work to be successful, are the internal drivers of autonomy, mastery, and purpose, each of which are intrinsic motivation drives (Pink, 2012). Would not students and schools be better served if systemically the three drivers of intrinsic motivation: autonomy, mastery and purpose, were embedded in the schooling process, which Willms (2009) reports are systemically absent from much of school life for many students? A school's measure of success rises and falls, as determined by achievement scores, which are based upon scores from multiple choice exams that are known to have limited scope and success in testing creativity, problem solving, collaboration, and conceptual thinking. Thus the type of work that is found to be most motivating to students is often not the type of work assessed in most classrooms and schools. Willms et al. demonstrate that when it comes to the engagement of students, schools and by extension school systems, are not very good at intellectually engaging the vast majority of students in their school work. It is clear that the external motivation drives of rewards and punishments, in other words, the norm-referenced grading systems used in the vast majority of schools, do not capture the hearts and minds of most students and in fact do the contrary, disengage students from school. At the heart of this disengagement process is the assessment focus. Will a refocussing of the assessment process to one that supports student learning for all, as a process of student individual improvement (Black et al., 2001; Perrenound, 1991), rather than one that focuses on rewards and punishment, help to better motivate students and thus

intellectually engage them more? Black et al. (2001) conclude their ground breaking report with these words:

> The main plank of our argument is that standards are raised only by changes which are put into direct effect by teachers and pupils in classrooms. There is a firm body of evidence that formative assessment is an essential feature of classroom work and that development of it can raise standards. We know of know no other way of raising standards for which such a strong prima facie case can be made on the basis of evidence of such large learning gains. (p.13)

The questions really are what is the connection between how a student is assessed and for what purposes (CEA, 2011), and how does this assessment focus impact student motivation (CEA, 2011), and in turn, how does assessment practice and motivation impact student intellectual engagement? Are these three constructs connected? Specifically, what role does formative assessment practices play in terms of intellectually engaging students? A review of formative assessment practices follows with the introduction of the studies conceptual framework, Figure 1 below.

Figure 1 outlines the roles and the relationship between the school principal, teachers' and their assessment practices and the impact of these practices on student motivation and intellectual engagement. The principal in the leadership role works with the teachers to accept and adopt the goal of formative assessment practices, as indicated in the districts assessment procedure. The principal also works with teachers to build their capacity to utilize the required skill set to implement the new formative assessment processes as outlined in, *The Assessment For Learning Journey* (Appendix D), teacher self-report survey. The teacher implements these practices into classroom instruction impacting student motivation as students are given clear targets, specific criteria, exemplars, opportunities for questioning, rich descriptive feedback about their school work in relation to the learning targets, self and

peer assessment practice that provides information about where they are in relation to the learning

targets, and strategies that support them in getting closer to the target.

Conceptual Framework

Figure1. Conceptual Framework

Figure 1. The conceptual framework for the study outlines the relationship and actions between the principal, teacher, and student.
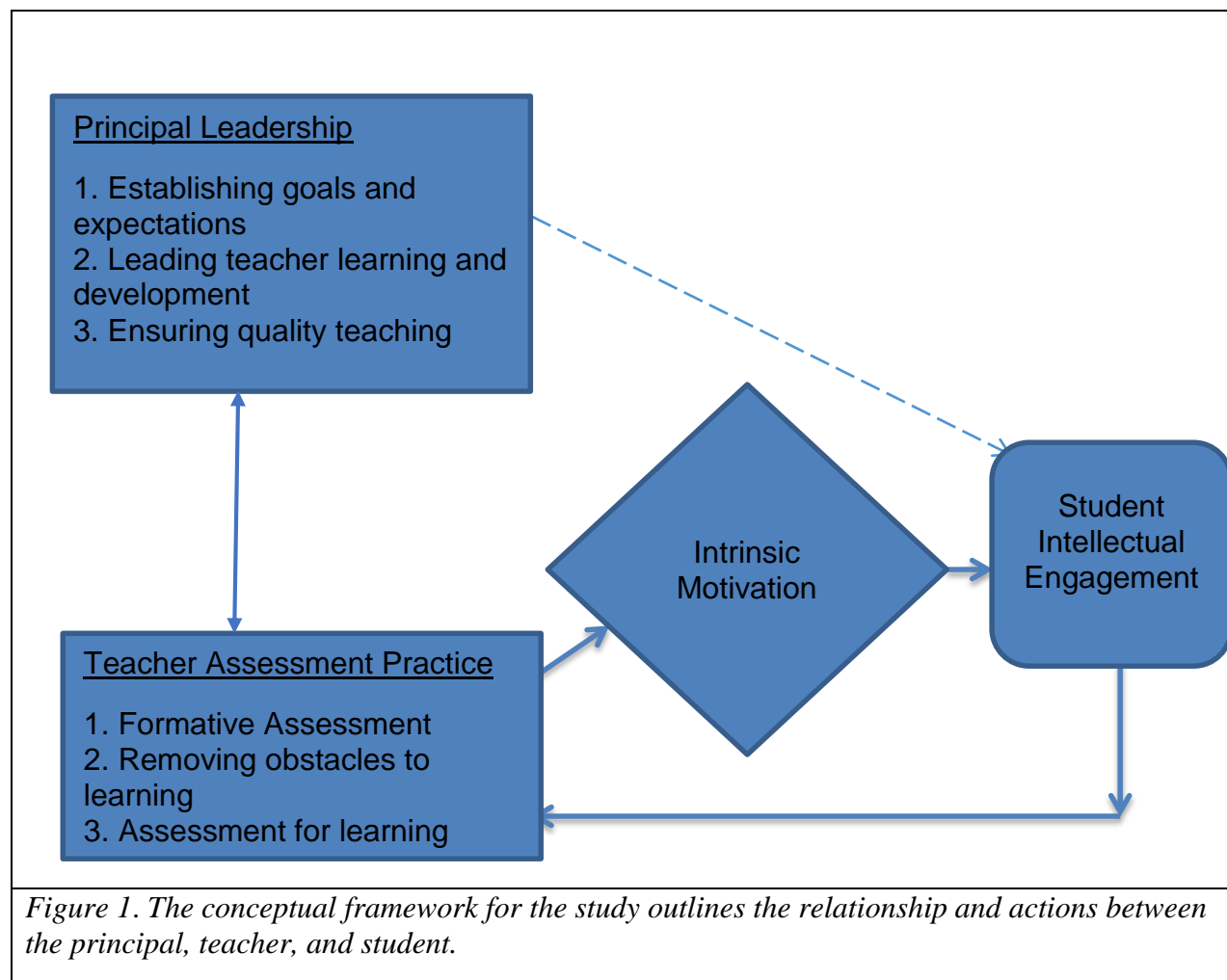
Students are also given multiple opportunities to practice with this iterative cycle of formative learning,

and other attempts to hit the target: formative assessment. As this cycle of learning and formative

assessment took place, the intrinsic motivation and intellectual engagement of students was measured

pre and post-study. As principals work with teachers to set goals and expectations, lead teacher learning,

and ensure quality teaching they engage teachers in a process of removing obstacles to more effective assessment practices that support students in their learning.

Summary

Four bodies of literature were reviewed in chapter 2. The first section outlined the significance of the role of principal leadership and how it can influence teacher practice in engaging in formative assessment practice and its impact on student achievement. The second section reviewed the importance of formative assessment practice as it influences student engagement. Student engagement was defined as it relates to this study, issues related to defining it were examined, and how it evolved to its current status were reviewed. Thirdly, assessment practices were reviewed as to how these impacted student motivation and student intellectual engagement. Forth, student motivation was explored as it relates to students' becoming intellectually engaged in their school work. Extrinsic and intrinsic motivation were examined with regards to their impact on student intellectual engagement and how critical intrinsic motivation is to student intellectual engagement. Finally, these four bodies of literature were reviewed with a focus on examining issues, debates, and perspectives as these relate to how principal leadership can influence teacher practice and how teacher practice can impact student motivation and student intellectual engagement. Next chapter 3 introduces the study's methodology.

This chapter describes the research methodology, research setting and context, the research sample, the data collection methods, how the data was analyzed, ethical considerations, issues of trustworthiness, and the limitations and delimitations of the study. It concludes with a chapter summary.

The purpose of this study was to understand the impact of principal leadership and teacher formative assessment practices on student intellectual engagement. This design-based research study brought four principals together to explore the literature review, the tools and processes to be applied in the study, and then required the principals to work individually at their school sites to apply this literature review knowledge and the tools and processes with their teachers. In their work the principals were asked to apply three areas of research from Vivian Robinson's, *Student-Centered Leadership* (2011): Establishing goals and expectations, ensuring quality teaching, and leading teacher learning and development, in their work with their teachers. These three areas of focus provided the framework for principal leadership direction. For the practical formative assessment tools and processes, principals used for support in their work with their teachers, the teacher self-report checklist referred to earlier as, *The Assessment For Learning Journey* (Appendix D), and for the formative feedback processes, the principals made use of Hattie et al. (2007) *The Power of Feedback* that explored specific processes of providing useful feedback to students about their work. While engaged in these actions with teachers, the principals were also asked to reflect on any insights about their work and how they thought their actions were impacting teachers and students.

Research Methodology and Design

This study employed a design-based research approach. Design-based research is framed by three cornerstone principles and four iterative stages (Ameil & Reeves, 2008). Reeves (2006) explains these cornerstone principles as,

addressing complex problems in real contexts in collaboration with practitioners; integrating

known and hypothetical design principles with technological advances to render plausible

solutions to these complex problems; and conducting rigorous and reflective inquiry to test and

refine innovative learning environments as well as to define new design principles. (p. 58)

The focus of the study was to explore how school principals could lead and support teachers to

implement a set of formative assessment practices that were meant to impact specifically on engaging

students intellectually. This leadership and assessment question is a complex problem, grounded in an

authentic school context that had yet to be explored. Much is known about the impact of principal

leadership (Fullan, 2014; Leithwood et al., 2012; Robinson, 2011) on school improvement and student

achievement, but little was known about what helps to specifically engage students intellectually. This

design-based research study provided an opportunity for school practitioners to conduct a rigorous,

collaborative, in situ investigation into this question that offers new insights into how principal

leadership and teacher formative assessment practices can be used to more deeply engage students

intellectually in their school experience.

Design-Based Research is framed in four stages as illustrated in Figure 2 (Ameil & Reeves, 2008).

Figure 2: Design-Based Research Stages

Design-Based Research			
Phase 1	**Phase 2**	**Phase 3**	**Phase 4**
Analysis of Practical Problems by Researchers and Practitioners in Collaboration	Development of Solutions Informed by Existing Design Principles and Technological Innovations	Iterative Cycles of Testing and Refinement of Solutions in Practice	Reflection to Produce "Design Principles" and Enhance Solution Implementation
Refinement of Problems, Solutions, Methods, and Design Principles			

Figure 2: Design-Based Research Stages illustrated per stage including feedback loops.

Note. Adapted from: "Design-Based Research and Educational Technology: Rethinking Technology and the Research Agenda, by T. Amiel and T. C. Reeves, 2008, *Educational Technology and Society, 11*(4), p. 34.

The application of each of these stages as applied to this study are described below and illustrated in Table 1.

Anderson and Shattuck (2012) recently summarized the elements of design-based research and its relevance in today's educational research landscape. The first component of design-based research is that it is situated in a real world educational context. This research study took place within four schools, with four principals, and a selection of their teachers working with the researcher to determine the impact of principal leadership on supporting teachers in implementing formative assessment practices to impact student intellectual engagement. The second component of design-based research is that it focuses on the design and testing of a significant intervention (Anderson et al., 2012). In this study the design interventions came from Robinson's text *Student-Centered Leadership*, specifically chapters three, five, and six, dedicated to principal leadership, and Hattie et al. (2007) *The Power of Feedback*, focused on teacher formative assessment practices, specifically clear descriptive feedback practices, the reflective teacher self-report survey *The Assessment For Learning Journey,* and attendance of myself and the school principals at a day long workshop presented by Vivian Robinson herself. The next component of design-based research is that it uses mixed methods (Anderson et al., 2012). Design-based research is pragmatic in its nature and will borrow from any methodology that helps to achieve the study's goals. This study employed two surveys that were quantitative in nature and two interviews that represented qualitative methods. The forth component of design-based research is that it uses iterative cycles seeking to improve the intervention by gathering data and making refinements and adjustments based on authentic feedback from all participants (Anderson et al., 2012). This data gathering and process of refinement took place over the five months of the study as principals applied new learnings

garnered from the research resources and as their teachers' applied new strategies to their formative

assessment practices striving to engage students more deeply. Finally, the researcher and participants in

the study worked together in a collaborative partnership (Anderson et al., 2012). All participants

collaborated about the processes of the design-based research approach, formative assessment practices

and tools, and student intellectual engagement, and decided the direction for principals working with

their teachers. Likewise, as the study progressed, the participants provided valuable feedback. In

addition to these summary principles from Anderson and Shattuck, I also drew on McKenney and

Reeve's (2013) critique of Anderson and Shattuck's work for a full sense of what design-based research

entails:

> The theoretical understanding emerging from DBR can be descriptive, explanatory or predictive
>
> in nature; it can also be more prescriptive/normative, providing guidance for future design
>
> efforts. Moreover, we feel compelled to point out an important characteristic missing from
>
> Anderson and Shattuck's characterization of DBR: Departing from a problem. The idea that
>
> DBR is initiated to address problems that are both scientifically and practically significant has
>
> been repeatedly addressed in the literature (Edelson, 2002; Ejersbo et al., 2008) and remains, in
>
> our opinion, central to the approach. (pp. 3-4)

For the reasons discussed above, design-based research was the ideal methodology for the study

as it allowed the participants and researcher to collaboratively and individually examine and refine the

interventions, in situ, with the hope of impacting teacher formative assessment practice and student

intellectual engagement in the classroom. This design-based research study was of benefit to us all, as

we entered the complex world of the classroom, in real time to observe what happened as principal

leadership focused on teacher formative assessment tools impacting student intellectual engagement.

Finally, this study provided insights about principal leadership dimensions impacting teacher formative

assessment practices and raised questions about student engagement theory heretofore unrealized that may be generalizable beyond the scope of this study. To conclude, Barab and Squire (2004) explain, "Design-based research is not so much *an* approach as it is a series of approaches, with the intent of producing new theories, artifacts, and practices that account for and potentially impact learning and teaching in naturalistic settings" (p. 2).

The study was developed through four iterative stages. The stages were designed to review, reinforce, reconnect, refocus, and move the work forward over the period of the study. The first stage involved a participant group meeting to introduce the purpose of the study, the research questions, the literature review, and the tools and processes to be used in the study, and provided a forum for clarification for any and all questions from the participant principals. The primary tool for principal use was the Robinson (2011) text, *Student-Centered Leadership* from which all principal questions and direction were derived. The four main research questions about principal leadership were addressed: (1) how do principals create the conditions in a school under which teachers change their assessment for learning practices to intellectually engage students? (2) How do principals support teachers in gaining the requisite knowledge and skills they need to be able to achieve the school goal of implementing formative assessment practices that more deeply engage students intellectually? (3) What can principals do to remove barriers that teachers experience in implementing formative assessment practices that support students in becoming more deeply engaged intellectually? (4) To what degree do principals utilize a theory of engagement when working with teachers to bring about changes in assessment practices that more deeply engage students intellectually? As well, it was explained that questions two to four each had a set of sub-questions that dug deeper into the four main questions totaling twenty-three questions in all, and that these questions would be the basis for the principal leadership direction and the interviews. Collaboratively, the steps of the study were determined. All participants then completed the

Informed Consent document, Appendix A. The principals were then given time to identify the teachers in their schools that would choose to work with them and to also spend time becoming more familiar with the scope of the study and internalize the research, processes, and tools as much as they were able.

The second stage involved principals working with their teachers and coaching them through, *The Assessment for Learning Journey*, teacher questionnaire to help the teachers frame the scope of the formative assessment work that they would be required to engage in in their classrooms. The teachers had six areas of formative assessment focus that they were required to pay attention to in advancing their assessment capacity. At this same time the first principal pre-study interview questions were completed. These interview questions were transcribed and in vivo coded and shared with the principals for their review and comments. These questions were created from Robinson's (2011) work on leadership and designed to cue the principals as to what her research requires leaders to do to actually impact students. Hattie et al. (2007) *The Power of Feedback* was also reviewed. Students were also required to complete the first *Tell Them From Me* survey providing baseline data regarding their intellectual engagement level. Having been cued, principals were ready for the next stage.

The third stage involved the principals working with their teachers to lead teacher learning by coaching and collaborating with them on how to best apply the designated tools and processes while working with their students. This stage included the strategies of checking inferences, using open-to-learning conversations, and engaging in theory competition discussions. Included in this stage was an opportunity for the principals and myself to attend a Vivian Robinson workshop on January 28th, 2015 in Edmonton, Alberta entitled, Building Capacity for Student-Centered Leadership. As she presented, multiple opportunities were given for our small group to engage in meaningful discussion about the topics presented. Attending this workshop helped to create a sense of group identity and purpose as each principal shared their challenges and insights about their own work at their schools. As Vivian Robinson

reviewed each of her five leadership dimensions each principal was able to appreciate more clarity about how her research applied to their day-to-day involvement in the study. As the principals continued with their work, I continued to work with the codes to synthesis and align them with possible themes and shared these with the principals again for their review and input. The principals continued to work with their teachers throughout this stage helping them to maintain their assessment focus and build their capacity.

Phase fourth involved the principals participating in the post-study interview questions that were asked of them in phase two, but this time they had had five months of experience working with and thinking about the content and processes of the study. As well, the principals revealed their reflections and insights on the processes they experienced as they worked with their teachers to more deeply engage their students intellectually. The second, *Assessment for Learning Journey*, teacher survey, and the second *Tell Them From Me* student surveys were administered. While each principal received all of the identical resource materials, explanations, transcriptions, codes, summaries, and probable themes, they each worked individually in their own schools and did so at their own pace, depth, and breadth determined by their engagement and capacity. Below Table 1 outlines the four phases of the study.

Table 1

Phases 1-4

Phase	Description of Each Phase
Phase 1 October 2014	All study materials emailed to participants previous to first meeting Group Meeting: Orientation to the Study, Purpose of the Study and Research Questions, Literature Review: Principal Leadership, Formative Assessment, Engagement and Motivation; Review of the Research Methodology; Review of Intervention Tools: V. Robinson's work and Hattie and Timperley article Teacher and Student Self-Report Surveys Reviewed Phase Two Action Planning Informed Consent Signed Principal Participant Demographic Survey Completed
Phase 2	Teacher Identification and First Steps Pre-study *The Assessment for Learning Journey* Teacher Survey Pre-study *Tell Them From Me* Student Survey

November-January, 2014	Individual Principal Reflective Interview Questions: Pre-study
	Transcription of Interviews and Coding
	Individual Phase Two Action Planning
	Introduction of *The Power of Feedback* (Hattie et al., 2007)
	Principal's Engaging Teacher's in Formative Assessment Practice
Phase 3 December – March 2014-2015	Transcription of First Interviews
	Coding of Transcriptions
	Sharing of Coding and Feedback to Principals
	Feedback From Principals to Me
	Sharing of Theme Development and More Feedback
	Attendance at the Vivian Robinson Workshop: Building Capacity for Student-Centered Leadership January 28th, 2015
	Principals Building Capacity Collaborating with Teachers
	Teachers Building Capacity in Classrooms
	Students Implementing New Teacher Formative Assessment Practices in Classroom
Phase 4 April 2015	Post-study *The Assessment for Learning Journey* Teacher Survey and Analysis
	Post-study *Tell Them From Me* Student Survey and Analysis
	Individual Principal Reflective Interview Questions: Post-study
	Transcription and Coding of Post-study Principal Interviews
	Sharing of Codes and Feedback
	Sharing of Theme Development and Feedback

Research Setting and Context

The process of purposeful sampling was used for participant selection (Creswell, 2012, p. 145). I presented an overview of the study to my school districts administrators at a meeting in August, 2014. My school district had been engaged in an assessment implementation process. This environment was ideal for the study because of the differing levels of implementation of the new district assessment procedure and the variety of school structures: K-12 schools, K-5/6 schools, K-9 schools, a K-4 school, a 5-12 school, a 7-9 school, a 7-12 school, and a 10-12 school. This variety of school structures lent itself to the possibility of the findings being applied to a wider scope for possible theory generation, artifacts, and practices.

Participant Population

Four principals, from four different communities, participated in the study. Two worked in separate communities of approximately 1000 people, one worked in a smaller community of approximately 500 people, and the final participant worked in a small city of approximately 17, 000 people. The schools varied in grade structure from K-9, 7-12, K-5, and a K-12 school. The school student populations ranged from approximately one hundred and thirty students to four hundred students.

The participants teaching and administrative experience ranged from sixteen years to thirty eight years teaching and eight to twelve years as a school administrator, respectively. The newest principal had two years' experience, while the most experienced principal had twelve years. Two principals had M. Ed. degrees in Educational Leadership, while two were in their second year of a M. Ed. Educational Leadership program.

The following table describes the four principals in the study.

Table 2

Participant Demographics

Principal Participants	Age	Years Teaching	Years as a Vice Principal	Years as a Principal	Gender	Level of Education	School Structure
Russel	41	16	0	12	Male	B. Ed. Secondary M. Ed. Educational Studies	K-9
Stephanie	46	22	4	4	Female	B. Ed. Secondary Mathematics M. Ed. 2nd Year Instructional Leadership	7-12
Brooke	60	38	5	6	Female	B. Ed. Secondary	K-5

						M. Ed. Educational Studies: School Leadership	
Matthew	40	18	6	2	Male	B. Ed. Secondary Social Studies M. Ed. 2nd Year Instructional Leadership	K-12

Data Collection

Data collection and analysis play a significant role in supporting the studies trustworthiness in that an "audit trail" is provided (Bloomberg et al., 2008). This trail is described here. Data collected in this study came from three sources that included audio recordings of the principal's responses to the studies interview questions derived from Robinson (2011), the *Assessment For Learning Journey* teacher survey, and the *Tell Them From Me* student survey. These methods of data collection provided three different perspectives and two different time periods within the study providing opportunities for participants to contribute to a broader, triangulated data base.

Data type A: Tell Them From Me Survey. The *Tell Them From Me Survey* (Willms et al., 2009) collects self-report data from students on their level of social, institutional, and intellectual engagement. This valid and reliable survey was created by Dr. J. Douglas Willms and is used extensively across Canada to provide data for a variety of purposes, but important to this study is that the survey generates data about student intellectual engagement that is normed to Canada's student population. The four school principals have administered this survey to all student participants in the fall and again in the spring to provide base-line data and exit data from the student perspective. Principals examined their own school data to determine if there were any significant statistical changes in the

groups of students whose teachers were involved in the study. Specific school-based data sets allowed for individuating one principal and set of teachers and students from another thus allowing richer, finer grained analysis than would have been possible with a single set of data.

Data type B: Assessment for Learning Teacher Survey. This survey was used as a pre and post-study measurement tool. It was administered to the teachers participating with the principals. It asks teachers to rate themselves with regards to six specific assessment for learning skills including identifying clear learning targets, providing specific criteria for assessment, providing exemplars of good student work, asking high level engaging questions, providing rich descriptive feedback about their school work in relation to the learning targets, providing self and peer assessment opportunities to students that provide information about where they are in relation to the learning targets, and strategies that support them in getting closer to the target. These six areas are targeted formative assessment skills that provide insight into teacher capacity growth as an outcome of working with specific principal leadership input.

Data type C: Structured Audio Recorded Principal Reflective Interview Questions. Two recorded structured interviews were the primary source of data for the study. These questions are the four primary questions that frame the entire study identified in chapter one. Connected to these four questions are the sets of sub-questions. Both interviews used the identical twenty three questions that were derived from Robinson's (2011) work. The first set was recorded, transcribed, and coded at the early stages of the study and the last set was an exit interview involving the same processes. This data set provided the main themes for the chapter four analysis.

Below Table 3 outlines the data sources including the questions, the type of data, the data source, and the method of analysis.

Table 3

Data Coherence Template

Research Questions	Data Type	Data Source	Method of Analysis
Principal participant demographic survey instrument questions.	Participant demographic information questions.	Appendix B: Principal Participant Demographic Survey Instrument	Table of demographic data collected illustrating/comparing participant principals age, experience, training, etc.
How do principals create the conditions in a school under which teachers' change their assessment for learning practices to intellectually engage students?	Questionnaire: Structured interview with written reflections, audio recorded	Appendix C: Principal Reflective Interview Questions: Question 1	Qualitative Data Analysis of transcribed interviews: Identify major codes, themes, report findings, and interpret findings (Bloomberg & Volpe, 2008, p. 100)
How do principals support teachers in gaining the requisite knowledge and skills they need to be able to achieve the school goal of implementing formative practices that more deeply engage students intellectually?	Questionnaire: Structured interview with written reflections, audio recorded	Appendix C: Principal Reflective Interview Questions:: Question 2: A-F	Qualitative Data Analysis of transcribed interviews: Identify major codes, themes, report findings, and interpret findings (Bloomberg & Volpe, 2008, p. 100)
What can principals do to remove barriers that teachers experience in implementing formative assessment practices that support students in becoming more deeply engaged intellectually?	Questionnaire: Structured interview with written reflections, audio recorded	Appendix C: Principal Reflective Interview Questions: Question 3: A-G	Qualitative Data Analysis of transcribed interviews: Identify major codes, themes, report findings, and interpret findings (Bloomberg & Volpe, 2008, p. 100)
To what degree do principals utilize a theory of engagement when working with teachers to bring about changes in assessment for learning	Questionnaire: Structured interview with written reflections, audio recorded	Appendix C: Principal Reflective Interview Questions: Question 4: A-F	Qualitative Data Analysis of transcribed interviews: Identify major codes, themes, report findings, and

practices that more deeply engage students intellectually?			interpret findings (Bloomberg & Volpe, 2008, p. 100)
To what degree do students demonstrate deeper intellectual engagement in their school work?	Pre and post self-reflection student surveys	Tell Them From Me Survey Questions from The Learning Bar	Quantitative analysis of the measures of student intellectual engagement
How did this study help you in your work as principal?	Questionnaire: Structured interview with written reflections, audio recorded	Post-study question 5 of principal interview	Qualitative Data Analysis of transcribed interviews: Identify major codes, themes, report findings, and interpret findings (Bloomberg & Volpe, 2008, p. 100)
Teacher *The Assessment for Learning Journey* survey covering six areas of focus regarding formative assessment classroom practices	Questionnaire: Self-report teacher survey, check list Likert Scale	Appendix D: *The Assessment for Learning Journey* survey	Quantitative analysis of the six measures of teacher assessment practices to determine improvement of classroom practice

Data Analysis

The data for this study were collected through audio recordings of principal interviews, surveys completed by teacher and student participants utilizing *The Assessment for Learning Journey* survey and the *Tell Them From Me Survey*, respectively. A transcriber was hired to convert the recorded principal interviews to a Word document and the transcriber was required to complete a confidentiality agreement. The four main research questions and sub-questions were used as an organizational framework to help sort through the collected data and to help identify emerging codes and themes. In vivo codes were applied to the principal answers to sort and organize the information to create themes and clarify the data. This coding method was shared with principal participants and my supervisor for their input to confirm that the codes and themes aligned with the research questions. As these codes and themes were extracted from the transcribed data sources, Microsoft Word and Microsoft Tables were

used to organize the data. All codes and themes were then laid beside the original transcriptions and both sets of data were utilized to write the interpretation. This interpretation was organized for writing by making use of the studies conceptual framework and creating three main categories from the principal leadership section of the framework: establishing goals and expectations; leading teacher learning; ensuring quality teaching. Each of these categories were further divided into pre and post-survey sections. This organizational pattern allowed the story of the principals to be told one principal leadership dimension at a time and chronologically as they revealed their thoughts and reflections before the study began and after the study was completed allowing the reader to clearly compare the before and after picture for each of the three leadership dimensions. All data was stored on my password encrypted computer and external hard drive, and on a flash drive that was kept in a locked cabinet.

I reviewed the principal interview data many times with the purpose of refining the alignment of the codes and themes to the studies research questions and to the studies conceptual framework. This process went through many iterations until the codes and themes were finally sorted through the lens of the studies conceptual framework into the principal leadership dimensions until I was comfortable with the final result. These principal leadership categories are presented in the findings of chapter four. In addition the teacher *The Assessment for Learning Journey* surveys and the student *Tell Them From Me* surveys were each analyzed and reported.

Each of the principals forwarded to me the two sets of the *Tell Them From Me*, pre and post-study student surveys that they conducted in their schools. These surveys are managed by The Learning Bar and are now officially embedded in the province of Alberta's Accountability Pillar yearly surveys for each school. This survey offers a small set of specific student self-report Likert scale questions that measure student intellectual engagement and are reported on a percentage scale. These two surveys were examined and compared and the results were determined from this analysis and are available in Table 6.

In essence the analysis of this data was to determine if there was a difference between the pre and post-study student surveys. It was anticipated that student intellectual engagement would increase with better use of teacher formative assessment practices. This expectation was not realized as student intellectual engagement actually decreased with most student groups. These findings are discussed further in the remaining chapters.

The principals also forwarded to me the two separate results, pre and post-study, of *The Assessment For Learning Journey* teacher surveys. This survey is a self-report check list using a Likert scale of four levels, for six categories of teacher formative assessment practice: providing clear and appropriate learning targets, clear criteria for assessment, use of exemplars, descriptive feedback, high level questioning and conversations, and self and peer assessment practices. I examined these surveys to determine teacher growth as reported by each teacher based upon their experience working with the formative assessment practices identified in the survey. This analysis is summarized and available in Table 5. To summarize briefly, all teachers reported significant growth in their application of most of these areas of practice. These findings are discussed further in the remaining chapters.

Table 4 below summarizes the four types of data collected in the study and the steps taken to analysis each set of data.

Table 4

Data Analysis - Data Types

Data Types	Data Analysis Steps
Pre and Post-survey Principal interview Audio Recordings of the 4 main questions and the sub-questions totaling 23 questions	Interviewed and recorded
	Transcribed
	Code and Theme Creations
	Shared for Feedback
	Reviewed, Reworked, Revised, Refined and Finalized
	Codes, Themes, and Original Transcripts used to Write Interpretation
Principal Participant Demographic Data	Collected
	Read and Charted

including age, gender, experience, training, etc.	
Tell Them From Me Student Survey determining effort, motivation, intellectual engagement	Pre and Post-Study were Administered to Students Reviewed by Principals Data Shared with Me Changes in student raw data and percent ratings identified and recorded
The Assessment For Learning Journey Teacher Survey capturing six areas of formative assessment practice	Pre and Post-Study Administered to Teachers Comparison of Six Assessment Categories Checklist Changes in Teacher Capacity Identified

Ethical Considerations

All ethical considerations were taken to ensure protection of all participants and compliance with all Research Ethics Board expectations. As a principal myself, my relationship with all other principals was one of equality with no imbalance of power. Informed consent for all principal participants and assurances of protection of anonymity were given and respected and the choice to opt out of the study was clearly explained and understood by the participant principal's (Bloomberg & Volpe, 2008). The purpose of the study and each phase of the study was clearly explained to all participants in an initial group meeting along with the timeline of the study, an overview of the literature review, the research processes, my role as researcher, and the role of the participant principals was clearly described. How the data would be safeguarded was clearly explained and followed. The data was kept secured and not shared with others. There were no financial costs to the participants. The one required text was purchased for the participants by me. Each participant was completely free to participate to the depth and breadth that they felt they could contribute to the study.

Each school principal issued a call to their respective teaching staffs to determine who might have an interest in building more capacity with formative assessment practices and who might be interested in becoming involved in the study and willing to work with their principal. In total eight teachers decided to become involved in this work with their principals. Each of these teachers became

involved in the study because of their interest in developing their own formative assessment skill set. No coercion was used in any form to include any of the teachers. Evaluatory or supervisory job performance motives were not connected to teacher participation. As researcher, all teachers remained anonymous to me.

There were no risks to the principal participants and each felt that they had gained professionally as a participant. All research was strait forward and all interactions were carried out in a professional collaborative manner. The data provided supportive and positive information related to the research questions. The anonymity of all participants has been maintained through the use of pseudonyms and all aspects of reporting the data maintains this anonymity. All data was kept secured and anonymity was preserved throughout the study. All requirements of the informed consent document were adhered to and each participant felt safe while involved in the study.

Trustworthiness

Trustworthiness involves issues of credibility, generalizability, and transferability. Each of these will be discussed. Credibility pertains to presenting an accurate representation of the participants and their thoughts, feelings, and actions as these relate to their participation and their role in the study (Bloomberg et al., 2008). As researcher I have accurately represented the participants in the study. The work contained herein is credible in that the primary source of data comes from the voice of the principals involved in the study and also the pre and post-surveys the teachers and students responded to providing their own voice. Each topic of discussion for the principal interviews is based upon their words, their voice, as they responded to the questions asked of them, connected to each of the three principal leadership dimensions. It is their thoughts and reflections about their work with their teachers and their review of the transcriptions, coding, and theme creation that provides the foundation of the data provided for the analysis of principal participation. All of this data was also shared with my

supervisor, and committee members for their review and input to mitigate any potential researcher bias or error. Triangulation of the data was also employed and is described here in some detail to lend more support to the concern for credibility.

Triangulation. There were trustworthiness issues to consider particularly with design-based research. Wang and Hannafin (2005) stated that, "by using a combination of methods, data from multiple sources increase the objectivity, validity, and applicability of the ongoing research" (p. 10). This study achieved this by using quantitative survey data from the, pre and post-study *Tell Them From Me* survey from students, pre and post-study *The Assessment for Learning Journey* surveys from teachers, and introspective interviews from the principal participants, thus achieving triangulation, a process of redundancy allowing for multiple perspectives to clarify meaning and to realize a more in-depth understanding (Bloomberg & Volpe, 2008). Further, Wang and Hannafin (2005) explained that, "being situated in a real educational context provides a sense of validity to the research and ensures that the results can be effectively used to assess, inform, and improve practice in at least this one (and likely other) contexts" (p. 16). Additionally, these authors added that, "contexts in design-based research need to represent rather than oversimplify typical (but complex) settings to the extent possible. Designers need to account for the influence of social factors and dynamics that affect both design participants and the design process" (p. 16). Barab and Squire (2004) account for social factors and dynamics, such as researcher influence and threats to validity, in their following explanation of DBR:

In Cobb et al.'s (1999) "teaching experiment" approach, this problem of intervention is turned on its head so that issues that arise in the environment are to be accounted for and integrated into existing theory. It is through understanding the recursive patterns of researchers' framing questions, developing goals, implementing interventions, and analyzing resultant activity that knowledge is produced. Rather than remain detached from the research context, researchers are

implored to intervene where possible, using interventions as opportunities to examine core

theoretical issues and explore learning. (p. 10)

Though design-based research is different in its approach to research trustworthiness when compared to

traditional applied research, this approach is as valid and reliable, thus trustworthy because it is

grounded in current education theory regarding principal leadership dimensions, teacher formative

assessment practices, and student intellectual engagement and motivation. This theoretical grounding

has led to a useful design artifact and new ideas about principal student-centered leadership impacting

teacher formative assessment practices that may lead to increases in student intellectual engagement. It

is clear that Robinson's (2011) work has been a useful tool in helping principals to impact teacher

practice. It is also clear that the work of Hattie et al. (2007) also proved to be useful in helping principals

and teachers to begin to see another avenue for deeper exploration for providing students with more

useful descriptive feedback for improving their work and achievement. More work will need to be done

to determine how better to make use of the Tell Them From Me survey to gage the impact of this work

on student intellectual engagement.

     Generalizability. Connected to trustworthiness measures is the usefulness of a study or its

generalizability. Barab and Squire (2004) assert:

It is one thing to demonstrate learning gains or show that statistical differences have been

achieved; it is quite another thing to demonstrate the usefulness or consequentiality of the work.

With respect to design-based research, and learning sciences more generally, this

consequentiality is an essential criterion for determining the significance of a particular study.

Our goal, as applied researchers engaged in doing design work, is to directly impact practice

while advancing theory that will be of use to others. (p. 8)

This study demonstrates relationships between student-centered principal leadership, teacher formative assessment practices, and student intellectual engagement. The implication is that the findings may be applicable beyond the context of this study. Barab and Squire (2004) suggest that design-based research's pragmatism is in its ability to "produce changes in the world" or its 'ability to do work in the world' (Dewey, 1938)" (p. 6) or as Messick (1992) describes, its "consequential validity", the changes the intervention produces in a system (p. 8).

Given that the small diverse setting for this study is not unlike thousands of other schools, school principals, school teachers, and students elsewhere, it is reasonable to accept that other principals wishing to develop their own student-centered capacity and their teachers' capacity for implementing formative assessment practices to intellectually engage their students more would benefit from starting with the work of this study. While this work is modest in scope, it is a small sample of what can be done with limited resources and support built upon a much larger surer foundation established by the work of individuals such as Robinson (2011), Hattie et al. (2007), Wilms et al. (2009) and the many other researchers and their work explored in the literature review in chapter 2. The study is simple in its design and resource requirements and can be prepared and completed with minimum participation, or on a grander scale, in situ, impacting principal and teacher efforts almost immediately leading to student impact. The study also offers several useful recommendations outlined in chapter 6.

Transferability. The discussion of generalizability leads to the discussion of transferability. Bloomberg et al. (2008) explain, "Transferability is not whether a study includes a representative sample. Rather, is instead about how well the study has made it possible for the reader to decide whether similar processes will be at work in their own settings and communities by understanding in depth how they occur at the research site" (p, 78). Because of cultural context, transferability becomes difficult, thus design-based research must, according to Barab and Squire (2004):

Lay open and problematize the completed design and resultant implementation in a way that

provides insight into the local dynamics…sharing the designed artifact, providing rich

descriptions of context, guiding and emerging theory, design features of the intervention, and the

impact of these features on participation and learning. (p. 8)

Researchers paying attention to these features of design-based research are able to inform others as to

application in their context and next steps in advancing the work. Each of the principals involved in this

study openly and clearly express their positions with regard to each of the questions asked of them.

Their realistic descriptions of their understandings of student-centered leadership, their challenges

implementing the practices as described in Robinson's (2011) work, and their growth as they attempt to

do so are richly described in their own words.

Trustworthiness and design-based research, though different from traditional applied research, is

as every bit as valid and reliable in its conclusions when it is conducted as I have outlined above. This

study was founded upon a rich, relevant literature review, it was ethically conducted, the data was

triangulated with principal, teacher, and student input, the scope and nature of the data is both

quantitative and qualitative providing a richness afforded a mixed-methods design, it has produced real

world changes for four principals, eight teachers, and has impacted dozens of students situated in a real

world setting. While not previously exploited in the combination as implemented in this study, the

studies design tools are easily accessible and have been proven elsewhere to impact principal student-

centered leadership, teacher formative assessment practices, and student intellectual engagement.

Combining these tools in the manner done in this study has only made each of these tools more valuable

by expanding the scope of their usefulness in a new, creative, knowledge-building process. This design-

based research is an innovative research methodology developed in a naturalistic real-world setting that

advances a new useful artifact and new theory development by combining these intervention tools into a

multi-tool application that is innovative. It is quite conceivable that a single, lone principal could execute the design of this study to further their own work in their own school, or a school district could instigate a district wide student-centered principal leadership capacity building initiative to impact teacher formative assessment to more deeply engage students intellectually, or for that matter, a host of other teacher classroom practices that may support student intellectual engagement. This work is not experimental in its core. It has already been demonstrated that each of the components works in schools with principals, teachers, and students and now when they are combined into a multi-pronged tool. Implementing the recommendations outlined in chapter six would push this work even further.

Limitations and Delimitations

Limitations. This study had several limiting conditions that are common to design-based research methodology, such as researcher subjectivity (Bloomberg et al., 2008, p. 87), which was mitigated by the critical literature review and triangulation of the data sources that included (a) pre and post-study student surveys using the *Tell Them for Me* (2009); (b) principal structured open-ended interview questions; (c) group participant feedback about iterative phase development and data coding; (d) pre and post-study teacher surveys using *The Assessment For Learning Journey* survey; and (f) direction from my doctoral supervisor and committee (Herrington, McKenney, Reeves & Oliver, 2007).

The study was also limited by the participants and context. Limits occurred because of the beliefs of the participant principals and of the teachers that the principals involved in the study. Each participant brought to the study their own beliefs that impacted on the processes of the study such as the group meetings, individual interviews, the planned interventions, principal interaction with teachers, and how these were each executed, and the level of engagement of each of the participants. Likewise, each school context contributed to the limitations of the study as each school brought to the study its unique culture.

I believe the teachers, school characteristics, and students also have some influences on the study's findings.

The study's surveys and interviews had limits that were common to all self-report instruments such as common rater effects, item characteristic effects, item context effects, and measurement context effects (Podsakoff, Mackenzie & Lee, 2003). The purposeful sample was also limited by those who were willing to participate in the study and "participant reactivity", as Maxwell (as cited in Bloomberg et al., 2008, p.87) describes it, was a limitation, as I am familiar with all participant principals. Participant reactivity means participants may react negatively or they may be overly cooperative offering responses they think the researcher wants, or they may be too guarded and less candid with their responses, thou I did not sense these reactions.

Another limitation of the study was the time constraints connected to a typical school year and what could reasonably be accomplished and managed within the constraints of a design-based research doctoral dissertation (Barab & Squire, 2004; Herrington et al., 2007). Finally, the extent to which I am able to provide theory and artifacts that are generalizable beyond the scope of this study are possible limits (Barab et al., 2004) as described above in the Transferability section.

Delimitations. This study was delimited by a number of factors. The study was not conducted in schools where the school principal was unwilling to participate in the study. Design-based research requires willing participant partners to be of use in a school context. The time frame of the study was a nine month period, October to June, of the 2014-2015 school year, from start to finish. This period ensured sufficient time for participants to complete the iterative interventions and the teacher and student surveys. Four school principals were involved in the study. Although I am a school principal, I was involved only as researcher in the study and not as a participant principal.

Student engagement is a very broad topic. Within the scope of this study I did not cover the breadth or depth of this topic, but limited the focus to the topic of student intellectual engagement and the role of principal leadership and teacher formative assessment practices. Thus the student engagement literature, while providing a brief overview of the topic, was narrowed to focus on student intellectual engagement as defined by Willms et al. (2009). As well, principal leadership is a very broad topic. The focus of this body of literature was from three chapters of Robinson's (2011) work on how principals' can help teachers' shift their formative assessment practices to a more refined focus on learning that supports student intellectual engagement. These choices were made as a result of limits of time, resources, and the enormity of these broad topics.

The participant population was determined by purposeful sampling. Being a willing participant is and was necessary for participation in a design-based research study, as principals had to be willing to attempt new design solutions and give feedback and direction to their teachers for further refinement of the design interventions.

Design-based research methodology was the chosen methodological approach because the design-based research approach allowed for the kind of real-world, nesting in situ, with iterative phase development (Amiel et al., 2008). A focus of the study, can principals apply Robinson's leadership dimensions to their work with teachers to help them renovate their formative assessment practices to more deeply engage students intellectually could only be realized by actually trying it and seeing what happens. The *Tell Them From Me Survey* (2009) and *The Assessment for Learning Journey* surveys were the two quantitative research tools used in this study, generating pre and post-study measures directly from students and teachers, respectively and are delimitations. The qualitative methods came from principal interviews and these were grounded, according to Barab and Squire (2004) in the

"messiness of real-world practice, with context being a core of the story and not an extraneous variable to be trivialized" (p. 3).

Summary

To summarize, chapter three provided a detailed description of the study's research methodology. Design-based research was used to examine how principals could support teachers in using formative assessment practices to more deeply engage students intellectually in their daily work. The research questions were reviewed and the design-based research methodology explained how the methods were specifically used to investigate these questions. Design-based research employs three corner stone principles and four stages and each were described. The research setting and context were explained. The choices for the participant selection were provided. The quantitative and qualitative data collection and analysis methods were outlined. Ethical considerations, issues of trustworthiness, and the limits and delimitations of the study were explained. Chapter 4 provides a detailed analysis of the study's findings.

Chapter 4: Findings

The purpose of this design-based research study was to explore with a small number of

principals the impact that student-centered principal leadership would have on working with teachers

that would employ formative assessment practices that could more deeply engage students intellectually

in their school work. As researcher, I believed that student-centered principal leadership purposefully

focused on helping teachers' improve their formative assessment practices would lead to greater student

intellectual engagement. This chapter presents the key findings obtained from interviews of eight

principals, as well as sixteen teacher surveys, and two administrations of the *Tell Them From Me* student

surveys. Five major findings emerged from this study.

Findings

1. The primary finding in this study is that principal capacity issues are at the heart of establishing

     school goals and expectations, leading teacher learning, and ensuring quality teaching.

2. The study demonstrated that as principals focused their work on impacting teacher formative

     assessment practice that they were successful in doing so.

3. The study demonstrated that as teachers focused their attention on formative assessment

     practices that they improved in their formative assessment practice.

4. The study demonstrated that as principals interacted with the studies design solutions they

     became much clearer about the processes involved in establishing school goals and expectations,

     leading teacher learning, and ensuring quality teaching. Furthermore, the principals demonstrated

     a shift from primarily a principal-centered approach to a shared, collaborative, student-centered

     approach and in making this shift the principals moved from understandings that were unclear

     and uncertain to understandings of clarity and certainty.

5. The primary finding from the student *Tell Them From Me* survey data is that there was a negative relationship in intellectual engagement, interest and motivation, and effort between the pre and post-survey data in all categories and all grades, with the exception of the grade twelve class in which there was an increase in intellectual engagement.

Next is a discussion of the findings framed by the conceptual framework illustrated in chapter 2 identifying components of principal leadership, teacher formative assessment, and student intellectual engagement.

Principal Leadership

Following is a discussion of the three aspects of principal leadership focused on in this study which are: the role of the principal in establishing goals and expectations; the role of the principal in leading teacher learning and development; the role of the principal in ensuring quality teaching. The focus of this presentation is the voice of the participating principals as they tell their story about how they approach the complex challenges of accomplishing these three leadership dimensions. You will hear these principals discuss the complex layers and tensions that they feel as they seek to fulfill the responsibilities they have towards those in their charge, their teachers and students. They openly and unashamedly describe the strengths and convictions they bring to their position, as well as areas of further growth and development as represented by their feelings of tentativeness and uncertainty, always with a hope of doing better for those whom they seek to serve. The presentation of their voice is organized by pre-study and post-study interviews separated by a five month period. The post-study interviews are five months after the pre-study interviews.

Two major findings emerged from this section of the study and they are:

1. The major finding in this study is that principal capacity issues are at the heart of establishing school goals and expectations, leading teacher learning, and ensuring quality teaching.

2. The second major finding is that as principals interacted with the studies design solutions they became much clearer about the processes involved in establishing school goals and expectations, leading teacher learning, and ensuring quality teaching. Furthermore, the principals demonstrated a shift from primarily a principal-centered approach to a shared, collaborative, student-centered approach and in making this shift the principals moved from understandings that were unclear and uncertain to understandings of clarity and certainty.

Establishing Goals and Expectations

This section discusses principal beliefs and practices centered on setting school goals and expectations. Setting school goals and expectations involves seeking school wide agreement regarding decided upon goals. It also involves establishing a clear alignment between overarching school goals and the goals set by middle leaders and for subjects and years and ensuring teachers are clear about and committed to the goals for which they are responsible. It also includes ensuring teachers have the requisite knowledge, skills, and resources required to achieve these goals.

The major finding is that principal capacity issues are at the heart of student-centered leadership efforts. As principals interacted with the design solutions they became much clearer about the processes of establishing school goals and expectations and as a consequence shifted, with regards to their views and language, from primarily a principal-centered approach for this practice to a more shared, collaborative, staff-centered approach. In making this adjustment, the principals progressed from unclear and uncertain understandings of these processes to understandings of clarity and certainty.

The two constants throughout the pre and post-interviews are firstly, how the principals conveyed the sense of responsibility they had for providing the leadership for setting school goals and expectations, and secondly, how no matter what, there are always obstacles to achieving school goals and expectations. Over the course of the study they were able to clearly articulate their own growth

regarding the clarity and the tensions they experience regarding directing this important practice of school leadership.

Pre-interviews. The principal's generally express a principal-centered approach and a high level of uncertainty in the pre-interview at the outset of the study. Evidence of the idea of principal-centeredness is expressed by Russel with the following comment:

> The first thing you have to do is, you have to go back to the policies that are in place. So first off, you're looking at the policies that are in place through the Teaching Quality Standards, through the new education requirements, through your school division, and then of course, through common practice that's in place.

Matthew adds in describing his collaborative goal setting process the principal-centered approach:

> So again, we set the school goals collaboratively as a staff looking at our data and that data could come from survey information. It could come from our Accountability Pillar, from our PAT or Diploma exam results, gathering data, trying to identify the direction, and build, I guess some common commitment towards those goals. … And I meet with staff and we work on that and so we do not have necessarily staff all working on the same specific thing, but it should all align with what our school goals are. And I guess, I would be the gatekeeper in trying to make sure that they're aligned.

Matthew is very clear about whose responsibility it is that these established goals are worthwhile and attempts are made to achieve them identifying his role as the *gate keeper*, the principal, who meets with teachers to approve teacher professional learning direction.

Principals express the lack of clarity and uncertainty they feel regarding being able to set and achieve school goals as they struggle with the concept of alignment of school goals and teacher practice. Evidence of this is presented here. Russel explains:

Alignment is the area that I think I need to do the most exploration in. The clear alignment between over-arching school goals. One of the things that I'm struggling with right now is actually trying to determine that for myself. What are the school goals? What are the mindsets that each one of the staff members have?

Brooke also describes her uncertainty and lack of clarity with:

What is alignment? …I think we have some work to do in terms of putting that altogether and making that alignment clear. That is something I would have to think more about. How do we actually do that and how clear is our alignment.

Matthew reveals his uncertainty by describing:

I think it's a challenge! We have a staff that's probably at different points in their knowledge and acceptance of assessment for learning as an instructional practice but trying to build, "I guess" a common sense of urgency, a shared sense of belief.

It is evident from these pre-interview representative samples that the principals approach their practice from a principal-centered approach, wherein they see themselves as responsible for directing the work of achieving school goals, and they use a number of strategies to do this. It is equally clear that principals are challenged about how to do this work and are confronted with their own lack of clarity regarding school goals and how to align these goals across school practice. They also struggle with not being focused and intentional in their practice, and there is the challenge of how to work with teachers that are at different levels of professional practice, particularly as this relates to formative assessment practice. From their point of view, these issues confound principal practice and they honestly declare that they need more clarity and capacity building to effectively deal with the issue of establishing and achieving school goals.

Post-interviews. An important finding is that all principals present more certainty about their practice, and clarity about the direction of their school and future professional learning. These elements are conveyed in the following pieces of evidence. Russel explains:

> It's the intentionality of it …I had to be intentional in planning it, I had to be intentional in guiding a direction, so that they can then take it on themselves and own it, otherwise something [this] won't happen unless that occurs. … We have a theme but it's not an instructional goal. This year has been very much about relooking at what our goals are as a school. We're looking at the characteristics of learning and then linking them back to assessment, and so, that conversation has been really, really important. Before you can get clear alignment, you kind of have to know what you're aligning to and that's been our goal this year. We're going to redefine the characteristics of learning, which then goes back to assessment, which then goes back to classroom practice.

Stephanie echoes her sense of conviction with the following observation related to fulfilled expectations declaring, "Formative and summative assessments became part of the language that was used in staff meetings." She adds clarifications related to her beliefs and the processes she engaged in to help goal achievement to be engaged in with the following statement:

> Initially there was lots of discussion. They [teachers] needed some help in how to. They didn't know how to go forward, so they needed some support with resources. They needed to come in and ask for some direction and there was no sense of imposing an assessment for learning practice without giving them some support and then being able to ask some questions around 'What does it look like'. People were really looking for that. Lots of conversations, lots of dialogue, support with resources, staff meetings and professional development available.

By going through these processes that encouraged collaboration and exploration Stephanie concluded:

I don't think anybody would argue that that was the right direction to go, to start with the learner

outcomes and to make sure that assessments were all based on that and we weren't just supplying

learning activities that didn't naturally meet the curriculum.

Matthew, as well, describes similar processes in describing collaborative practice that includes

clarity about the principal's role:

I think certainly lots of collaboration, people sharing and talking about things. Certainly one of

the strengths of the assessment procedure has been the increase in dialogue about assessment,

that teachers start to talk about their assessment more… led to… shared understanding…

common language… the role of the principal to create a sense of urgency around identifying an

issue or concern and then engaging the staff in working as a team to kind of address that.

The language of the principals with regards to establishing goals and expectations shifts within

the timeframe of the pre and post-interviews, from one that is described as uncertain and unclear to one

that is more clear and certain. As evidence, Russel in the first interview states, "One of the things that

I'm struggling with right now is actually trying to determine that for myself. What are the goals?" This

is contrasted with the second interview where he exclaims, "It's the intentionality of it … I had to be

intentional in planning it, I had to be intentional in guiding a direction, so that they can then take it on

themselves and own it, otherwise something [that] won't happen unless that occurs." Brooke likewise

asks in her first interview, "What is alignment? … I think we have some work to do in terms of putting

that altogether and making that alignment clear. That is something I would have to think more about."

In her second interview, Brooke describes, "I can engage them in discussion myself. Then, I know. I

have a pretty good sense of whether they're 'Well. I'm doing it.' or 'I really believe in this'." These not

so subtle changes in language signal a deeper awareness in the principals as they make use of the design

interventions, *Student-Centered Leadership* (Robinson, 2011) concerning principal leadership, and *The*

Power of Feedback (Hattie et al., 2007) concerning student feedback, resulting in the principals seeing areas for their own deeper work on principal leadership connected to goal setting for their schools.

To conclude, the key finding in this section of principal leadership is that as principals interacted with the design solutions they became much clearer about the processes of establishing school goals and expectations and as a consequence shifted from primarily a principal-centered approach for this practice to a more shared, collaborative, staff-centered approach. In making this shift the principals also moved from unclear and uncertain understandings of these processes to understandings of clarity and certainty.

Leading Teacher Learning

This second section discusses that, "The most powerful way that school leaders can make a difference to the learning of their students is by promoting and participating in the professional learning and development of their teachers." (Robinson, 2011, p.104). Leading teacher learning involves a number of practices. The first is using research based information to direct teacher professional learning. Next is using teacher collaboration to focus on understanding the relationship between what has been taught and what students have learned, while systematically linking the school's and individual teacher's professional development plan to student learning needs. Next is to leverage in-house teacher expertise to address teacher learning needs and using the impact of instruction on student learning to determine professional learning needs. The last is to use professional engagement strategies for complex issues rather than bypass strategies to improve teacher learning.

The major finding for this section of the study is that leading teacher learning and development is hindered primarily by principal capacity issues. Principals also identified a number of obstacles connected to teacher practice. Having interacted with the design solutions principals have demonstrated greater awareness and an interest in addressing these capacity issues in a professional manner.

Throughout the study, the participating principals consistently felt keenly aware of their responsibility for leading and guiding teacher development. They articulated a clear understanding of the strengths of their respective teaching staff and where they feel improvements are needed. Principals also had identified three barriers that interfered with improving teacher learning opportunities. Lastly, they identify their own capacity as a barrier to leading teacher development more effectively.

Pre-interviews. The following excerpts from the pre-interviews illustrate the following features. Principals share similar feelings about their responsibility for leading teacher learning and speak about their beliefs, and the processes they use to engage teachers in learning opportunities. They identify three perceived obstacles that impede the opportunity for maximizing teacher development. This section concludes with a candid exploration of their own capacity issues in attempting to move their schools forward.

In the pre-interviews, principals reinforce the principal-centered approach to leading teacher learning. Russel explains that he must "give them a reason" to "buy into a practice that's going to be beneficial to them." Russel reveals his feelings and thoughts about his responsibility for teacher development based upon his review of their planning documents:

> One of the things that I'm really learning about as I go through their annual professional growth plans, their unit plans, and their year plans is that I'm starting to see where they place the importance of assessment. And what I'm seeing, at this point, is that there isn't much, other than how much it weighs. And so, that's part of what I really have to kind of get my handle on, of where they're at, and then clearly lay out the expectations. We can come up with those together, but also then, *what is the outcome that I want to see?* (Italics added)

While he acknowledges the need for staff input by stating, "We can come up with those together, but" he then concludes with, "What is the outcome I want to see?" illustrates his personal sense of responsibility to lead his teacher development to where he feels it needs to go.

Stephanie explicitly explains the "I provide" focus with the following statement:

School PD is one of the big things I'm starting. … I think we haven't been really good about asking teachers what they want for PD, or what kind of supports that they need. Sometimes it's been dictated from above…you come back from an admin meeting and you have a list of a whole bunch of things that we need to cover.

This statement embodies her responsibility to provide the opportunity by explaining how teachers have not been involved in professional learning planning and that it may be time to reconsider this approach. She also introduces the issue of systemic barriers and how principals are subject to the direction of central office and how central office demands sometimes interfere with school plans.

Brooke and Matthew provide similar statements regarding the, I provide, approach by ensuring that issues of safety and trust are taken care of. Brooke introduces the element of safety by explaining, "It's about providing, I think, a safe environment, to do some of that work and to not feel like, "I've really messed up here, or if I have, it's OK kind of a thing." Matthew likewise describes the need for creating a safe environment and how to accomplish that by, "Creating trust, a culture of trust. So people…feel valued here. And I think in talking to staff, getting to know staff, you get to know what their strengths are, maybe what their weaknesses are, what interests them, motivates them."

Each of these accounts describes evidence about how principals feel and believe it is their job to direct teacher professional learning and to provide the rationale for their teachers to be engaged in the learning, to be self-reflective and to examine their assumptions about their strengths and weaknesses. Further, principals strive to see where teachers need to focus their efforts for professional improvement.

Principals also feel teachers are very much concerned about working in an environment of safety and trust to accomplish this work. To assist in their work, principals examine teacher planning documents, engage in conversations with teachers to get to know their teacher's on a professional and personal level, and to know their teaching strengths and weaknesses, so they then can develop a sense of where they believe the work of teacher development must be directed.

Principals also describe a set of three barriers they feel they must deal with in their attempts to lead teacher learning. The first of these barriers is teacher mindset. This obstacle is described by three of the principals here. Russel describes this obstacle in the following:

> The whole goal is always to engage the students and sometimes they see that as part of the instruction practice rather than as the assessment practice. I think that's the biggest thing. We have to get their mindset changed around.

Russel then describes how this will get done explaining, "But again, it's got to come from the administration level to initiate it, to start it, to build it, and then maybe they will come to you!"

Stephanie further illustrates the issue of teacher mindset with this comment, "But this is what we've done in a classroom! I've taught this lesson." She adds, "And I bring up that my favorite saying is. 'I've taught my dog to whistle.' as where have we sort of embedded some formative practice, or some feedback we're getting from kids that they've really got it." Her point simply being that instruction does not always equate to student learning and teachers need to consider their methodology, their mindset. Matthew provides the identical evidence explaining, "Our professional learning that we do, talks less about, 'I've taught it.', but more about, 'Have they learned it?' … and that is an area of growth for a lot of our teachers."

The prevailing message from these principals regarding teacher mindset is that teachers see that their job is to teach students and the students' job is to learn, and that these two activities are separate

and distinct. The principals see it differently. They see formative assessment as essential to the teaching/learning process and that teachers need to be actively involved in formative assessment practice so they can obtain evidence to determine if they are effective in their instructional practice as measured by whether or not the students are learning from their instruction.

The second obstacle to leading teacher learning is teacher capacity issues. Russel shares his view of the professional capacity of his teaching staff with regards to assessment for learning practices with the following evidence:

> Teachers have to know what their professional responsibilities are and assessment is one of them. However, the professional expectations of assessment is pretty minimalistic compared to what assessment can be for students. Using assessment as teaching, using assessment for teaching and ... making sure they have an understanding of that because they really don't at this point in time.

Russel continues with, "I realize that they don't understand that process … And so, they're still stuck in those responses of good job, or more effort, or more practice. You've got to get beyond that."

Brooke shares similar evidence regarding teacher capacity explaining, "We are looking for ways to help student learning and intellectually engage students, and I think to model the willingness to change things, and to do different things differently than they have been done in the past." Matthew describes issues of teacher capacity with this comment, "I think it's a challenge. We have a staff that's probably at different points in their knowledge and acceptance of assessment for learning as an instructional practice." Stephanie also explains, "I think it's important … that we started with something fairly basic that everybody could address at whatever level they were entering at."

Undoubtedly, the issue of teacher capacity is linked to that of teacher mindset. If you as a teacher are of the mindset that your job is to teach and it is the students' job to learn, it then follows, that issues

of your own capacity are not going to be a part of your self-reflective practice. The unsuccessful student must try harder or work more. Teacher thoughts about whether or not more structured practice is required for the student, or if the student needs more clarity about the nature of the task, or the task processes to complete the task are irrelevant because considerations about the impact of their teaching on student learning do not exist. Teacher capacity issues are complex issues to manage effectively.

Three of the principals, Brooke, Stephanie, and Russel identify lack of time as a systemic obstacle, in that there just isn't enough of it to do all of the work necessary for the amount of professional learning required by teachers. Brooke's statement exemplifies her colleagues as she states that, "I wish we had more time in PD sessions and PD days to do this kind of work. Because I think often what stands in the way is that time factor of being able to meet with people." It is safe to say that having more time for teacher professional learning would be a welcome addition for all principals.

The last obstacle regarding leading teacher learning is that of principal capacity. Principals describe their own capacity issues quite candidly and without reservation, particularly as these relate to the more complex and difficult leadership practices introduced in *Student-Centered Leadership* (Robinson, 2011). It became quite clear that these leadership principles and practices are new to all but one of these principals at the beginning of this study. The forth principal is familiar with the work of Vivian Robinson as the result of a very recent Masters course. These principal capacity issues are presented in the following section.

When the principals were asked to what extent is the research on the characteristics of effective professional learning used in the design and selection of teacher professional learning opportunities connected to assessment for learning practices they had the following to offer.

Russel responded, "I think that's where the problem is right now, is the fact that they're not." Brooke adds, "I guess I haven't thought of it in terms of effective professional … learning. … I don't know if I

can even say to you what the characteristics of effective professional learning are ... I'll have to think about." Stephanie replied likewise with: This was one of those really tough ones and I guess it kind of made me start thinking about a long-term PD plan and sort of wishing we had started this process earlier." Matthew concludes this question with, "I think this is an area of growth for us for further exploration."

The principals realize that this area of strategic planning is an area for development. The questions about what does research demonstrate about what are the components of effective characteristics of professional learning, and then, how are these aligned to effective professional learning opportunities for assessment for learning practices need to be answered keeping in mind obstacles of teacher mindset, teacher capacity, and insufficient time. This is a complex process in and of itself.

When the principals were asked if school professional development planning was systematically linked to the analysis of students' learning needs, they responded in the same vein. Brooke offers, "I'm not convinced that's true. Because we say that until it becomes too much work, or until it becomes too inconvenient, or uncomfortable, and then we don't want to do it. ... Systematically linked ... maybe not systematically." She adds, "It's quite possible that the system does the opposite." Stephanie shares, "I think we get a sprinkle of a lot of things instead of going deep into things that would be directly influencing student learning in the classroom." Matthew explains, "At this point, no. I think we're moving closer to that. ... but there's not, I guess, a systematic approach to it where we're doing this completely K-12 throughout our school." To conclude this question, Russel offers a provocative insight with this reply, "I think it always gets tied up in looking at those students of hope, those types of students who are at risk, the high-priority students that consume so much of your time." Russel

concludes with, "Systematic linking for all students I think is where we have to really work more on and not be so focused on those high-need students which is too easy to get absorbed into."

This question provoked strong views from the principals. It seems there are implied beliefs that the system that the principals are a part of, have failed too many students and it needs to do better. This is clearly a growth area for principals if they are to pursue having a larger impact on student engagement and achievement.

When principals were asked about how effectively the school identifies teachers with the expertise needed to help colleagues address specific teaching problems they responded with the following insights. Being new to the school and unfamiliar with his staff Russel states, "That's what I am doing right now" meaning, I am learning about all of the teachers new to me in this school. Brooke responds with, "I think that we identify teachers with expertise. I'm not sure we have them help colleagues address specific teaching problems!" On the other hand, Stephanie and Matthew both offer an opposite position respectively with, "I think with a small staff it's actually fairly easy." And, "One of the strengths of having a small school is … they have a good sense of people's areas of strength and interest and I think that they are able to seek those people out as a resource." This mix of answers provides no overall take away.

When the principals were asked to respond to is the impact on students used as an important indicator of the effectiveness of professional learning opportunities, all principals were brief and to the point about the need for growth and development in this area. Russel offered the following frank observation:

> I think teachers want to say that they're doing it because it has impact on students. However, I think what ends up happening is unless they can see some immediate results, unless they can quickly see something related to the end result, and if it's too much work, they then shy away

from it. And working with comments, working with feedback, you have to develop yourself, and you have to teach kids on how to interpret that and how to use it. And if you are expecting that to happen too quickly, they're going to give up and they're going to say, 'Well I gave that a try!'

Brooke presented this honest and open comment, "I don't know if we try to measure that actually. I mean we make assumptions, I guess that there will be impact, but do we actually measure student impact? I don't know that we do that." Stephanie responds similarly with, "Although ideally that should be about what all of our professional development is. … but I don't know if we actually then dive down and say, well how is this going to directly impact kids in classrooms?" Matthew concludes, "I think this is another area for us to move further with. … We're not measuring … what we've done with professional learning as to whether or not it's really had an impact on student learning." All of the principals are in agreement that the practice of doing professional development and linking it to its impact on student learning and measuring it is not happening and is an area for further development.

All principals indicated room for improvement when it came to responding to the question, to what extent do you employ bypass or engagement strategies in your leadership of change? The terms bypass and engagement come from Robinson's (2011) work that describes the approach principals take when they encounter teachers whose theory of action has no connection to the theoretical approach the leader wants the teacher to take. Principals can choose to either bypass the teacher's theory of action related to the desired change or they can engage teachers in their theory of action by exploring the theoretical differences and working together to determine the best course of action. Bypass can work when theoretical differences between the change agent and the change target are minor. When the change is not minor the effort to create change will most likely lead to dysfunction in the relationship and the work.

Both Russel and Brooke responded similarly by identifying lack of clarity about the question, and then identifying informal leaders or early adopters they can rely on to get things going. Stephanie's response is very upfront with, "I don't know if I've thought about that one enough to give you an answer on that one." Even Matthew who has been previously exposed to the work of Vivian Robinson answers, "Probably employ bypass more than I would like at times." The evidence here reveals that the bypass approach is the chosen strategy used by the principals, at this point in time. The idea of theory competition and theory engagement looks to be very new to all the principals and using this engagement strategy is yet to be adopted.

This concludes the pre-interview discussion regarding leading teacher learning. The principals offered descriptions about how they feel the responsibility for leading teacher learning and how they engage in that process. The principal-centered approach dominates. They describe three significant barriers they face in their efforts to lead teacher learning including teacher capacity issues, systemic issues, and issues related to their own capacity. These issues will be compared in the post-interviews.

Post-interviews. Principals have subtly shifted their views with regard to feeling the responsibility for leading teacher learning. There is more a sense of, we are in this together compared, to the sense of separation the principals described in the pre-interviews. The evidence for this shift is introduced here. Russel replies with certainty it is his job, "In planning it, in guiding a direction, so that they can then take it on themselves and own it." Brooke likewise describes her experience with a teacher new to her staff and the need to catch her up to the current staff with having, "observations and discussions" such as, "OK, have you tried this? Or if she came and said this didn't really go that well, or I'm not sure how to do this, it being a coaching kind of thing, rather than a mandated kind of situation." She describes a second observation with, "The other two grade five teachers that I was working with really are already all about doing an amazing job with feedback and an amazing job with engaging kids,

so I was learning from them also." These pieces of evidence embody a greater collaborative, knowledge sharing approach.

Stephanie also describes an interactive experience between teachers and students demonstrating the impact of student voice with this explanation. "It became kids asking for descriptive feedback. So it really pushed the practice in that direction, and kids were looking for second chances and were coming in for help to get those kinds of opportunities to demonstrate their learning." She continues and explains that, "Formative and summative assessments became part of the language … kids take it home, and then they start looking for it as well. And teachers see the value in kids buying into being responsible for their learning." Matthew also describes working with staff at a different place describing: "You have to encourage teachers to take some risks to change maybe traditional practice, to do more … solid PD to support them, … there's a balance of pressure and support to be able to change teacher practice."

While the principals continue to feel the responsibility to lead teacher learning as theirs, they exhibit a different focus from the pre-interview with descriptions that include much more collaborative engagement that embraces all parties: principals, teachers, and students. Language choices such as 'so they own it', 'coaching' rather than 'mandating', 'staff…actively engaged', and 'pressure and support' represent this subtle move in mindset.

The perceived barriers to leading teacher learning undergo some change. It is very fascinating to note that the barrier of teacher mindset that was acknowledged by three of the four principals in the pre-interview does not come up at all in the post-interviews. This is an interesting deviation in the principal voice.

That said, time continues to be a main barrier, at least for one principal who states, "Time is always a huge thing." She continues, "Even within the PD staff times that we have, lots of times I would like there to be more actual collaboration time."

Russel reiterates the importance of having authoritative documents such as the Teaching Quality Standard to rely on for teacher practice direction. Brooke describes the importance of "creating those opportunities for discussion and collaboration." and "supporting people to work together." as important practices to move teacher learning forward. She describes her school culture thusly, "The culture of this school has not been a really collaborative one. It's not that people don't support each other … actual … gritty of collaboration has not been the culture … People kind of do their own thing." For staff who do work together her approach is:

> When they come and say, 'Can we do this?' I never say no because even if it doesn't work out, if we're waiting for perfection then we kill it. There's nothing gained and they do come and say "We'd like to try this. What do you think?" I always say go for it. So I think supporting that risk taking, supporting the collaboration.

She concludes her comments about collaboration with, "I think one of the other things is that teachers need to, own being learners themselves."

Stephanie shares a similar approach about collaboration amongst teachers. She explained, "There was no sense of imposing an assessment for learning practice without giving them some support and then being able to ask some questions around what does it look like? She continues with, "So lots of conversations, lots of dialogue. Support with resources, staff meetings, and professional development available." Matthew echoes these exact sentiments adding, "I think certainly lots of collaboration. People sharing and talking about things." And he continues with, "One of the strengths of the assessment procedure has been the increase in dialogue about assessment. Teachers start to talk about their assessment more … that's led to … some shared understanding … a common language that we use."

In the post-interview principals still report feeling the responsibility they have for leading teacher learning, however do so with supporting more of a culture of collaboration and knowledge sharing than previously and do not report seeing themselves as the isolated, lone leader as portrayed in the pre-interview. There is a sense that as more collaboration and knowledge sharing takes place, teacher understanding and knowledge increase, and there is more professional engagement and confidence exhibited by the teachers. This finding is also supported by the *Assessment for Learning Journey* teacher surveys. Time is still reported by one principal as a systemic barrier to leading teacher learning as it is in short supply.

When asked in the second interview to what extent is the research on the characteristics of effective professional learning used in the design and selection of teacher professional learning opportunities connected to assessment for learning practices several themes emerged. Russel briefly replies, "That professional learning is what it all has to be about." Russel is new to the school and describes the status of his staff and their situation for professional learning as follows, "Professional learning has been huge, but I think I really feel fortunate for the staff that I have which is kind of split." The mix of old and new teachers has been a good thing. He explains, "It's actually been nice to see that meshing, come together, and professional learning taking place." However he concludes with, "It's just been slower than what I had hoped for, developing the professional learning between our staff members." I think this comment also speaks to the issue of time.

Brooke expresses old and new tensions leading teacher learning as she explains, "It's important to have a feel for what people, and balance I guess, what people think they want, with what we feel are important things for them to learn." The pull of seeing a need for targeted school professional development and the need for teachers to have control over some of their own professional learning continues to be an issue as her teachers now have two mandated self-directed professional learning days

creating more pressure as schools already struggle with time and states, "When … we're already pretty full with, I will say, mandated kinds of things that we need to cover." And that, "Whole important but not urgent kind of thing, and quite often, we end up doing the urgent in our PD session." She concludes with, "So it's not as much. I would say no, not as much as I would want it to be."

Stephanie expresses herself by explaining how her work in this project has helped her to look ahead to the next school year as she describes her thoughts about planning and collaborating. She explains, "It will really lend itself to what we … start doing from here … reviewing … at this time of year, you're already starting to think about … where you might need … teachers to have some support." She concludes with where teacher responsibility for professional learning stating, "They're the ones coming up with the professional development ideas, I think they have more buy-in around those."

Matthew adds as he looks ahead to the new school year:

Someone like Timperley talks about professional learning and the belief that it's not one size fits all. We don't want sort of a snapshot, like attend one PD session. So we've tried to have sort of an over-arching focus for the year which often translates into years, and so it's ongoing, and so assessment hasn't been just the assessment for the last year, it's been for the last few years and it continues to grow. We maybe focus on different aspects of that piece around assessment. So next year, like I said, we're maybe going to focus on going back to really focusing on how we can assess formatively, really quick snapshot stuff, but to give people some ideas.

The second interview reveals principals that are surer of school direction and how staff collaborative processes support teachers in their work, and how this helps to move the work of the school forward. They also acknowledge obstacles of time and perceived interference from central office direction. Russel expresses, for the group, the idea that things move more slowly than he would have liked.

When the principals were asked to what extent does teacher collaborative learning focus on understanding the relationship between what has been taught and what students have learned, the results represent two different views. Brooke represents one view with this answer:

I think we're getting better. And hopefully after the amount of assessment for learning work that has been done … we're getting better at being able to say ok, we might be finished with this, or I thought they knew this, but they don't. Or, oh, they do know this, so we don't have to be doing it then. I think we're getting better. And that notion, and I think I used to hear that thinking a little bit more, "Well I taught it. If they don't know it." … I'm seeing more, either extra support, extra time with kids, people willing to give up their recesses or have kids come after school, or sometimes even in the morning. … We are getting better at that. So that it's not just OK, we do it, you test it, you move on, no matter what the edicts of learning is or isn't. I'm not seeing that as much. We are getting better at that for sure.

Matthew represents the other view where he explains, "I think another good area for further investigation is the idea that teachers should be in their classrooms assessing and checking in, whether that be formatively hopefully", acknowledging this as an area for future development. He then continues with how that should look:

To see what students have learned and then providing opportunities to obviously reteach things that have been missed, to fill in gaps for students and that should be personalized with students. And so, the assessment should be, and the feedback should be, designed to be able to see not just what has been taught, but most importantly, what has been learned.

All principals acknowledge the increased clarity they have with the issue of teacher collaboration and the connection between instruction and student learning that was not there previously. Two of the principals report movement in this area and that "things are getting better" even to the point of

recognizing how the teacher mindset has adapted to supporting students beyond traditional classroom expectations. Two of the principals acknowledge greater clarity with the issue and are committed to making improvements as they go into the next school year.

When the principals were asked if school professional development planning was systematically linked to analysis of students' learning needs, they responded almost in kind with the desire to see improvement. Russel explains, "Very simply it will be." Brooke states, "We are not doing a good job of that. No!" Stephanie describes, "Again, I think an area that we need some work on. I think it's something that we need to start planning probably now for the future. Matthew echoes this sentiment but elaborates with the following:

> That would be an area of growth for us. We're trying to focus more of our PD on student learning, rather than teacher instruction, and gearing that towards areas where we notice student learning is maybe less than we would like. To then provide the PD, or the support to try and improve that. … We sometimes still fall, in that addressing teacher instruction, rather than coming at it from the point of view of student learning needs.

Answers to this question have not changed from the pre-interview period indicating this is one of those more complicated practices that all of the principals acknowledge they have some work to do with.

When the principals were asked, to what extent are teachers' individual learning and development plans related to student learning needs, they replied in the following way. Russel explains with reference to teacher growth plans, "I had to return a couple of growth plans this year … This is a tricky one, because you can't have goals for your students. You have to have goals for yourself to change student's behaviors and learnings." He comments about the revised plans, "How they've been reworded, but linking back to the learning experience, I think is what I keep doing. And then, hopefully, this will come back to looking at student needs with their growth plans and development plans."

Brooke is not sure about her process as she explains, "I think it comes back to time to a certain extent with researching how I might take this a little bit further. I don't know. Student needs? I guess not. … I don't know if there's a direct academic connection, but I guess there probably is." Stephanie explains, "I think that we need to do some work with making this discussion linked closer to how their plans are related to student learning needs. … It is an area I hope to work on more in the future." Matthew succinctly describes, "We're trying to encourage more of the thinking from student learning rather than teacher instructions … but it's a different mindset to try and start where the student needs are and then work backwards from that."

Some minor changes have taken place since the pre-interview with this topic. One is that the principals are more cognizant of this principle of practice and the need for improvement. The second is that all principals indicate the need to shift teacher focus from that of instruction to that of student learning. This is another of those more complicated principal practices that is linked to the previous questions.

When principals were asked how effectively the school identified teachers with the expertise needed to help colleagues address specific teaching problems they responded in one of two ways. Russel explained, "It's actually pretty easy this year. … I have a new population and I have, kind of a seasoned population, and not much in between." He concludes, "We've had some really good informal mentorships going on between the two groups of people, and hopefully that will continue." Stephanie adds, "We're a really small school and so … it's really easy to know who those teachers are in your school that have some expertise around giving descriptive feedback, or using formative assessments. … it's … easier to link teachers."

Brooke represents the other approach with, "I like to think, again, that we're getting better at that. Some of it is supporting people to be confident in themselves." She further explains, "It's not a

popularity contest, and it's not about I'm a wonderful teacher and you're not. I think this staff … it's a better one-on-one situation. She concludes with, "People do not want to stand in front of the staff, their peers. It's difficult." Matthew adds, "We've gotten better at that." He continues, "I get … to see teachers teaching … I know which teachers do things really well." He clarifies, "It's easy for me … to say, 'Maybe you should sit in and take a look at this person's class. They do a really good job with this." He finishes with this observation, "We're getting better at being more open, opening our classrooms to having people come in and see what's going on and sharing. But certainly, we've got room to improve in that as well."

Overall there is not much change from the pre to the post-interviews concerning identifying and using school expertise. In general, it appears teachers feel apprehensive when it comes to sharing their expertise with their peers. Small schools with stable staff populations get to know one another better than larger schools and may feel a little more comfortable with this practice. All principals describe room for some improvement in this area.

When principals were asked if the impact on students is used as an important indicator of the effectiveness of professional learning opportunities, three of the four responded that it is a concern. Russel exclaims, "That's got to be one of our benchmarks. Is it right now? No it's not." Matthew, likewise explains, "That's still an area that often we're not tying it necessarily back." He then offers his views as to why this happens with this thought, "We're still focused in on teacher instruction." He continues, "We're trying to look more and more at student learning and seeing that as the measure and the determiner of whether or not we should be doing certain things for our professional development or professional learning."

Brooke's comments are the opposite of Russel's and Matthew's with this response, "I would say yes. I think it's the unusual individual that doesn't want to impact kids, and take what they see kids

being excited about and use that to further engage" them. She provides a little more detail with this explanation, "When we did that TTFM survey, our grade fives, when it came to the engagement category, they were 100%. So what does that mean exactly?" She makes a connection as to why exactly with this comment, "I think about those grade fives and what those teachers have done. Those two teachers are excited themselves. Those two teachers are very engaged themselves."

Stephanie shares a more complicated view starting with an outlook of certainty with, "It is! And I think sometimes … we lend ourselves too much to the conversation just around PAT and Diploma Exam results." She makes this observation:

> I think we get so caught up in looking at those results. … I think sometimes we forget just what kids are learning, and are they being critical thinkers, and are they actively engaged, and are they a well-rounded student, or are they ones that can give us the information that we want on a PAT and Diploma Exams.

Stephanie concludes with, "We have more work to do. … How do we get … information from kids about how they're learning … and get them to articulate … in a measure that's not a PAT and a Diploma Exam?"

When principals were asked, to what extent they employed bypass or engagement strategies in your leadership of change, they split. Brooke's comments are to the point with, "I don't think I can really speak to that. I don't even know what to say to that." Stephanie likewise states, "I think the bypass one is pretty easy and I think that's probably been the strategy that a lot of us have looked at over the past." On the other hand Russel explains, "I'm someone who always goes back, back to the parts, and so, I'm not going to assume something's been done. I'm not going to bypass this section and assume something else is there." Matthew describes his process by stating, "We try and focus very much on the engagement strategies and certainly encourage conversations." His school is a grade K-12 school and

the high school portion is engaged in the provincial initiative High School Redesign and as a result of this involvement he explains, "I've been engaging them in this idea of thinking differently and very much not wanting it to be top down, but wanting them to challenge themselves, and take some risks, and think differently about some things." He concludes with these observations, "I try and remove the obstacles to make that happen for them rather than it being top down where I'm telling them this is what we're going to do."

The post-interview shows that two of the principals identify the strategy of bypass as a definite area for improvement and that some work has been started on this. The other principals have made purposeful use of the strategy of theory engagement, but this is not necessarily connected to formative assessment practices and they still have much work to do in this area.

This section of the findings has reviewed the views of the principals as revealed in the pre and post-interviews regarding leading teacher learning and all of the components connected to this leadership practice. The principals have also discussed topics including processes they use to engage teachers in learning, barriers they encounter, and issues of teacher capacity.

Principal's identified the most significant capacity issue at the heart of leading teacher learning and development as being their own capacity. After interacting with the design solutions principals have demonstrated more mindfulness of the processes involved in this principal practice and have presented greater personal awareness and even some movement towards engaging with these capacity issues.

Ensuring Teacher Quality

This third section discusses the effects of ensuring quality teaching. Ensuring quality teaching involves paying attention to the coordination of common assessment practices within and between grades, making use of a common instructional framework connected to assessment practice, creating shared views about assessment practice between teachers and their leaders based on current research

principles, the importance of teachers collecting and using assessment data and attending to barriers in collecting this data, and implementing the ladder of inference to more effectively deal with the complex practices of ensuring quality teaching.

The primary finding in this area is that principal capacity issues are at the heart of ensuring quality teaching. Principals have demonstrated increased understanding of the practices involved in this leadership area as a result of interacting with the design solutions. By developing principal capacity in this area principals will be much better prepared to ensure quality teaching.

Pre-interviews. When principals were asked to what extent the teaching of formative assessment was coordinated both within and across grade levels, they responded with identifying a few themes. The first is from Russel who admits quite openly that, "Well it's not, at this point in time at this school. …This whole process is to get some of these key individuals, to make them more intentional with the process." The next theme shared by Brooke and Stephanie is expressed clearly in this quote from Stephanie stating, "It's one of those things that you do for a long time and then you sort of get away from it. So this process is good to think about it again." Matthew introduces another theme that is common to small rural schools explaining, "Again, being a small school, we often end up with single teachers teaching one entire grade and so we do have that silo approach." Another theme introduced by Brooke mirrors the practices of *individualism* or *Balkanization* discussed by Hargreaves and Fullan (2012) and are illustrated in this quote, "We have had times when there is animosity between the people who are teaching within the same grade level so you don't get that kind of thing happening." She adds to this theme with, "I was … suggesting to this person, 'Go talk to this person who is awesome at building rubrics.' The response was, 'Well why would I?" A final theme for coordinating assessment practices within and between grades is introduced by Matthew who describes that in small schools there may be one teacher or a set of teachers that teach several grades a particular discipline, such as the humanities

courses and these lend themselves to easily coordinating practices between and within grades. He

explains, "And so I think kind of a mix. I think sometimes it helps being small and other times it's a

challenge to go beyond."

When principals were asked to what extent is the teaching of formative assessment practices

informed by a common instructional framework they responded with comments ranging from they do

not and they do. Russel noted that his school was not there yet. Stephanie describes practices connected

to the district's student assessment procedure but does not name it. Both Brooke and Matthew go right to

the district's student assessment procedure, AP 360 and describe specifics of the procedure. Matthew

shares:

> In our division, we have done a fair amount of work, and there's been a fair amount of divisional
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> PD on assessment for learning, and a number of our staff have taken part in various sessions. We
>
> have worked … pretty extensively over the last few years on a few … key things: about making
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> outcomes explicit, about giving feedback for that, and then of course, reporting that by outcome.
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> So, in terms of some of those key foundational things, I think we're aware of it and I think that's
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> based on research best practice, that we're looking for the best ways … to implement some of
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> those practices of assessment for learning.

The evidence demonstrates the district's student assessment procedure has made an overall impact on

assessment practices and is recognized as a common instructional framework for three of the four

principals. Having been in discussion with the forth principal, he is very much aware of the framework,

but recognizes his teachers are not there yet as he clearly illustrates in the next question.

When principals were asked if their teachers and the leadership group have shared views about

effective teaching and learning of formative assessment practices and what research, or other evidence

are those views based on they responded in the following ways. Russel shares, "Not so much at this

point in time. This is pretty new right now. … This has been a great eye opener for me. And a great way of working with this research." With regards to research he replies, "Honestly, I'm starting back to AP 360, which is Battle River's assessment on learning. I'm going back to the outcomes … to what is considered good practice, and what they want as practice within our school division." He concludes, "I'm reading right now, of course, Vivian Robinson stuff … I think that's what's most important, to use the terminology … that common terminology and understanding."

The other principals identify the work of Black et al. (2001), *Inside the Black Box*, John Hattie, Bloom's Taxonomy, and resources from the Alberta Assessment Consortium as research sources they have used in their work with teachers to develop formative assessment capacity. A theme shared by Stephanie and Brooke is that, "We have more shared views than we used to." But that they have, "moved away from some of that stuff and I know that it's important to start looking at it again and re-addressing some of those things, because we sort of put them on the back shelf."

When principals were asked about the degree to which they and their teachers collect data about formative assessment practices that can be used in productive ways three of the four responded with, "That's a weakness! … That's information that's now going to start being collected." and, "I don't know that we do that really at all. Collect data? I don't know that we do that." Matthew the contrasting principal responds with, "Our teachers are gathering formative information all the time with their students." He describes how this takes place describing formal and informal processes and how re-writes of student work are determined through shared expectations and practices. Overall, principal expectation for teachers to collect assessment data for productive purposes is a growth area for.

When principals were asked what the barriers were that their teachers experience in using formative data for instructional purposes the overwhelming response is summarized by Brooke with, "So, if you're not collecting it, that's a barrier?" Russel explains how formative assessment as a focus

has become passé as it has become politically unpopular and replaced by newer initiatives before it became deeply embedded in teacher practice in all district schools. Matthew introduces another theme with:

> The challenge for them is it's a change in practice for many. … I think of something like reporting by outcomes. Many teachers had started to blueprint exams and things like that directly to outcomes, but hadn't gone so far as to actually record it by outcomes. For those teachers, that maybe hadn't gone so far as to actually even blueprint it, this is a really big jump for them. … I think it has … shined a light on some really poor instructional practice … doing many things that were not linked to outcomes. And that I think has been maybe the biggest change that people have really had to think about. Why they're doing what they're doing?

In short, teachers do not overtly collect assessment for learning data for instructional purposes and it has not been a principal expectation.

When principals were asked how effective their leadership team was in using the ladder of inference to test their important assumptions they unanimously answered that using the ladder of inference was a practice that needs to be developed much more. Vivian Robinson (2011) explains that, "Creating an inquiry-based culture requires people to understand and accept the fallibility of their claims and to be skillful in checking the information and reasoning on which they are based." The tool to determine the accuracy of your decisions is the ladder of inference which requires a practitioner to examine their selections, descriptions, interpretations and conclusions about observed events. She continues to explain that the ladder of inference is important because even if you have high quality relevant data, "the quality of those decisions is ensured not by the data but by the knowledge, inquiry values, and interpersonal respect that educators bring to the data discussion and interpretation."

With regards to using this tool to check the validity of his and his teachers' inferences Russel replied, "It's not! I can be very clear with that one. There are so many holes. ... We're making assumptions … we have no grounds for, and therefore, how do we test what those are at this point in time?" Brooke briefly stated, "We haven't done that at all!" Stephanie likewise replied, "I haven't thought about that at all yet, at this point in time." Matthew repeats the same theme, "I think that's something new for us. I've read it with Robinson. I haven't really used it more than I guess … the open to learning conversations we've began." It is clear that the ladder of inference is a new tool yet to be used by these principals.

In the pre-interviews, ensuring quality teaching has been identified as a growth area for principals. One principal has limited success with attempts of coordinating the teaching of formative assessment practices both within and across grade levels. All others identify it as an area in need of revisiting for future development. When it came to principals making use of an instructional framework for formative assessment practices and having shared views with all staff based upon research evidence they did fairly well. All principals either directly or indirectly identified the school district's student assessment procedure as a framework for assessment practice. All principals identified some evidence based research as sources for this work. That said revisiting this work is also seen as needful. All principals, but one, identified the collection of formative assessment data as something that is not done. The one that did states that teachers do it all the time. The fact that data was not collected concerning formative assessment practices was the primary barrier to using data and therefore another growth area for principal practice. Finally, with reference to making use of the ladder of inference to check teacher assumptions and therefore practices, all principals identified this as a major growth area.

Post-interviews. When principals were asked to what extent is the teaching of formative assessment coordinated both within and across grade levels they continue to identify three main themes.

The first is that of small schools being limited by their size and the resulting isolation and silo effect. Matthew explains, "Being a small school we often have one teacher that teachers that entire elementary grade, and so I think generally, in the teaching profession, sometimes suffers from that isolation, in teaching in silence."

The second theme is that of minor movement. Russel shares an example of how his school coordinator was able to get two teachers together to discuss a student that was 'falling through the cracks.' The two teachers had different perspectives about this student and because they got together and shared they were able to coordinate support for the whole student. Stephanie offers, "I think that kind of work is starting to go across grade levels as well."

The third theme is that a systemic school plan has yet to be developed that specifically coordinates both within and between grade protocols connected to formative assessment practices. Matthew shares that in his school they, "certainly try to tie in multi-leveled, multi-graded, multi-course assessment practices." There is in place the district student assessment procedure that provides a framework for this, but even this is not uniformly applied nor embedded across the district.

All principals recognize the importance and value of coordinating assessment practices within and between grades. However, systemic improvement is limited at this point of time with a sense of tentativeness rather than one of certainty.

When principals were asked to what extent is the teaching of assessment for learning practices informed by a common instructional framework their responses are very similar to their pre-interview answers. Russel's first response was they were not there yet. His second is, "I want it to be. It's not there at this point in time. As I said, I think we're on a good route of defining for ourselves who we are, the importance of assessment, linking back to TQS and curriculum." indicating work for future development. Brooke's situation is similar as she responds, "I think we're moving that way a little more

too, and I think as we tighten up around outcomes and what outcomes just aren't." Both Stephanie and Matthew reiterate their use of the district framework of AP 360 as the structure that their schools operate from as a matter of course. While AP 360 provides a comprehensive framework for student assessment practice it is clear that it is unevenly applied in these schools.

When principals were asked if their teachers and the leadership group had shared views about effective teaching and learning of assessment for learning practices and what research or other evidence those views were based on they demonstrated considerable engagement and movement in this practice. It was evident that Russel had been at work with his teachers as he identified making use the Robinson book, Rick Wormeli YouTube videos, other articles, and the requirement of new staff to visit other schools to see how they do things there and to bring that back to share these practices with the entire staff. He comments, "Are they shared yet? No. Are we data collecting? Yes. Are we in a better place? Of course we are!" Russel concludes with, "So is there a shared practice? No. Is it developing? Absolutely." Russel also had sticky notes of his 'cheat sheets' from the Hattie et al. (2007) article, *The Power of Feedback*, stuck to his computer monitor that he made use of often for himself and in discussions with his teachers.

Brooke shares key ideas with regards to research, "We have shared research kinds of things and again, it's that balance. Even some of the documentation that you had provided and I had provided." referring to *The Power of Feedback* (Hattie et al., 2007). Her comment about balance is further explained with, "It's a balance because we've got quite a diversity in terms of capacity on our staff, and I feel quite strongly about including support staff in what we're doing." She makes an observation regarding the prevalence of research explaining, "A number of years ago you never heard about reading … research and maybe it's the Internet, a whole mindset now! It's not unusual to go to a PD session …

and have an article from some researcher." She explains research is important with, "We are doing things this way because this is what research has shown is more effective." Brooke concludes:

> That whole notion that you are a learner too … You may have done this job for five years, 10 years whatever. There is still a) things we're learning about learning, to begin with, and b) you haven't found out all the stuff we were learning even when you started.

Matthew concludes, "If we have limited time, then let's try and do some of those high-yielding things and maybe we can give up on some of those past practices that maybe weren't so high yielding." A review of sound research allows this to happen. Overall, principals are engaged in using research and making it available to their teachers to support and develop a broader shared assessment practice foundation.

When principals were asked about the degree to which they and their teachers collected data about assessment for learning practices that can be used in productive ways their responses provide evidence to illustrate some movement in this practice. Russel explains how their parent-teacher interviews are student-led conferences, and as a result of this practice, the teachers must be very clear about how assessment practice has been coordinated and made clear to the students who must report to their parents in these interviews. He shares:

> So different ways of assessing, and the products of assessment, I think have been a really good way, through student-led conferences, that force that conversation, again, coming back to what are we going to show? Well, we're going to show what you assess. So is it a good assessment? I hope so, or I don't want you to share it.

Russel's school process puts assessment practice front and center and demonstrates a very effective use of assessment data collected by the teachers and the students then shared with parents.

Brooke discloses, "We're not doing a good job with that either I don't think. Individual teachers maybe, but as a staff we are not." She concludes, "I'm becoming more and more aware of the importance of doing that, in actually following through with stuff. We've not done that. Work to be done."

Stephanie shares that her school was a pilot school for *Tell Them For Me* survey and that her teachers have collected and analyzed this data and are using it as part of their Three Year Plan processes. This survey is an opportunity for the students to offer their voice about their school experience and even teaching practice, but this is not connected specifically to assessment practices.

Matthew explains that, "We do not have any school wide formal methods for tracking AFL practices. He concludes with, "We will be starting a book study on formative assessment with lots of strategies. We will be sharing what strategies teachers have tried and what has been the impact of using these" as next year's plan for his school. If they include assessment data collection as part of the sharing protocol this could become more useful.

When principals were asked about the barriers their teachers experienced in using assessment for learning data they revealed two main themes. All four principals identified time as a major barrier. Russel identifies time as an issue because of the new district policy of allowing two of the six PD days as teacher self-directed days. Brooke comments that it takes time to collect the data and then knowing what to do with as another issue. Both Stephanie and Matthew identify the mindset of traditional assessment practices as time consuming teacher behaviours with limited learner impact. Stephanie explains:

> I think it's that getting away from traditional methods that have been around forever and start looking at some other approaches that will engage kids and find out what they know without what we've traditionally done.

Matthew adds, "I think sometimes it's just the limitations of their mindset that they think the assessment pieces have to be big, rather than really tiny daily pieces." Matthew continues to illustrate this idea with:

> Even the mindset of some of our high school teachers has started to change around unit exams. Rather than giving a unit exam at the end, with all of the outcomes of the unit, some of them are starting to break that up, of giving the exam in pieces.

When principals were asked about how effective their leadership teams were in using the ladder of inference they all acknowledge the necessity of this tool and at the very least a desire to implement this as a practice. Russel offered, "And so it's been brought to my attention this year and I've intentionally tried to implement it as I've been approaching different things." He asks two basic questions, "What are we doing?" and, "Why are we doing it?" His next step is to collect the data before preceding any further. He affirms this will save everyone more time if solutions are sought with this method. Brooke agrees, "It was really kind of one of those 'aha' yeah, that's what happened." She concludes, "I think that in itself was kind of an eye opener and makes for better ways of dealing with kids. …that definitely is something that I would, myself, like to make better use of, and be more aware of." She concludes, "I like that. Still work to be done." as she looks to the future. Stephanie acknowledges, "I think I'm still building there." She determines, "I think it's really good we're reflecting on this at this point of the year and … I think it will be helpful for us looking forward." Matthew offers:

> We're getting better I think of certainly rather than make those inferences and make comments or judgments about what we've witnessed in the classroom, or what we've seen in the hallway, but trying to have those open to learning conversations with people, to ask the questions rather than make the assumptions. And I think in the same sense, also from more of a cognitive coaching point of view, to not necessarily give people the answer when they come and they want

you to solve their problem, to talk them through it, because I think they probably have the answer within.

All principals recognize the value of the ladder of inference and the importance of implementing it in their practice though it is, "Work yet to be done."

Principal capacity issues are at the heart of ensuring quality teaching. All principals recognized the importance of the coordination of common assessment practices within and between grades, making use of a common instructional framework connected to assessment practice, creating shared views between teachers and their leaders based on current research principles, the importance of collecting and using assessment data, tackling barriers to teacher collection of assessment data, and implementing the ladder of inference to more effectively deal with the complex practices of ensuring quality teaching. By and large, all of the principals identified these as areas for further growth and development.

At the end of the post-interviews, I concluded the interview by asking all the principals one additional question: As a principal, how has this study helped you in your work? Russel responded about how it helped him to focus as a principal moving into a new building with new staff. He was not lead around by the hundreds of things that could become distractions. It helped him to take a look at the data and ask why things are being done this way in this school. The ladder of inference helped him to check his assumptions at the door so to speak. Formative assessment practice became an area of focus and clarification for his school.

Matthew commented about how excited he was to have an opportunity to benefit from Robinson's work and how the study forced him to delve into it more deeply and that this was useful on two levels because it was assigned reading in his Master's work. He also stated how much more confident he felt engaging teachers in those difficult open to learning conversations because he was informed by this current practical research.

Brooke responded about how the study made her more aware and intentional in her work. Robinson and Hattie provided her with a language and strategies to help her to support her teachers beyond just saying to them, "Good job!" The parallels between teachers supporting students and principals supporting teachers are very real. Hattie's et al. (2007) feedback work became very useful to her. She concluded with comments about how exciting the work had been and how she wouldn't want to be doing any other thing than perfecting the craft of the principal-ship.

Stephanie identified how this was so helpful in getting her year started. She saw the need to revisit this work to reinforce the previous formative assessment work she had done in her school. Stephanie is the one principal that was not able to attend the design intervention of a day long workshop with Vivian Robinson at the end of January. As a result of this missed opportunity she felt some isolation from the group. Her experience certainly speaks to the importance of creating a knowledge building community and how feeling a part of that community is really important. She recommended that more meetings of the entire group to overcome the sense of isolation she felt would have been helpful. The irony of the whole situation is that it was her busy schedule that kept her away from the workshop that was scheduled.

Teacher Formative Assessment Practice

This section of the study represents the impact that principal influence potentially has on teacher formative assessment practice. Principals have been armed with the design intervention tools of the Robinson text, *Student-Centered Leadership* (2011) that helps to support them in establishing goals and expectations, leading teacher learning, and ensuring quality teaching. This resource is specifically for their use. They have also been provided with the formative assessment article from Hattie et al. (2007) entitled, *The Power of Feedback*, which they are to use to assist them in supporting teacher practice with regards to offering specific feedback strategies that will expand teacher repertoire beyond the traditional

teacher feedback phrases of 'try harder' or 'study more'. This article supports teachers in terms of providing feedback strategies that will support students in becoming more proficient at identifying barriers to their learning that are either task clarity issues, task process issues, or student self-regulation issues. The last tool, the *Assessment for Learning Journey* survey is specifically for the teacher so that they will have a very clear formative assessment framework for examining their own professional practice and so that they can self-report their progress over the period of the study.

Each of the participating principals were tasked with selecting teacher participants for the study and administering the *Assessment for Learning Journey* surveys pre and post-study to provide the teacher perspective as they participated with their principal in fulfilling their role in the study. Their role in the study was to work along with their principal to deepen their formative assessment strategies. In total eight teachers contributed from the participating schools: a grade one and a grade nine teacher from one school; a grade four teacher and two grade five teachers from one school; a grade 7-12 teacher and a grade 7, 11 & 12 teacher from one school, and a grade 7 teacher from one school. The data from these surveys are summarized in Table 5 presented in the findings below.

There are two important findings that can be discussed related to teacher assessment practice. The first is that as principals worked with these selected teachers it is clear that they were able to directly influence teacher practice. This is an important finding in that it supports recent work pointing principal focus and effort in this direction. The second is that as teachers focused on deepening their formative assessment capacity they felt that their ability to provide formative assessment strategies to their students improved over the course of the study. This is also important as it supports the collaborative principal teacher team approach to building school wide capacity.

Formative Assessment

With regards to the first finding the clearest evidence to support it is the progress that the eight teachers reported in their self-evaluations. Overall, every teacher reported feeling more confident in their abilities to use formative assessment learning strategies in their practice. Table 5 will now be discussed to illustrate this finding.

Table 5 below reports the evolution of self-reported teacher growth from the pre to the post-study. The vertical axis of Table 5 contains the six formative assessment areas of focus of teacher practice. The horizontal axis reports the rating scale used by the teachers, with number one representing, *Not at All*, meaning this practice is not done, with number four representing, *To a Great Extent*, meaning this skill is used often and teachers feel very competent in using it. The other horizontal axis variable is the comparison of the pre and post-study numbers, with the totals of these comparisons reported at the bottom of the table. To illustrate, the pre and post-study columns and how the survey is read, the Assessment Focus item in the left column, Clear Learning Targets, will be used to describe this process. Of the eight teachers, zero teachers selected, Not at All, in the pre and post-study surveys revealing that all teachers perceived themselves beyond the beginning stage of this formative assessment practice. Continuing to the right, in the pre-study survey, three of the eight teachers identified themselves to be at the, To a Limited Extent level, while the remaining five teachers perceived themselves to be at the, To Some Extent, level. Moving right again, in the post-study survey, the teachers shifted with five of the eight teachers now reporting themselves to be at the, To Some Extent, level while the remaining three identified themselves to be at the To a Great Extent level. These numbers demonstrate the movement of the eight teachers in terms of how they perceived their own growth and development over the period of the study. Of the eight teachers beginning the study, three began feeling they were at the, To a Limited

Extent, and five were at the, To Some Extent. Concluding the study, five felt they were at the, To Some

Extent, and three were now feeling they were at the, To a Great Extent.

Table 5

Assessment for Learning Journey Teacher Survey Summary

Assessment for Learning Journey Teacher Survey Summary																
	Not at All				To a Limited Extent				To Some Extent				To a Great Extent			
	Pre-Study		Post-Study		Pre-Study		Post-Study		Pre-Study		Post-Study		Pre-Study		Post-Study	
Assessment Focus % Level	%	1	%	1	%	2	%	2	%	3	%	3	%	4	%	4
Clear Learning Targets	0%	0	0%	0	.375%	3	0%	0	.625%	5	.625%	5	0%	0	.375%	3
Criteria	0%	0	0%	0	.5%	4	.125%	1	.375%	3	.625%	5	.125%	1	.25%	2
Exemplars	0%	0	0%	0	.5%	4	0%	0	.5%	4	100%	8	0%	0	0%	0
Feedback	0%	0	0%	0	.625%	5	.125%	1	.375%	3	.75%	6	0%	0	.125%	1
Questioning & Observation	0%	0	0%	0	.125%	1	0%	0	.625%	5	.5%	4	.25%	2	.5%	4
Student Actively Involved	0%	0	0%	0	.5%	4	.375%	3	.5%	4	.375%	3	0%	0	.25%	2
TOTAL		**0**		**0**		21		5		24		31		3		12

The highlights of the Table 5 are presented here. No teacher reported being at the *Not at All* level

of the scale for either survey, therefore no teacher presented as a beginner in this study. The greatest

movement took place at level two, *To a Limited Extent*, as teachers moved to higher levels. The pre-

study had 21 teacher checks at this level, representing tentative, uncertainty about their confidence and

ability to perform these skills, while the post-study had only five checks at this level representing

substantial movement from level two to level three with teachers presenting themselves as more confident in their abilities to perform these skills. The largest shifts took place in the assessment focus areas of Using Exemplars and Providing Feedback. Four teachers moved out of these two skill areas with only one teacher remaining at this level in the assessment focus area of Feedback. The assessment focus area of Student's Actively Involved demonstrated the least movement. This area of focus began with four teacher checks and ended with three teacher checks, indicating only one teacher felt more confident and skilled enough to move from this level to a higher one.

The next level that demonstrated significant movement was level four, *To a Great Extent*. The pre-study had three teacher checks at this level indicating very few teachers felt that they had excellent confidence and skill at this level. The post-study had 12 teacher checks indicating much more confidence with their skills. The assessment focus area with the most change was that of Setting Clear Targets. In the pre-study there were zero teacher checks, while in the post-study there were three checks. The assessment focus areas of Questioning and Observing and Student's Actively Involved both increased by two checks. The only assessment focus area that had zero checks was that of Providing Feedback. All eight teachers reported themselves to be at level three in this skill area.

From the data presented above it appears that the assessment focus area of teachers' Questioning and Observing and Setting Clear Learning Targets present themselves as the most skilled areas of development, while Actively Involving Students in formative assessment practices appears to be the most challenging skill development area. This set of data offers principals areas that they can focus on with more specificity as they help teachers develop assessment for learning skills.

Removing Obstacles to Learning

These obstacles are reported by principals as they observed teacher reaction to change processes. The principals presented indirect evidence that they feel is required to support growth in teacher

practice. These are presented in detail in the section above on principal leadership and are discussed as obstacles to teacher capacity building and are summarized here. The first is the necessity of principals being clear and intentional in terms of setting school goals and direction whether that be individually or collaboratively. Lack of clarity and focus with regards to goals and expectations hampers teacher growth and development and school wide achievement. The second is that teachers must be able to understand the reason for the change and they must believe that the change will benefit either their practice or their students learning. Failure to make clear the benefits of the change will lead to teacher reluctance to become involved in the new change leaving the change agent, the principal, and the change target, the teachers, at odds with one another. The third is that teachers need to feel that the professional learning environment supports teacher risk taking with the new approaches, and that they have the resources required to implement the change. If teachers feel that support is lacking and professional criticism or censor is a possible outcome they will be unwilling to engage the new change. The next is that teachers want to have an opportunity to collaborate, discuss, explore, share, and improve strategies in a safe, manageable process. Most teachers are not willing to be the early adopter. Most want to proceed with change as part of a supportive group so that collaborative learning can take place where the bumps and glitches of new learning can be worked out collectively, instead of in isolation. If students respond positively to the new changes teachers are more motivated to implement the change. Lastly, principals feel that much more time for professional development is required to manage change in teacher practice, particularly if the practice is to become embedded in teacher behaviour. Lack of time is a significant factor that seriously impacts teacher effort and engagement. Sufficient time is required to change teacher practice deeply and permanently.

For principals to be able to provide these supports they have all identified the need for their growth in terms of their own professional capacity. It is important to keep in mind that these schools are

well functioning schools with fairly solid reputations with community and student support. That said for these principals to become more student-centered in their leadership practice they feel that they need to better understand the concept of Theory Competition to be able to avoid the often ineffective, often used, bypass strategy in dealing with change of practice and instead utilize the more effective teacher engagement strategy. To better utilize the engagement strategy they must become better equipped to employ Open to Learning Conversations, though more difficult, are a necessity to support teachers trying to achieve deeply embedded change. They must also develop the ability to apply the skill of examining the Ladder of Inference so they are able to create an inquiry-based school culture that requires teachers to understand and accept the fallibility of their claims and to be better skilled at checking their evidence and reasoning for why they do what they do (Robinson, 2011). Finally, they then must be able to determine if teachers need to work on Learning Goals to build their own capacity, or to move straight to Performance Goals to achieve school targets.

It is clear from this data that as principals work with teachers, even with limitations of capacity in the above mentioned skill set, in such a short period of time, they still had a significant impact on teacher growth and development with regards to teachers implementing formative assessment practices, as reported by the teachers themselves. Given opportunity and support to develop their own capacity with this skill set, how much more effectively could principals' impact teacher capacity related to their formative assessment skill set?

<center>**Student Intellectual Engagement**</center>

Tell Them From Me

The *Tell Them From Me* survey was used to provide data from the student perspective related to student intellectual engagement. Student intellectual engagement is a profound, serious, emotional and cognitive investment in learning (Dunleavy, et al., 2012). In other words, this measure is much deeper

than a superficial, temporary interest in a particular topic or lesson. Intellectually engaged students are deeply interested in, curious about, and connected with others in setting and achieving their personal learning goals. Also:

> Intellectual engagement is inherently a growth-producing activity…that supports adolescents in developing important competencies for learning and living. These competencies include for example, an orientation towards original work, critical thinking, collaboration, active citizenry, risk-taking, experimentation, independent action, and confidence as innovators and knowledge-builders. (Dunleavy et al., 2012, p. 3)

It is imperative that school systems create a learning environment that can support this type of student engagement by providing appropriate levels of challenge and skill. This connection resonates strongly with the formative assessment practice of student self and peer assessment practice targeted by *The Assessment for Learning Journey* framework each of the teachers used to focus their efforts in enhancing their assessment practice. These students' lives, inside and outside of school, are interrelated and interconnected. They experience *flow*, a high level of challenge and skill connected to their learning, and are intrinsically driven by this learning (Csikszentmihalyi, 1997). The *Tell Them From Me* survey arrives at this composite measure by asking students over twenty questions that provide information about their interest and motivation related to the language, math, and science classes they attend, the amount of effort they exert in relation to these classes, and how they perceive the level of skill and challenge they experience in these classes. Dunleavy et al. (2012) revisited the first *What Did You Do in School Today* document (Willms et al., 2009) and reported student intellectual engagement had risen from 37% to 41% over a four year period. A 4% increase demonstrates movement in the right direction, however the almost 60% disengaged students should raise some alarms and draw attention to this poverty of engagement in schools.

The *Tell Them From Me* survey was administered twice: the pre-study, in the fall or early winter of 2014-2015 and the post-study, in late spring of 2015. In total eight teachers participated. Two teachers were engaged with grade 1 students in their work. Grade 1 students do not participate in the *Tell Them From Me* survey, therefore they are not included in the data summary. Two classes of grade 5 and one grade 4 class, from the same school, were involved in the study and these classes are reported as one group for grade 5 and one group for grade 4. One grade 9 class is reported in the data. Two grade 7 classes from different schools are reported in the data. The grade 11 and 12 classes are from the same school and reported separately. These student groups provide the data for this survey.

The primary finding from this set of data is that there is a negative relationship that can be determined as a result of the teachers' and principals' interactions with the design solutions and student intellectual engagement. It is apparent that all but one group of students, the grade 12's, became less intellectually engaged when the pre and post-surveys are compared. The post-survey was administered very late in the school year, either at the very end of May or early to mid-June when students are less likely to be engaged in almost every measure. It is unclear as to why this occurred. One explanation is it is possible that the timing of the post-survey administration, late in the school year, is a possible factor. Students were focused on the end of the school year. A second possibility for these results could be the students pushed back as a result of the significant change in teacher formative assessment practice disrupting the normal flow of classroom practice students were comfortable with. Another possibility could be that the teachers were already doing solid formative assessment work and little change was experienced by the students. Whatever the explanation, it is clear that further work is required to explore this unexpected phenomena.

The survey's intent was to provide feedback from the students' point of view. A cursory examination of the summary table, Table 36, would indicate that the overall effect has been negative.

All student groups, except the grade 12 group, have decreased in their intellectual engagement from a minor 3% to a significant 27% in the three measures reported in Table 6.

Table 6

Tell Them From Me Summary Table

Tell Them From Me Summary Table				
Intellectual Engagement Measure	Grade/Pre-Study %		Post-Study %	% Change
Intellectual Engagement Composite	G9	45	27	Decrease 18%
	G7	72	67	Decrease 5%
	G11	52	46	Decrease 6%
	G12	53	56	Increase 3%
	G7	82	55	Decrease 27%
Interest & Motivation	G9	36	18	Decrease 18%
	G4&5	87	84	Decrease 3%
	G7	67	44	Decrease 23%
	G11	33	23	Decrease 10%
	G12	47	56	Increase 9%
	G7	67	40	Decrease 27%
Effort	G9	100	73	Decrease 27%
	G4&5	94	92	Decrease 2%
	G7	89	78	Decrease 11%
	G11	89	77	Decrease 12%
	G12	67	67	No Change
	G7	83	70	Decrease 13%

The data gathered and presented here are puzzling to say the least. This phenomena is discussed in more detail in the following chapters.

Summary

This chapter presented the five major findings revealed in this study. The findings were organized according to the conceptual framework of the study. Pre and post-interviews of the principals, pre and post *Assessment for Learning Journey* surveys given to the participating teachers, and pre and post *Tell Them from Me* student surveys provided the data for this study. The principals own words were used to tell their story about the issues and challenges they encountered as well as the new knowledge, skills, and insights they gained as they worked through the study.

The primary finding in this study is that principal capacity issues were at the heart of forming and developing a student-centered principal leadership approach related to the three principal practice areas explored in this study. The principals came to understand that becoming student-centered in their leadership practice takes a particular skillset to implement effectively. Being intentional and collaborative in setting goals and expectations that are student-centered became a much clearer realization for the principals. The importance of aligning leadership and teacher school goals and expectations also developed as a result of the participants interactions with the design solutions. Time is a barrier to achieving school goals and expectations as there never seems to be enough of it to develop teacher capacity. These schools are not lacking in terms of physical resources, though aligning professional learning with meaningful school goals that are student-centered is an area for growth.

With regards to leading teacher learning principals presented several tensions that they strive to balance. Principals present themselves as more collaborative after interacting with the design solutions, but this is not without its challenges. There are the tensions between offering a balance of professional learning for seasoned teachers and then newer teachers, and there is the tension for where principals see the need for some development for their teachers and where teachers feel their self-directed professional development should go. There is the tension between focusing on school goals and being directed by central office to cover other issues not directly connected to school goals. There is the tension between what teachers believe they have taught and what students have learned. All principals report that there is a need to improve systematic planning for school professional learning. Two principals report that this is improving, while all principals report being clearer about the concern. All principals reported that they need further work with connecting individual teacher professional learning to the learning needs of the students. Making use of in-house teacher expertise is reported by two principals as getting better, by one that it is pretty easy this year, but it is reported that there is anxiety from teachers to open themselves up

to outside observation. Three of the four principals identified that the impact of teacher professional learning impacting students was still a concern. The connection of teacher professional learning designed to meet student learning needs is tenuous at best. When it comes to professional conversations about choosing the bypass strategy versus the engagement strategy, two of the four principals still struggle with the engagement strategy. Two are beginning to implement it in their practice.

Ensuring quality teaching is another capacity issue for principals. Coordinating assessment for learning practices within and between grades can be a challenge. Small schools have a single teacher in a single grade prone to the effects of isolation. Principals have yet to lead in developing a systemic school plan to coordinate this effort however they acknowledge its importance and have plans for the future. There is a common assessment framework in place provided by the district, but it is unevenly implemented across schools at this time. All principals are engaged in sourcing research that is relevant to assessment practice and providing it to their teachers. There are a number of shared views amongst staff about assessment practices, however others are still in development. Having teachers collecting data about assessment for learning practices has shown some movement, but has much room for growth. Student-led, parent-teacher interviews requires data clarity for teachers and students for this process to take place and this drives data collection in one school. Three of the principals share they need more growth in this practice. Time is a barrier identified by three principals to teachers using assessment for learning data. Two principal's recommend teachers do a reevaluation of traditional assessment practices to help them save time. All principals acknowledge the usefulness of the ladder of inference and see themselves making use of it. Two principals are now giving it a try.

These three principal leadership practices have been introduced to four principals who have had limited time to read, internalize, and figure out a way to integrate these new ideas into their existing practice, while involved in their busy school year. Without fail none of the practices have been rejected

outright and all of them have been seen with an eye towards school improvement possibilities by all the principals. All the principals commented at the end of the study how much they appreciated the learning opportunity and how it helped them focus, with intent and how they feel more confident in their abilities to lead their school.

It is clear that when principals interact with teachers to impact teacher practice, teachers report growth in their own formative assessment capacity. All teachers involved in the study reported overall growth in their formative assessment practice. Involving students actively in assessment practice proved to be the most challenging area for teachers. Principals identified what they believed to be barriers to teacher growth possibilities, the major one being their own capacity. Principals also identified the areas of focus that they need to pursue to be better able to help teachers with these barriers. This section certainly identifies the positive impact of principal leadership practice on teacher practice and the potential this development offers.

The *Tell Them For Me* survey provided little in the way of useful evidence to suggest better implemented formative assessment practice enhances student intellectual engagement. This deeper layer of evidence needs to be disaggregated, variable by variable, to better understand what occurred here, however this is not within the scope of this study. Possible reasons for this set of data are that the late timing of the post-survey could explain the disengagement of the students, or this could be a reflection of student push-back as a result of the significant change in teacher assessment practice, or high levels of teacher practice were already in place so little movement was the result. A similar study carried out over a longer period of time would be an interesting study opportunity. Also, involving students in the study at the level of informed participant would be a very useful next step to determine what happens to their engagement reaction having been fully informed and involved in the study.

This summarizes the study's findings. Chapter 5 will provide an analysis of the findings.

Chapter Five: Interpretation of the Findings

The purpose of this study was to explore with a small number of principals the impact that focused principal leadership would have on working with teachers that would employ particular formative assessment practices that could more deeply engage students intellectually in their school work. It was hoped that a better understanding of how student-centered principal leadership could directly influence teacher formative assessment practice, which would in turn impact student intellectual engagement, would provide support for school wide student-centered leadership so that principal and teacher practice could more deeply engage students intellectually. Student intellectual engagement is important so that many more students may more fully enjoy, appreciate, and benefit from their school experience than they do presently (Willms et al. 2009).

This study used a design-based research approach. Principals agreed to become familiar with two particular research-based tools, namely the work of Vivian Robinson's (2011), *Student-Centered Leadership* and Hattie et al. (2007) scholarly article, *The Power of Feedback* and insert these into their day-to-day work with their teachers. Principals researched these tools independently and applied them to their work as they were able. In addition, I and all but one of the principals attended a full-day workshop presented by Vivian Robinson entitled, *Building Capacity for Student-Centered Leadership*, January 28th, 2015, and throughout the day we participated in group discussions about the practices illuminated in her presentation of her text. The principals also provided data in the form of pre-study and post-study interviews and answered questions derived from Robinson's text focused on: establishing goals and expectations, leading teacher learning, and ensuring quality teaching. As well, teachers used as a practice guide and provided information from a pre and post-study survey on formative assessment practice, while students provided data from pre-study and post-study *Tell Them From Me* surveys. The principal interviews were transcribed, shared with the principal participants for feedback, coded and

shared again with the principals, recoded, compared to each other, organized into themes, organized by question, then linked to the conceptual framework, reorganized, and then laid beside the original transcription and these were used together to arrive at the findings presented in chapter four. The coding provided a focus in terms of themes; however the original transcription provided verbatim, the principals own words, which I used in chapter four. The teacher self-report surveys were analyzed to determine teacher growth in their practice. Principal observations and comments about perceived teacher obstacles, as revealed in the principal interviews, were also examined and discussed. The student surveys were analyzed for the same purpose as a measure for student intellectual engagement. The study was based upon four research questions:

1. How do principals create the conditions in a school under which teachers' change their assessment practices to intellectually engage students?

2. How do principals support teachers in gaining the requisite knowledge and skills they need to be able to achieve the school goal of implementing formative assessment practices that more deeply engage students intellectually?

3. What can principals do to remove barriers that teachers experience in implementing formative assessment practices that support students in becoming more deeply engaged intellectually?

4. To what degree do principals utilize a theory of engagement, as described by Robinson (2011), when working with teachers to bring about changes in assessment practices that more deeply engage students intellectually?

In addition to these four central questions about principal leadership, measures about the impact of principal leadership on teacher formative assessment practice, and the impact of teacher formative

assessment practice on student intellectual engagement are also central to the studies conceptual framework and findings.

These four central questions, as well as the measures about principal leadership impacting teacher formative assessment practices and these in turn impacting student intellectual engagement were examined, explored, discussed, and predominantly satisfied by the findings presented in chapter four. The primary finding in this study revealed that principal capacity issues are at the heart of establishing school goals and expectations, leading teacher learning, and ensuring quality teaching regarding student-centered leadership. The study clearly demonstrated that as principals focused their efforts on impacting teacher formative assessment practice that they were successful in doing so. The study further demonstrated that as teachers focused their attention on formative assessment practices that they improved in their practice. While principal capacity issues are a primary finding the study also demonstrated that as principals interacted with the studies design solutions they became much clearer about the processes involved in establishing school goals and expectations, leading teacher learning, and ensuring quality teaching with an eye to establishing student-centered leadership. Furthermore, the principals demonstrated a shift from primarily a principal-centered approach to a shared, collaborative, staff-centered approach and in making this shift the principals moved from understandings that were unclear and uncertain to understandings of clarity and certainty. The primary finding from the student *Tell Them From Me* survey data is that there was a negative relationship between the pre and post-survey data in all categories, except the grade twelve class, meaning students reported less intellectual engagement at the end of the study

This chapter interprets and synthesizes these findings. The chapter is organized by synthesizing the research questions with the findings as outlined in the conceptual framework (Figure 1) and this framework is organized by the categories of principal leadership, teacher assessment practice, and

student intellectual engagement and frame this discussion. The literature regarding principal leadership, formative assessment practices, and student engagement and motivation also inform this discussion. The intent of these findings are to shed more light on the direct impact principals can have on influencing teacher formative assessment practice and how teacher assessment practice may be able to better engage students intellectually. The chapter concludes with a review of my assumptions identified at the outset of the study as these relate to the findings.

Principal Leadership

In this study, principal leadership was focused on the three dimensions of establishing school goals and expectations, leading teacher learning, and ensuring quality teaching. To ascertain the capacity of the principals four focus questions concentrated on how principals create the conditions to support teachers in changing their old assessment practices by helping teachers acquire new knowledge and skills to develop new formative assessment practices, and by helping to identify and remove barriers to teachers acquiring this new knowledge and skill set, by way of using a new theory of engagement, all with the goal of engaging students more intellectually in their school work.

The major finding in this study is that principal capacity issues are at the heart effectively implementing the three dimensions of establishing school goals and expectations, leading teacher learning, and ensuring quality teaching. That said however, a second finding is that as principals interacted with the studies design solutions they became much clearer about the processes involved in establishing school goals and expectations, leading teacher learning, and ensuring quality teaching in the relatively short period of time of a maximum of a five month period. Furthermore, the principals demonstrated a shift from primarily a principal-centered approach to a shared, collaborative, student-centered approach and in making this shift the principals moved from understandings that were unclear and uncertain to understandings of clarity and certainty.

The study clearly supports the findings of the importance of principal leadership being second only to teacher classroom practice in impacting student achievement (Hopkins et al., 2010; Leithwood et al., 2008; Leithwood et al., 2012; Robinson, 2011) by demonstrating how quickly and effectively they were able to influence teacher practice. As these principals focused their attention on supporting teachers in building their capacity to better use formative assessment practices the teachers overwhelmingly reported growth in their own formative assessment practices. It is interesting to note that teachers developed their capacity the least in self and peer-assessment. Black et al. (2001) and Hattie (2009) recognized the significance of this strategy for student improvement. Black et al. (2001) identified this approach to be fundamental to impacting student motivation and intellectual engagement. Hattie's (2009) work identifies student self-report, one aspect of formative assessment, as having an effect size of 1.44, the highest of any teacher practice that can impact student learning. The importance of these findings cannot and should not be underestimated by principals as they work with their teachers. This needs to be a priority area of focus for principals for future development simply because no other strategy can demonstrate this effect size and positive impact on student achievement. Consequently, principals cannot afford to use the strategy of bypass when it comes to moving teachers towards this practice. Principals must directly engage teachers in professional discussions about this strategy and implement it as soon as possible. Digging deeper into the strategy of student self-reporting may help to explain the results provided from the *Tell Them From Me* student surveys with regards to student intellectual engagement results.

The principals involved in this study sought out willing teachers interested in formative assessment practices and the focus of the study whose assessment beliefs did not conflict with the goals of the study (Black et al., 2001). While not in the scope of this study, an interesting investigation would be to determine the impact these "living examples of implementation" may have had on their respective

staffs as Black et al. (2001) and Elmore (2002) outline as a process to improve formative assessment practice school-wide.

The need for principals to gain commitment to school goals from teachers is an essential component to achieving these goals. Because these were willing participant teachers, it can be argued that they desired to see improvement in their classroom formative assessment practices and were motivated to change this practice. Working with their principal, and in some cases, with each other, these teachers demonstrated a sincere focus on goal achievement. As explained by Robinson (2011) seeing a discrepancy between what you do in practice and what you should be doing in practice, being motivated to close that perceived gap, and being focussed on this goal, along with principal support, helped to keep the goal out front for these teachers. This goal focus sustained these teachers as they sought improvement in their formative assessment capacity.

Each of the principals in the study applied the studies intervention tools to some degree in working with their teachers to build their capacity in leading teacher learning. In doing so they followed the recommendation of Elmore (2002) as he affirmed, "For every increment of performance I require of you, I have a responsibility to provide you with the additional capacity to produce that performance." It has been established that at the beginning of the study principals lacked the capacity to clearly and effectively lead teacher learning as they described their lack of capacity with regards to being student-centered with leading teacher learning. However, as each principal followed the direction of Robinson (2011), and as they became directly involved in the same leaning and training that the teachers were receiving they were able to gain the commitment of all those required to achieve the goal, and as a result they successfully developed this leadership capacity and the formative assessment skill of their teachers.

Leading teacher learning is a complex set of skills for principals to master. Robinson (2011) outlines the characteristics required to do this effectively which include that it serves identified student

and teacher learning needs, focuses on the relationship between teaching and learning, provides worthwhile content, integrates theory and practice, uses external expertise, and provides multiple opportunities to learn. And while keeping all of these characteristics front and center principals must be able to deal with any obstacles that might interfere along the way. Likely, one of the most complex obstacles principals encounter is that of theory competition.

Teachers previously have been identified as 'resistant' to change if they do not readily adopt the proposed change in practice. Robinson proposes that teachers do what they do based upon a theory of practice that presently works for them and asking them to change what they do requires leaders to offer some evidence that the change will be better for their practice and student performance. Our principals identified that their first method of dealing with this was the bypass strategy. In other words, avoid the difficult learning conversations because they didn't have the capacity to deal with this effectively. The approach of theory competition was unknown to the principals as a possible strategy, thus not available to them so they automatically defaulted to the bypass strategy. This strategy has been shown to be ineffective and even detrimental to change processes. Robinson offers theory engagement as a strategy to help gain agreement amongst all teachers and leaders.

Theory engagement requires principals to clearly understand the current factors that 'sustain' current practice amongst their teachers and therefore the challenges involved in changing this practice. Bypass strategies that do not engage teachers in the conversation about why they do things the way they do and challenge them at the theory level cannot help with change processes and leaders must then resort to using open-to-learning conversations that demonstrate respect for the opposing theory of use employed by the teachers who are required to make the changes. Robinson (2011) explains that open-to-leaning conversations require a search for valid information, respect for those involved, and the ability to increase the internal commitment of the teachers involved. At the end of the study all principals

recognized theory engagement as the desired approach to moving teacher learning forward. They also recognized theory engagement as a difficult approach to adopt, however a necessary one. As Matthew experimented with this process he explains, "I've been engaging them in this idea of thinking differently and very much not wanting it to be top down, but wanting them to challenge themselves, and take some risks, and think differently about some things."

I think it is important to recognize, that on a small scale, and with willing participants committed to formative assessment practices and greater student intellectual engagement, that capacity for both the principals and teachers was developed in a relatively short period of time, as principals strove to lead teacher learning. Again, this is complex work as principals endeavour to lead teachers into new and more effective approaches to increase student engagement and learning. Without a focus on developing principal capacity in this leadership dimension this work would be difficult to move forward.

Our principals also demonstrated limited development in the complex area of ensuring quality teaching. The coordination of common assessment practices within and between grades, making use of a common instructional framework connected to assessment practice, creating shared views about assessment practice between teachers and their leaders based on current research principles, the importance of teachers collecting and using assessment data and attending to barriers in collecting this data, and implementing the ladder of inference to more effectively deal with the complex practices of ensuring quality teaching as a comprehensive approach to ensuring quality teaching was new to the principals. In terms of demonstrating capacity growth in this dimension, the principals began the study with comments such as Russel's, "Well it's not, at this point in time at this school." At the end of the study Brooke echoes the commonly held view of the principals explaining, "I'm becoming more and more aware of the importance of doing that, in actually following through with stuff. We've not done that. Work to be done."

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Ensuring quality teaching is definitely a growth area for the principals and all identified this dimension as one for future work. Small schools in rural areas with one teacher in each grade and for each subject discipline are structurally difficult to deal with in terms of teacher isolation and developing a coherent instructional program. More importantly, there is a certain amount of discomfort for principals in examining the quality of someone's teaching and this is magnified, particularly in small schools, where everyone knows everyone and being familiar is a common cultural factor and then having the capacity to support teacher growth and development at the level described by Robinson (2011) is certainly a capacity challenge for principal and teacher alike. This capacity is inextricably linked to the principles identified in establishing and setting school goals and the leading teacher learning dimensions. Unless principals are familiar with and competent with having open-to-learning conversations and theory engagement processes that allow all participants to have professional, respectful, conversations about educational approaches and differences, supporting and more importantly challenging teacher growth will be difficult. As Robinson (2011) explains with regards to checking the validity of our inferences, an important learned skill required to see the need for change, that applies equally to principals and teachers alike, "Creating and inquiry-based culture requires people to understand and accept the fallibility of their claims and to be skillful in checking the information and reasoning on which they are based" (p. 100).

This leaves the question, that if principal capacity can be developed, as it was in this study, and if principals were able to work with an entire staff and applied the same principles of the three dimensions of student-centered leadership as outlined by Robinson (2011) what could be the impact school wide? At the end of the study all principals appreciated being involved in the study and had learned a great deal from it. They all reported being more intentional, purposeful, knowledgeable, and confident in their leadership of their school. Being involved in a small group created a sense of involvement and

belonging that ironically was most deeply felt and recognized by Stephanie as a result of missing the Vivian Robinson workshop. She felt left out and even disadvantaged because of this missed opportunity. That said, she still developed her own capacity having been involved in the study more so than she would have on her own, particularly in the three dimensions the study focused on. The principalship is a complicated business. This kind of professional development, a design-based research project, in situ, serves as a model of on-the-job training for principals as they engage teachers in improvement that shows great promise (Hildebrand, 2012).

Teacher Formative Assessment Practice

Teachers worked in partnership with their principals. Principals were provided with the formative assessment article from Hattie et al. (2007) entitled, *The Power of Feedback*, to assist them in offering very specific feedback strategies that go way beyond the traditional teacher feedback phrases of 'try harder' or 'study more'. The second tool, the *Assessment for Learning Journey* survey, provided a very clear, specific, formative assessment framework for teachers to examine their own professional practice and to help focus their assessment efforts.

What teachers do matters, or as Hattie (2009) explains, what some teachers do matters - especially those who teach in a most deliberate and visible manner (p. 22). Thus, while Hattie recognizes that all teachers have an impact he argues that that impact is not always as positive as it could be. There are teachers that are better than other teachers at their craft and at impacting student motivation, engagement, learning, and achievement. One purpose of this study was to see if principal leadership could help to influence and improve teacher capacity and practice. Formative assessment was chosen as a tool for teacher development because of the potential power it has to impact student intellectual engagement. Within its scope are the large effect sizes for student improvement as described above by Black et al. (2001) of up to 0.7 and Hattie, (2009) and Hattie et al. (2007) of up to an effect

size of 1.44. Both of these are superior effect sizes with self-report at 1.44, the highest ever effect size. Black et al. and Hattie et al. also provided practical direction and support for teachers to transform their practice at the classroom level as outlined in the *Assessment for Learning Journey* survey. Teachers reported that they felt more efficacious in their practice after working with their principals in terms of transforming their formative assessment practice.

This framework was central to the third finding of Black et al. (2001) that there is sufficient know how about how to provide teachers with a focus on where to direct changes in their assessment practice so that they could be more effective. It was hoped that inserting this simple but succinct tool into the study would be sufficient to provide some insight into how to overcome the 'low attainment trap' traditional assessment practice has had on student motivation, engagement, and achievement. While teachers' reported improvement in their formative assessment capacity it was insufficient, and possibly limited by the short period of time of the study and maybe other factors, to demonstrate deeper student motivation and engagement. This focus certainly lends itself as consideration for a separate study dedicated to this topic.

It has been established that large scale school or system initiatives are often met with what has been identified as 'resistance' by some of those who are impacted by the change, however this has not been the case in this study because of the small scale of the study and because all teachers involved were willing volunteers. That said Robinson (2011) approaches the issue of resistance as a matter of theory competition between the advocates of change and those who must actually do the change and she provides clear direction on how to manage change through examining our inferences using the ladder of inference and by what she identifies as theory competition instead of resistance. The ladder of inference is a method for educators to use to check the infallibility of their own inferences. They do this by interrupting the inferences they might be making by asking questions about their selection of data, how

they describe the situation, how they may interpret the situation, and finally, they question their conclusions. By beginning at the bottom of the ladder and questioning the data selection before proceeding an inquiry-based practice of continuous improvement is integrated into the professional environment.

All principals identified themselves as more comfortable with these management strategies as they experimented with analyzing the ladder of inference as they identified more clarity about checking their inferences, and about having open-to-learning conversations analyzing theory competition with the teachers they were working with. For future consideration it would be important to investigate how the involved teachers viewed these types of conversations as principals checked their inferences and strove to have open-to-learning conversations. Did teachers see this process as a useful professional development method that supported them in their growth? It appears that to some degree they must have. At what point is too many teachers too many for this approach for one principal? Can open-to-learning conversations be effectively carried out in larger group settings as they are in one-on-one settings, and if so how large? If scaling this up for much larger systemic change is a real possibility for advancing systemic change the impact could be very influential, regardless of the professional focus.

Alberta teachers continue to work in a system that exploits standardized testing. Two of the teachers involved in this study teaching grades nine and twelve are impacted directly by this influence. Though there are promising changes taking place in Alberta such as reducing the grade 12 exit exams from a 50% overall course weighting to a 30% overall weighting and changing the grade 9 exam to a Student Learning Assessment to be given at the beginning of the year instead of at the end of the year so teachers can use this data as formative information instead of as summative information with little use for teaching and or learning. These changes were not in place for these teachers during this study. Clark (2011) had compared the Scottish assessment experience to the United States experience, two vastly

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different assessment approaches. Scotland had conducted a nine year national formative assessment initiative that demonstrated huge teacher satisfaction results with the initiative. While the Alberta system resembles the American approach with a focus on high stakes testing, the teachers involved in this study demonstrated definite growth in their assessment practices over a short period of time. Though outside the scope of this study, including more time and more teacher involvement would be areas of focus worth pursuing in the Alberta experience.

To conclude this section, could student intellectual engagement measures be a metric worth pursuing equal to the metric of student achievement? Currently student achievement measures are arrived at within a poverty of student intellectual engagement. How would a student intellectual engagement focus impact teacher formative assessment practice? Would teachers see student self-report as a serious endeavour worth focusing their attention on? As identified with the principals above, teacher practice is a complicated business, however when the work of Black et al. (2001), Hattie (2009), and Hattie et al. (2007) is examined the question of where teacher practice needs to focus is no longer a mystery. With student self-reporting having an effect size of 1.44 the mystery really is why has not focusing on this one powerful teacher practice not happened much more quickly than it has across all school jurisdictions?

Student Intellectual Engagement

As identified in chapter four, the primary finding from this part of the study is that there was a negative relationship between the pre and post-survey data in all categories, but the grade twelve class. Overall, students were less intellectually engaged at the end of the study then at the beginning. The findings of the one group of grade 12 students is a usual finding from the *Tell Them From Me* surveys. Students in grade 12 naturally strive to end their public school career with a sprint to the finish as these school marks follow them for the remainder of their lives. I identified two possibilities for this finding in

chapter four. One is that the timing of the *Tell Them From Me* post-survey was so late in the school year that students were already anticipating their summer holidays and had already checked out of school intellectually. The second is that the students could have been demonstrating some push back as a result of changes in teacher classroom assessment practice that they were not yet willing to accept. Of course, there may be other possible reasons for these results not apparent in the data. Perhaps if the study had been carried out over a longer period of time, perhaps an additional five month period, the results may have been different. For future consideration, student inclusion in this type of study would be a useful approach to gather their voice. Obtaining student input about changes in teacher assessment practice would provide insight however this was not within the scope of this study.

It is however evident from the data that students have their own engagement agenda that is very different from what their school leaders and teachers desire. At the end of the school year or semester, principals and teachers want their students to be deeply engaged in their learning so that they can perform well on their final exams. Clearly too many students are not deeply engaged at these times. Final exams are a common occurrence for grade 6-12 students in Alberta. Grade 6 students write Provincial Achievement Exams in English, math, science and social studies. All grade 12 students that desire a high school diploma in Alberta write at least two Diploma Exams: English and social studies, while many students write at least another one in math or in one of the sciences, as prerequisites for post-secondary entrance, while most grade 7-11 students write course finals. The provincially mandated exams carry with them several implications. First, they are used as a measure of student academic performance, second, they are perceived as a measure of teacher performance, third they are perceived as a measure of school performance, and lastly, they are perceived as a measure of district performance. While officially this is not the purpose of these exam results, in actuality this is what happens. The Fraser Institute routinely reports school and district scores and then ranks schools, while the media and

others pay significant attention to the results. Again the results of these academic exams take place within a climate of poverty of student intellectual engagement, yet this reality continues to go unnoticed and unreported. Clearly, there is a significant disconnect between systemic goals and behaviours and what our students are telling us about their intellectual engagement in our educational system that needs another serious look. This issue raises several questions. Considering the low level of student intellectual engagement, how useful are these summative year end exams, and how much and how many students actually prepare for them? Should not a high level of student intellectual engagement be a prerequisite to measuring student performance? And finally, how could school systems achieve this goal?

Historically, the disengaged student was the domain of the 'drop-out' as described in chapter 2. Much good work has been done to address this concern (Finn, 1989, Pope, 2001: Willms, 2003, Willms et al., 2009). In 2009 Willms et al. expanded the definition of student engagement in their work *What Did You Do in School Today? Transforming Education Classrooms Through Social, Academic and Intellectual Engagement* to include an intellectual component meaning: a serious emotional and cognitive investment in learning, using higher-order thinking skills (such as analysis and evaluation) to increase understanding, solve complex problems, or construct new knowledge driving student engagement research in new directions. Coupled to this new definition was the inclusion of the concept of flow (Csikszentmihalyi, 1991) identified as an intrinsic, deep absorption, interest, and enjoyment in an activity, the opposite of boredom and apathy. This expansion of the definition of student engagement has resulted in research moving into new directions, particularly that of improving engagement for all students and not just for those on the margins. School systems have much to contemplate in terms of engaging students at his level, but it will not happen if it is not a consideration of the current school system landscape. While student voice is becoming much more widely recognized as an important element of school system reform its full impact is yet to be felt, nevertheless an impact is being made.

An example of this impact is how Alberta Education has recently combined their provincial

Accountability Pillar survey with the above mentioned *Tell Them From Me* survey to ascertain greater

student voice. Though more needs to be done this is a step in the right direction. Student motivation is

key to engagement.

The prevailing motivational practice of school systems is the extrinsic reward model. Extrinsic

motivation occurs when we are motivated to perform a behavior or engage in an activity in order to earn

a reward or avoid a punishment. The external reward for participation in school learning is that of grades

and marks, while punishment is failure, or not achieving to a particular standard relative to one's peers.

Most students are not motivated by marks and grades and are even disengaged from the system by them

(Harlow et al., 1950; Deci, 1971), thus the prevailing extrinsic motivation model needs to be

reconsidered. An intrinsic motivation model must be at play for the vast majority of students to be able

to experience the state of flow. Extrinsic motivation kills this drive. Willms et al. (2009) argues

rightfully so that the here and now is an important consideration for our students and that school should

not be allowed to waste student time. The time of our young people is just as important as that of any

adult time and therefore school needs to engage students in meaningful learning. The type of academic

learning that school systems desire for their students to engage in in the 21st century includes creativity,

problem solving, collaboration, and conceptual thinking (Friesen, et al, 2009; Friesen et al., 2010) all of

which are promoted best through utilizing an intrinsic motivation model that promotes student

autonomy, mastery, and purpose and each of these factors need to be included in system research and

development if transformation is to take place at the classroom level. Formative assessment practices

that include student self and peer assessment practices move students in the right direction as they are

taught how to assess their own work (Black et al., 2001; Hattie, 2009) which requires a high level of

intellectual engagement and motivation to do effectively. There is movement in this direction with

educational jurisdictions as discussed above, relating to Alberta Educations recent initiatives in curriculum redesign and timeline for the elimination of Provincial Achievement Tests and the reduction of Diploma Exam weighting. Impacting student motivation and intellectual engagement are serious endeavours worthy of the educational community. Principals and teachers each play a role in making this happen. Do not all students deserve an educational system focused on engaging them deeply in their learning? This will require studies that really look outside the one size fits all organizational system that dominates the current landscape.

Researchers Assumptions

School systems presently are at odds with themselves at the policy and practice levels because of system incoherence. The lack of instructional coherence between school system policy statements and practices, research findings connected to principal leadership, teacher practice and formative assessment practices, and then the connections to student learning and motivational processes seems to be the largest single dilemma school systems face in the 21st century. School systems must break away from the outdated, ineffective, stifling, 20th century factory Taylorism model of organization and delivery, the antiquated reward and punishment belief system of grades and marks connected to this system, and the resulting assessment systems that have grown out of these beliefs that we know demotivate and disengage our students and move towards the creation of a coherent policy and practice model based on what we actually know about what motivates and engages students. As school systems strive to sort out the systemic inconsistencies and contradictions that are directly contradictory to their stated goals and beliefs an excellent place to begin is in the areas of principal leadership and teacher formative assessment as these offer our students the largest possibilities for student motivation, intellectual engagement and success.

Much more is now known about how to change large systems and the contextual obstacles that these systemic changes must overcome to be successful (Mourshed et al., 2010). Making use of Robinson's (2011) theory competition approach places the responsibility for change on those who want to be the change agents. Educational leaders at the provincial and district leadership level have the responsibility to build their capacity to be able to engage in this work to impact principal leadership, teacher classroom assessment practice, and ultimately student intellectual engagement in school.

Summary

To summarise, chapter 5 discussed an analysis and interpretation of the findings as outlined in chapter four. The focus of the study was identified, as well as the type of study, design-based research, along with the intervention tools used by the principal and teachers in the study and the sources of data for all concerned groups: principals, teachers, and students. The research questions were reviewed as were the research findings. These were interwoven with the conceptual framework which was used as the framework for the analysis and interpretation discussion. Issues of principal leadership capacity were identified and explored with regards to establishing goals and expectations, leading teacher learning, and ensuring quality teaching. Principal capacity developed over the course of the study and principal leadership impacted teacher practice directly. Using the ladder of inference, engagement strategies rather than bypass strategies, and employing theory competition were areas identified as growth areas for principals. All principals enjoyed the challenge of being involved in the study.

All teachers reported capacity development as a result of being in the study. Teachers demonstrated the least growth in the one area that has the highest impact on student learning, that of student self-reporting. Principals need to pay attention to this area of practice to achieve the most gains for their students. Teachers were willing to cooperate with principal support and direction and would benefit from support in this area.

Student intellectual engagement demonstrated a negative impact. Possible explanations for this finding were offered for consideration. This discussion reviewed the implications of systemic contradictions and inconsistencies with what is known about student engagement and motivation and what is actually done systematically that disengages students from school. Students appear to have their own engagement timetable that is separate from the design and desires of the school system. There are systemic changes that are now beginning to address student engagement concerns and student voice is central to this movement. Extrinsic versus intrinsic reward models need to be re-evaluated in light of recent research. Finally, I, as researcher, offered some of my assumptions with regards to the study's findings. System coherence with what is known about good policy, research, and practice, and what is done in school systems needs to be addressed. As systems address these inconsistencies all partners in the system will benefit, but mostly the students.

This summarizes the analysis and interpretation. Chapter 6 will review the findings, provide conclusions for the study, and my interpretations to these conclusions related to principal leadership, teacher formative assessment practices, and student intellectual engagement. It will conclude with recommendations for further research.

Chapter Six: Conclusions and Recommendations

The purpose of this design-based study was to explore with a small number of principals the impact that focused principal leadership would have on working with teachers that would employ particular formative assessment practices that could more deeply engage students intellectually in their school work. The conclusions from this study are arrived at through an analysis of the research questions and the study's findings and address three areas: principal leadership; teacher assessment practice; and student intellectual engagement.

Principal Leadership

Three findings from the study concern principal leadership and are inextricably linked to each other. The first major finding of the study is that principal capacity issues are at the heart of establishing school goals and expectations, leading teacher learning, and ensuring quality teaching. One conclusion that can be drawn from this finding is that even though each of the participating principals had multiple years of school leadership experience and training, with two holding Master's degrees in school leadership, and one currently working on a Master's in school leadership, their experience and training did little to help them to implement the skills required for student-centered leadership as outlined by Robinson (2011). Years of experience and past training are insufficient for principals to do this type of work without building their own capacity first. This new research is largely unfamiliar to principals who are not attending a post-secondary institution taking courses and being exposed to it. This study exposes one disconnect between what current principal leadership research offers and real time practice at the school leadership level. Systemically, there is no built-in structure within the school system that supports principals in consistently building their own capacity by consistently providing exposure to current leadership research. If these principals had not volunteered to become involved in this design-based study, all but one would be unfamiliar with the work of Robinson (2011) and would not be looking at

their leadership practice through the new lens of being student-centered that Robinson provides. Therefore, principals must accept a certain level of responsibility to keep up-to-date and connected to current research informed practices so that their leadership remains relevant.

A second finding concerning principal leadership is that as principals interacted with the studies design solutions they became much clearer about the processes involved in establishing school goals and expectations, leading teacher learning, and ensuring quality teaching. In short, the principals became better informed. Furthermore, the principals demonstrated a shift from primarily a principal-centered approach to a shared, collaborative, student-centered approach and in making this shift the principals moved from understandings that were unclear and uncertain to understandings of clarity and certainty. A second conclusion is that when principals involve themselves in design-based research they are provided a job imbedded opportunity to explore new research and processes they can build their professional capacity fairly quickly. The work of the principal is complex and demanding. These principals sincerely appreciated the opportunity to develop their own professional capacity and with this increased capacity they also became more confident in their work with their teachers. It must be noted that their involvement in the study was in addition to the regular demands placed upon them in their day-to-day responsibilities. As such it is certain that their day-to-day responsibilities took precedence over this peripheral study throughout the time frame of the study. Even so, each of the principals demonstrated increased capacity in the new knowledge they obtained and the new processes they were able to experience. Working together as a small group of volunteers helped to create a level of accountability and involvement that likely would not have been present had they been completely on their own. This circumstance parallels the buy-in expectation of the teachers in the study in that they require a reason or a purpose to learn and to change their practice. Finally, as principals' engaged in the study, focusing on

the three dimensions identified above, they developed simultaneously their own capacity and that of their teachers.

The third finding connected to principal leadership is that the study demonstrated that as principals focused their work on impacting teacher formative assessment practice that they were successful in doing so. The conclusion that can be drawn is that when principals work collaboratively with their teachers using a shared professional focus that their impact on teacher practice is direct and teachers improve their capacity. In a small way this process serves as a model for professional collaborative work. The principal and the teachers, at each school, shared a focused goal, identified specific research supported assessment practices, did the work in a supportive culture of practice free of concerns about risk and failure and they each developed professional capacity. Learning about Robinson's dimensions of leadership gave principals more confidence to be able to engage teachers in open-to-learning conversations, to challenge teacher inferences about their own practice, and how to engage in theory competition conversations more so than they would have or could have previous to the study. Principal confidence increased with more knowledge and information.

Each of the findings related to principal leadership are connected. Principals found themselves at the beginning of the study unaware and unable to act on the leadership principles of Robinson (2011) as they lacked the knowledge and skill to do so. As principals grappled with the new knowledge and processes of leadership as outlined by Robinson (2011) they were able to begin to understand them intellectually and then find small ways to begin to introduce them into their day-to-day leadership practice. Dealing with matters of inference related to classroom practice, beginning open-to-learning conversations, and understanding theory competition became knowledge and skill processes that helped them to see their roles more clearly and confidently. They could see a place for these ideas to support

them in the complicated challenge of changing teacher practice. As a result of this new insight they were able to directly influence teacher classroom practice in a positive manner.

Teacher Assessment Practice

One finding from the study connects to teacher assessment practice. The study demonstrated that as teachers focused their attention on formative assessment practices that they improved in their practice. The conclusion from this finding is that teachers respond positively to the collaborative interaction of principals when that collaboration is done with relational trust and support and with a focus on learning that the teachers are interested in. As principals demonstrated more confidence and clarity in their leadership, their teachers were able to engage in innovation and risk, with a sense of commitment to capacity building, and as a result participated in a small focused professional community (Robinson, 2011, p. 34). Under the support and direction of their principals, teachers needed to be able to distinguish between learning and performance goals to help them to move ahead in a more strategic manner. Robinson's work helped to clarify for both the principals and the teachers the difference between these two types of goals and in doing so offered an essential step in being more deliberate with capacity building. Asking teachers to move to performance goals without providing the requisite skill set to achieve the goal is not an uncommon expectation in school settings. Recognizing the need to develop teacher capacity to accomplish desired goals is a crucial step often ignored in policy or procedure directions mandated from middle or central education levels resulting in teacher resistance and or failure to accomplish the desired goal. Elmore (2002) explains this principle, "For every increment of performance I require of you, I have a responsibility to provide you with the additional capacity to produce that performance" (p. 5). Principals also provided resource support for teacher development.

Teachers were provided with two formative assessment tools, *The Assessment for Learning Journey* framework and *The Power of Feedback* (Hattie et al., 2007), that supported them in learning

goals and then performance goals. These tools proved to be valuable resources in reinforcing their development as all teachers reported increased capacity at the end of the study. Distinguishing between these two types of goals, learning and performance, makes sense in terms of teacher development and capacity building. Teachers were able to determine for themselves areas for further development using *The Assessment for Learning Journey* survey by clearly identifying the areas that they felt they needed additional growth in.

Teacher practice improved as a result of collaborative support from principals that was offered in the form of a trusting supportive environment and in principals offering teachers clarity on the kind of goals that teachers needed to set: learning goals or performance goals. Teachers also benefitted from the resources principals provided for them that helped provide clear information about skills and processes connected to the practice of formative assessment. The assessment area that teachers identified as the one requiring the most work to be done on their part was also the one that offered the most hope for gains in student achievement and intellectual engagement. Hattie's work that identified student self-report with an effect size of 1.44, which is greater than any other teacher practice known, cannot and must not be ignored by principals and teachers. It is possible that teachers chose to focus on developing formative assessment practices that were simpler to develop and that they left the most complex practice for later work. Teachers need to consider where they are at in relation to this very promising assessment practice. Is it a learning or performance goal and then not delay in moving forward with mastering this practice?

<center>**Student Intellectual Engagement**</center>

The one finding connected to student intellectual engagement determined that there was a negative relationship between the pre and post-survey data in all categories, but the grade 12 class. The conclusion from this finding is that the data is unclear as to what this result means. I offer a few

possibilities. First it is possible that students were reacting to the change in the status quo of the teacher's classroom assessment practice. Their understanding of how assessment practice flowed from their previous experience with these teachers was disrupted and their sense of equilibrium possibly upset as more was expected of them in regards to how formative assessment practice impacted their day-to-day classroom experience. Had additional time for the study been available it may have been able to provide an answer for this issue. A second possibility is that quality teaching was in place prior to the study and creating higher intellectual engagement ratings may have been difficult to do from the outset. Or it could have been simply most students were past the point of maintaining engagement in their school work as summer vacation loomed before them just days away and intellectual engagement was just something that they could no longer sustain. Teachers revealed that they virtually ignored the most engaging student assessment practice that of self-reporting. The link between student motivation, interest, and intellectual engagement is an interesting one. Hattie (2009) demonstrated the powerful effect size of 1.44 regarding student self-reporting. Had teachers paid more attention to this powerful practice would student intellectual engagement have been reported differently? It is possible that teachers needed more support with this student practice as a learning goal. Throughout the study student input as to their engagement levels would be a point of view that would be welcomed. Supporting teachers in how to provide students' with opportunities to self-report and seeking their input may have provided different results.

<div align="center">**Recommendations**</div>

I offer recommendations based upon the findings, analysis, and conclusions of this study. The recommendations that follow are for: principal leadership practice, teacher formative assessment practice, and student intellectual engagement.

Principal Leadership

There is an expectation that principals come to their job well equipped to do it. More often than not, they have demonstrated years of excellence in teaching, sought further education and training by entering a Master's program, and have spent some time as a vice-principal learning how to carry out the functions of running a school. Once on the job, there is limited time and effort focused on keeping principals up-to-date with current educational research and innovation. On the other hand, universities are submerged in research focused on how to impact schooling outcomes such as increased student achievement, improved graduation rates, and improved student engagement just to name a few. Bridging these two institutions, public schools and university education faculties, at the school administrative level continues to be a challenge. If all educators are indeed serious about applying what is known about best and next practices to where it needs to be applied, then ways to bridge this gulf need to be seriously explored, conceptualised, and implemented. As a researcher implementing a design-based doctoral study, I have been able to be, in a small way, that bridge. And in turn, my participation in the program has had more impact on my professional growth than anything else I have done to learn about educational leadership. As for my participating colleagues, I feel qualified to comment for them that they benefited immensely from their participation in the study. They were exposed to leadership dimensions and practices that would not likely have crossed their desks had they not been in the study. This process provides a model for principal leadership capacity building. I offer several recommendations for this focus.

1. Principal leadership, that is student-centered, requires training specific to that educational focus. Robinson (2011) wisely shifts leadership focus away from an emphasis on leadership style to leadership practices (p. 3). Years of experience and training that do not involve this type of preparation is inadequate. It would be foolish to ignore the large effect sizes of 0.42 and 0.84 that

Robinson's work has so clearly established to do less effective work for principal leadership development.

2. A design-based research process is an effective way to deliver this type of in-situ, on-the-job training. The focus of this research needs to be centered on leadership practices that impact teacher assessment practice, student achievement and student intellectual engagement.

3. For principals to become agile learners and school innovators requires continuous knowledge building and learning that involves time as a resource, and access to new research information. These two ingredients must be able to find a place in the working day of the school principal if they are to become the lead learners in their schools. To do this principals and system leaders need to examine what must come off of the table of the principal workload so that this more important work gets done.

4. While this study demonstrated some success, its direct impact is limited to five principals. System structures that include university education faculties, participation and support from departments of education, and district offices need to be developed that provide research, funding, and structural support for principal leadership development that is job imbedded. Had this type of structure been in place, and had the principals been granted permission and support from the center to consider their involvement in this design-based study their main leadership professional development focus, it is possible that much greater gains would have been made by all participants. Undergraduate teacher education programs already provide a model for this type of system structure where universities, governments, and K-12 systems work together to provide a qualified teaching force. Exploring how to do this for principal leadership development would be a worthwhile endeavour.

Teacher Formative Assessment Practice

      Teachers demonstrated capacity building as a result of their involvement in the study. They also demonstrated where more growth was required. I offer the following recommendations for consideration.

1. Teachers verified that they could develop their capacity as they collaborated with their principal in small professional learning communities. This collaborative practice should be expanded upon. All teachers and their principals would benefit from developing a professional learning community as described by Hargreaves and Fullan (2012). These communities share a collective responsibility to each other and to their students with the goal of continuing to improve their practice in an environment that is respectful, compassionate, and dignified. The collective learning is research informed, locally adapted and applied, and all issues are solved by the collective group learning their way out of them together. This learning community develops in a very real organic process as a result of the buy-in from all participants to the goal of being the best that they can be.

2. Teachers should continue to engage in self-assessment processes regarding their formative assessment practices to develop their own self-reflective skills and to continue to challenge their own inferences about their current assessment practices.

3. Teachers need to develop their capacity to engage their students in the practice of self-reporting their own learning to take advantage of the enormous effect size that this student assessment practice has on student learning.

4. Teachers need to be able to prioritize their choices for professional growth and choose the most effective practices over less effective practices and focus their capacity building on these high impact assessment practices.

5. For future consideration, studies similar to this one would benefit from more informed teacher involvement in a single school and with much more participation. The researcher and principal should meet with all of the teachers in the school and explain the entire study and the possible benefits to the teachers with the hopes of gaining more teacher participation and this would also assist in beginning to build a professional learning community focused on the school goal of improving student achievement and intellectual engagement by paying attention to the teacher practices that offer students the largest gains, formative assessment practices.

6. Teachers would benefit from having the opportunity to showcase their professional development capacity building by sharing with fellow teachers and encouraging professional learning as a community of learners.

7. Teachers should collect evidence of their development so that they can share exemplars of their work with others that would benefit from seeing these examples.

Student Intellectual Engagement

The negative relationship between the pre and post-survey results regarding student intellectual engagement is an interesting finding. Clearly this was not the finding that was hoped for. That said principals and teachers each demonstrated improved capacity. The question that remains is how could principal and teacher improvement not impact student intellectual engagement? I offer the following recommendations.

1. Students should be involved as informed participants from the outset of the study by being involved in initiatory meetings with the researcher, principal, and teachers as the entire study is explained to them.

2. The study should be carried out over a longer period of time so as to allow the students to become accustomed to the changes in teacher assessment practice to see if they are able to confidently agree that these changes helped or did not help them to become further engaged.

3. Students should be given training by their teachers in how to effectively use self-reporting practices providing them with expertise in this high powered assessment practice as described by Hattie (2009) as having the greatest influence on student performance with an effect size of 1.44.

Recommendations for Further Research

I recommend further studies be conducted that would explore greater involvement from teachers and students in terms of investigating principal leadership impacting teacher assessment practice and student intellectual engagement. This study is just a small exploratory study examining the relationship between these three groups. A more comprehensive, supported study would advance our understanding of the link between principal leadership, teacher formative assessment practice, and student intellectual engagement. Believing there is much more to explore and understand about this relationship the following should be considered for further investigation:

1. Preparing principals with targeted training on the subject of Robinson's three leadership dimensions: setting goals and expectations, ensuring quality teaching, and leading teacher learning focused on in this study prior to their interaction with their teachers would likely advance the impact principals have on teacher assessment practice.

2. The inclusion of all of the teachers in one or more schools participating in a similar study would provide a more detailed picture of the impact of principal leadership on teacher assessment practice.

3. It would be instructive and helpful to extend the teacher data source from just the *Assessment for Learning Journey* teacher self-report to collecting more precise, in-depth, concrete,

teacher data that provided clearer evidence from the six categories of the teacher self-report. This data would include pre and post-study teacher examples of teachers' use of the six topics explored in the teacher survey: clear learning targets, task and process criteria, exemplars, examples of constructive feedback, examples of effective questioning and conversations, and examples of how students are involved in self and peer-assessment practices.

4. More involvement from students at the outset of the study and supporting them in working with the six areas of focus outlined in the teacher's *Assessment for Learning Journey* framework and obtaining feedback about these aspects of teacher practice pre and post-study would also provide a much more developed data base for determining the direct impact teacher practice has on student intellectual engagement.

Summary

This chapter reviewed the findings of the study and provided conclusions of these findings related to principal leadership practices, teacher formative assessment practices, and student intellectual engagement. Next, it made recommendations connected to these same three categories of findings and conclusions. Finally, recommendations for further research were offered. To conclude, the approach of being student-centered in principal leadership practice is a new lens for school leadership. Focusing the three dimensions of establishing school goals and expectations, leading teacher learning, and ensuring quality teaching and supporting teachers in their formative assessment practices to help students to be engaged and successful in school is evolutionary in its practical application at the school leadership level.

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Name of Researcher, Faculty, Department, Telephone & Email:

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Supervisor:

Dr. Sharon Friesen, Vice Dean, Werklund School of Education, University of Calgary, Educational Leadership, K-12 Systems, 403-220-5625, sfriesen@ucalgary.ca

Title of Project:

The Impact of Principal Leadership and Assessment Practices on Student Intellectual Engagement
Sponsor:

NA

This consent form, a copy of which has been given to you, is only part of the process of informed consent. If you want more details about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

The University of Calgary Conjoint Faculties Research Ethics Board has approved this research study.

Purpose of the Study

Current research has clearly described the problem of student intellectual disengagement from school. The question yet to be answered is why are so many students intellectually disengaged from their school experience? One of the goals of this research is to determine if there is a link between student intellectual disengagement and the type of assessment practices being used at school. Do summative assessment practices de-motivate many students and thus disengage students intellectually while at school? If so, what role, if any, can a principal play in transforming teacher assessment practices within a school from a focus on summative assessment practices to formative assessment practices? If there is a link established between the type of assessment practices and student disengagement then this link can be used to help principals to support teachers in changing from traditional summative assessment practices to more formative assessment practices to more deeply engage students intellectual.
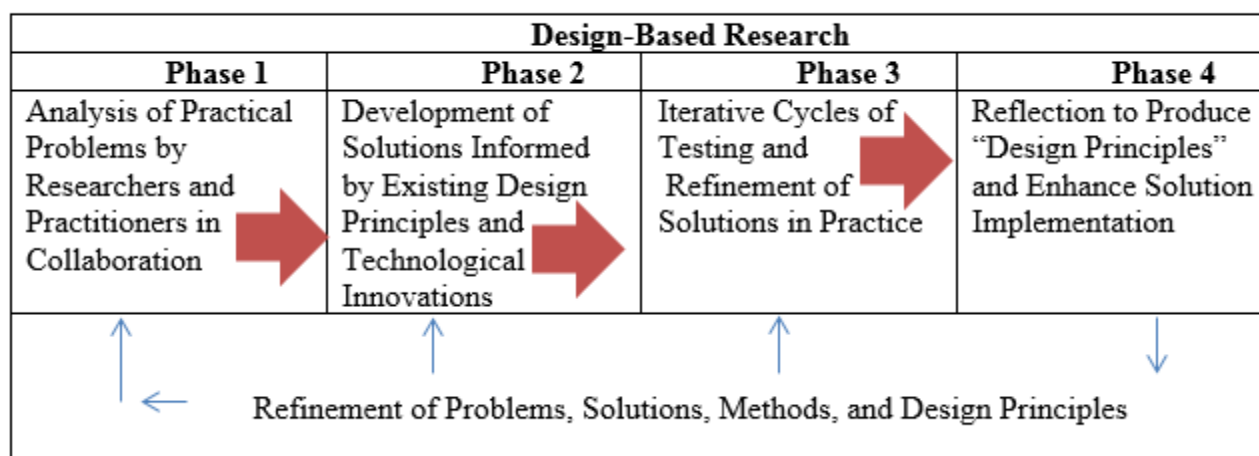While some research has explored classroom practices and their impact on student intellectual engagement, the connection between assessment practices and descriptive feedback cycles and student intellectual engagement has not been examined in any detail particularly as these apply to how principal's lead this kind of change. As school leadership and teachers have the greatest 168

What Will I Be Asked To Do?

Participants would have to:
1. read and become familiar with the proposal of 88 pages
2. read and become familiar with *Student-Centered Leadership* by V. Robinson (2011)
3. meet as a small group to discuss a review of the literature, design-based research methodology, and what it would look like for principal's to be working with teachers and helping them deepen and broaden their formative assessment practice to intellectually engage students initially, and co-create what that would look like in day-to-day practice, then meet up to 2 more times throughout the project to refine the work further for approximately two hours
4. write journal entries concerning their work and note key ideas and thoughts regarding the work they are engaged in as a school principal implementing this intervention. These journals will be returned to the participants after analysis.
5. explore the reference list readings if desired (optional)
6. become familiar with formative assessment and student feedback cycles as described in the document, *The Power of Feedback* by J. Hattie & H. Timperley (2007)
7. make use of the district wide Tell Them From Me survey and note the student intellectual engagement numbers for both administrations of the district mandated survey and determine what if any changes are apparent in the data
8. participate in two one-on-one taped interviews regarding their implementation of the group agreed upon design-based intervention for approximately 90 to 120 minutes using the questions adapted from V. Robinson's work Student-Centered Leadership (2009). Sample questions are attached below:
 1. How does a principal create the conditions in a school under which teachers' change their assessment practices to intellectually engage students?
2. How do principals support teachers in gaining the requisite knowledge and skills they need to be able to achieve the school goal of implementing assessment practices that more deeply engage students intellectually?
A. How do you as principal ensure that there is agreement in your school about the importance of AFL practices?
B. How do you as principal ensure that there is clear alignment between overarching school goals and the goals set by teacher leaders, formal or informal, for subjects and grades relating to AFL practices?
C. How do you as principal ensure that teachers are clear about the AFL goals for which they are responsible?
D. How do you as principal ensure that teachers feel personally committed to achieving the AFL goals for which they are responsible?
These interviews will be taped as they will provide the qualitative data that will be examined for themes or threads as to how principals applied their new knowledge of working with teachers regarding how to use assessment practices to impact student intellectual engagement. These will be coded and will be reported anonymously.
9. agree to participate for a period of five months for the implementation period as outlined in the Research Process diagram below:

Research Process

Design-Based Research			
Phase 1	**Phase 2**	**Phase 3**	**Phase 4**
Analysis of Practical Problems by Researchers and Practitioners in Collaboration	Development of Solutions Informed by Existing Design Principles and Technological Innovations	Iterative Cycles of Testing and Refinement of Solutions in Practice	Reflection to Produce "Design Principles" and Enhance Solution Implementation
Refinement of Problems, Solutions, Methods, and Design Principles			

Participation is voluntary. Participants can decline to answer any or all questions, and may withdraw from the study at any time and if at all possible have all their data returned to them.

What Type of Personal Information Will Be Collected?

Should you agree to participate, you will be asked to provide your gender, age, experience and academic training as outlined below.

The purpose of this survey is to gather information to determine the nature of the training, expertise, and experience of the principal participants.
Check one of the following:
Gender: Male _____ Female _____
Age: _____
Total years of experience as an educator: _____
Total years of experience as a vice-principal: _____
Total years of experience as a principal: _____
Total years of experience in present school: _____
University Training:
Bachelor's Degrees: _____
Specialization: _____
Post-graduate Diploma/Baccalaureate: _____
Specialization: _____
In progress: _____ How far? _____
Master's Degree: _____
Specialization: _____
In progress: _____ How far? _____
PhD/EdD Degree: _____
Specialization: _____
In progress: _____ How far? _____

All audio recordings will be accessed only by me, my supervisor, my doctoral committee members, and

a bonded transcriber who will sign a letter of Confidentiality Agreement. All audio recordings will be deleted upon the completion of the study after all data has been analyzed. It may be possible that there may be some rich conversations that may add to the data analysis that may be worth quoting verbatim. You can indicate if you are supportive of this or not by completing the checklist below.

"There are several options for you to consider if you decide to take part in this research. You can choose all, some, or none of them. Please review each of these options and choose Yes or No:"

I grant permission to be audio taped: Yes: ___ No: ___

I wish to remain anonymous: Yes: ___ No: ___

I wish to remain anonymous, but you may refer to me by a pseudonym: Yes: ___ No: ___

The pseudonym I choose for myself is: _____

You may quote me and use my name: Yes: ___ No: ___

Are there Risks or Benefits if I Participate?

Risks:
All ethical considerations will be accounted for in the development of this research study. As a principal in the district system, my relationship with all other principals is one of equality with no imbalance of power. No principals report to me for supervisory purposes. Informed consent for all participants and assurances of protection of anonymity (Bloomberg & Volpe, 2008) will be priorities for all aspects of the study. The purpose of the study and of each phase of the study will be clearly explained to all volunteer principal participants in a group meeting, small groups, or individual meetings as required at the beginning of the study once all volunteers are identified. The place is yet to be determined depending on the geography of the volunteers. An overview of the literature review will be a part of the informed consent and my research questions will be clearly identified and explained. The roles of the researcher and volunteer principals will also be clearly described.
All principal participants will be informed that they have the option to withdraw from the study at any time and that they may decline to answer any or all questions asked of them. There are no costs to participate in the study, other than the time required for interviews, reflective writing, and small group or individual meetings to review, receive and provide feedback for each iterative stage. I will provide the text *Student-Centered Leadership* to principal participants and any other reading materials. Other than the relationship between principals and their own teaching staff, the power relations among the participants are lateral and not vertical. Only teachers who express interest in participating in the study will be asked to volunteer. At no time is teacher participation in the study to be deemed supervised or evaluated with regards to job performance. Thus, there should be no concerns with participants' that I, as researcher, or that participating principals could exercise any undue influence or power over them because of their involvement or their decision not to participate in the study. As a researcher working as an invited guest in schools, I have no desire to exercise any unnecessary power or influence over any participant other than to act as someone who supports the research process and the participants in that

process. At no time will I make any evaluation of any persons choice to participate or to not participate in the study, nor will participants be judged or evaluated, or be at risk of harm, and no value judgments will be placed on any participants responses. All group meetings, interviews, and conversations will be conducted with the utmost professionalism and respect for confidentiality with regards to reporting beyond the participants and their schools.

Benefits:
If you agree to participate in this study there may or may not be a direct benefit to you. As a participant, you will be able to be involved in co-creating an intervention that may support you as a principal in helping teachers to more effectively implement formative assessment practices that more deeply engage students intellectually in their school work. Indirectly, the processes learned from participating in this study may be transferable to other work that you undertake with your teachers. The information obtained from this study may help to provide more effective ways for principals, thus schools and systems to engage students intellectually in their school experience.

What Happens to the Information I Provide?

All audio recordings will be accessed only by me, my doctoral committee members, and a bonded transcriber who will sign a letter of Confidentiality Agreement. All audio recordings will be deleted upon the completion of the study after all data has been analyzed. It may be possible that there may be some rich conversations that may add to the data analysis that may be worth quoting verbatim. All recorded conversations will have pseudonyms applied as directed in the above questionnaire regarding choices for participation. Due to the size of the school district and the familiarity within the district between all principals and many teachers, 'in-house' anonymity cannot be guaranteed, but every attempt will be made to honor this request.
All data will be stored in a locked cabinet or a password protected computer.
All principal participants will be informed that they have the option to withdraw from the study at any time and that they may decline to answer any or all questions asked of them. All their data will be returned or destroyed if at all possible upon withdrawal from the study.
Once the study is completed, and an analysis of the data reported on, all recorded conversations and transcripts will be deleted.

Signatures

Your signature on this form indicates that 1) you understand to your satisfaction the information provided to you about your participation in this research project, and 2) you agree to participate in the research project.

In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time. You should feel free to ask for clarification or new information throughout your participation.

Participant's Name: (please print) _____

Participant's Signature: _____ Date: _____

Researcher's Name: (please print) _____

Researcher's Signature: _____ Date: _____

Questions/Concerns

If you have any further questions or want clarification regarding this research and/or your participation, please contact:

> Dr. Sharon Friesen, Vice Dean, Werklund School of Education, University of Calgary, Educational Leadership, K-12 Systems, 403-220-5625, sfriesen@ucalgary.ca

If you have any concerns about the way you've been treated as a participant, please contact the Research Ethics Analyst, Research Services Office, University of Calgary at (403) 210-9863; email cfreb@ucalgary.ca

A copy of this consent form has been given to you to keep for your records and reference. The investigator has kept a copy of the consent form.

Appendix B: Principal Participant Demographic Survey Instrument

The purpose of this survey is to gather information to determine the nature of the training, expertise, and experience of the principal participants.

Check one of the following:

Gender: Male _____   Female _____

Age: _____

Total years of experience as an educator: _____

Total years of experience as a vice-principal: _____

Total years of experience as a principal: _____

Total years of experience in present school: _____

University Training:

Bachelor's Degrees: _____

Specialization: _____

Post-graduate Diploma/Baccalaureate: _____

Specialization: _____

In progress: _____   How far? _____

Master's Degree: _____

Specialization: _____

In progress: _____   How far? _____

PhD/Ed D Degree: _____

Specialization: _____

In progress: _____   How far? _____

Appendix C: Principal Reflective Interview Questions

The purpose of these questions is to help principals to reflect on their experience as a school leader and to explore what it is they do to help teachers move forward with their own learning and classroom implementation. The four main research questions provide the foundation points for each series of questions.

1. How does a principal create the conditions in a school under which teachers' change their assessment practices to intellectually engage students?

2. How do principals support teachers in gaining the requisite knowledge and skills they need to be able to achieve the school goal of implementing assessment practices that more deeply engage students intellectually?

A. How do you as principal ensure that there is agreement in your school about the importance of assessment for learning practices?

B. How do you as principal ensure that there is clear alignment between overarching school goals and the goals set by teacher leaders, formal or informal, for subjects and grades relating to assessment for learning practices?

C. How do you as principal ensure that teachers are clear about the assessment for learning goals for which they are responsible?

D. How do you as principal ensure that teachers feel personally committed to achieving the assessment for learning goals for which they are responsible?

E. How do you as principal ensure that teachers have the knowledge and skills they need to achieve the assessment for learning goals for which they are responsible?

F. How do you as principal ensure that teachers have the assessment for learning resources needed to achieve the goals for which they are responsible?

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3. What can principals do to remove barriers that teachers experience in implementing assessment for learning practices that support students in becoming more deeply engaged intellectually?

A. To what extent is the research on the characteristics of effective professional learning used in the design and selection of teacher professional learning opportunities connected to assessment for learning practices?

B. To what extent does teacher collaborative learning focus on understanding the relationship between what has been taught and what students have learned?

C. Is school professional development planning systematically linked to analysis of students' learning needs?

D. To what extent are teachers' individual learning and development plans related to student learning needs?

E. How effectively does the school identify teachers with the expertise needed to help colleagues address specific teaching problems?

F. Is the impact on students used to as an important indicator of the effectiveness of professional learning opportunities?

G. To what extent do you employ bypass or engagement strategies in your leadership of change?

4. To what degree do principals utilize a theory of engagement when working with teachers to bring about changes in assessment practices that more deeply engage students intellectually?

A. To what extent is the teaching of assessment for learning practices coordinated both within and across grade levels?

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B. To what extent is the teaching of assessment for learning practices informed by a common instructional framework?

C. Do your teachers and the leadership group have shared views about the effective teaching and learning of assessment for learning practices? What research or other evidence are those views based on?

D. To what degree do you and your teachers collect data about assessment for learning practices that can be used in productive ways?

E. What are the barriers that your teachers experience to using assessment for learning data for instructional purposes?

F. How effective is your leadership team in using the ladder of inference to test our important assumptions?

(Adapted from Robinson, 2011)

STEP 1 = Rate the **current level** of AFL practice (self and/or group) STEP 2 = What **evidence** can you collect to support the current level? STEP 3 = What **evidence** will take me/us to the next level?	NOT AT ALL	To a LIMITED EXTENT	To SOME EXTENT	To a GREAT EXTENT
Clear and appropriate LEARNING TARGETS (outcomes) Teachers can confidently interpret and prioritize learner outcomes from Programs of Studies Students are informed of the learner outcomes Students can explain what they are to learn (i.e. can articulate the learning target) Learner outcomes are visible (i.e. stated, shared, shown) throughout the learning process (e.g. plans, assignments, assessment/evaluation tools, gradebooks, etc.) Teachers gather a variety of assessment evidence to measure achievement in relation to the outcomes				
Development of CRITERIA (i.e. what a student has to know and be able to do in order to achieve the outcome) Teachers confidently turn learner outcomes into success criteria Students understand the criteria required to meet an outcome Criteria is (to some degree) co-developed with students to support the development of their understanding of it Criteria for summative assessment is transparent to students (i.e. assessment tool is available from the outset)				
Use of EXEMPLARS (i.e. can be a demonstration, conversation, sample product, etc.) Students have access to examples of varied levels of performance in order to compare their own work Teachers are confident about when and how in the learning process to scaffold learning with exemplars				
Students receive FEEDBACK that: Provides useful information about performance in relation to the learner outcomes and criteria Is descriptive (articulates what's on track and what needs attention) Helps guide the next step in learning (i.e. closes the gap) Is frequent, timely and varied (i.e. both oral and written) Comes from peers, teachers and self				
QUESTIONING and CONVERSATIONS: Teachers confidently lead discussions that promote high levels of cognition (thinking) Questioning techniques are used to engage all students, not just a few, in thinking and discussion related to the outcomes Summative assessment questions match the level of cognition of the learner outcome they are attempting to measure In a typical school day, students are actively and frequently involved in outcome-aligned collaborative work with peers				
Students are actively INVOLVED in their assessment: Students assess work—their own and others'—in relation to the criteria and/or by using exemplars (Note: summative grades are assessed by teacher) Students coach one another (and themselves) in relation to a learner outcome / learning goal (i.e. can monitor progress) Students articulate their progress and set goals for their learning Students are requested and able to demonstrate their learning / understanding in a variety of ways				

Sources: Black & Wiliam Black Box Research (1998; 2004); AAC *Refocus* (2005); Stiggins (2002); Lissa Steele (Chinook's Edge School Division) (2007); Maureen Parker (BRSD) (2008).