BUT WHAT IF I FAIL?

A META-SYNTHETIC STUDY OF THE CONDITIONS SUPPORTING TEACHER INNOVATION

SALLY HOLDSWORTH

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Supervisor(s):
Dr. Nancy Maynes

Dr. Blaine E. Hatt

Supervisory Committee:

Examiner(s)

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Sally Holdsworth

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Abstract

This meta-synthesis project investigates the conditions that support teacher innovation in schools. Twenty-seven articles that report on studies using a combination of qualitative and quantitative methodology were selected for this project. The articles were analyzed using Hargreaves' and Fullan's concept of Professional Capital as a framework, and nine emergent themes were developed. Most significant among the themes were the impact of teacher attitudes and beliefs, and the importance of school structure on how teachers initiated and sustained innovations in teaching practice. This project is limited by the ability to generalize results. This limitation is due to the variety of methodologies and sample sizes employed by studies used for the meta-synthesis. This project offers a discussion of the importance of local adaptation in supporting teachers to develop and sustain innovations that lead to positive school change.

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Background and Significance

Background

When I made the decision to pursue post-graduate work at almost exactly the half-way mark of my career, I was driven by the opportunity to 'get above' the day-to-day demands of administrivia and the endless downloading of 'new' initiatives and procedures that often seemed to be renamed and reinvented by those who had left the classroom behind a long time ago. I wanted to examine for myself the research and theoretical discussions responsible for the direction education was taking and see if, somehow, I could find a direction forward for myself. In this way, I wandered through courses, which were seemingly unrelated, pursuing my own interests, without necessarily envisioning any sort of summarizing event or project. After all, I had chosen to undertake the challenge of academic study for personal self-improvement. However, when I took time to reflect on my courses and the topics I had chosen for assignments, I found that what tied them together was an interest in investigating the conditions which support teachers as they strive to be innovative, try new methodology, and seek to improve their practice in order to improve student achievement.

Much to my surprise and frustration, many of my online discussion forums featured comments about the unwillingness of 'senior' teachers to innovate or try something new. My twenty years of teaching experience has not proven this to be the case. In the course of my career, I have found very few teachers who are not dedicated to trying new methods which could improve the success of their students. However, there are a multitude of factors — time, space, family pressures, lack of administrative support, isolation (to name a few) — which might impede attempts at innovation. During my career I have also seen teachers experience the resentment that comes from ill-advised strategies, which are imposed upon teachers in an attempt

to force innovation. These initiatives are often imposed 'from above', by the ministry, school board or administration, and are designed to increase accountability for administrative purposes, rather than to support creative and innovative teaching practice (Hargreaves, 2004).

To examine how schools and teachers initiate and sustain innovative practices, this major research project involved a meta-synthesis of research studies which investigated the conditions needed to support true innovation; innovation which is both authentic and sustainable. Ironically, while pedagogy is moving toward a more individualized, student-centered approach, professional development in the last two decades has become increasingly prescriptive and standardized, thereby minimizing the belief in the professional skills of the teaching profession (Darling-Hammond, Wei, Andree, Richardson & Orphanos, 2009). The meta-synthesis which forms the basis for this project focused on examining current research about factors which contribute to creating a culture of innovation among teachers in order to provide a direction for future thought about school orientation and policy as it relates to ongoing professional learning and professional practice for teachers.

The Importance of Innovation

As a primary function, schools exist to enable students to achieve learning goals. In order to do this, educational institutions dedicate themselves to constant improvement, using data and best practices to increase the effectiveness and quality of instruction and learning programs offered (Earl & Katz, 2006). As a public institution, schools are beholden to an insecure public, which demands evidence of efficacy (McNamara & O'Hara, 2004). The drive to meet these demands results in near constant change, as all levels of education adapt to achieve what is deemed necessary for student success. These often top-down shifts come in many forms —

structure, methodology, pedagogy — but all are seeking to standardize practice and to provide evidence that the quality of the educational experience is improving for students (Hargreaves, 2004). Even as standardization increases, however, so does the evidence from educational theorists that the most effective agent of change for students is, in fact, the classroom teacher (Hargreaves & Fullan, 2012; McKenzie, Santiago, Sliwka & Hiroyuki, 2005).

In a study of the process of improvement in twenty school systems from around the world — including Ontario — the McKinsey report noted that system improvement "ultimately comes down to improving the learning experience of students in their classrooms" (Mourshed, Chijioke & Barber, 2010, p. 3). In the quest for measurable improvement by higher levels of government administration, however, this key factor is frequently ignored. Tschannen-Moran (2009) points to contrasting rationales of educational reform: on one hand, in the move toward "greater standardization of work processes, such as 'teacher proofing' the curriculum; on the other, in the move toward professional development and coaching as coordinating mechanisms" (p. 220). McNamara and O'Hara (2004) argue that while there is increasing pressure to "reduce teaching to merely implementing a 'proven' programme of instruction" (p. 468), the literature and scholarship of school improvement has increasingly stressed that student learning is directly related to the quality of teacher learning. This failure to appreciate the importance of the classroom teacher has led to the development of educational initiatives by 'experts' whose strategies are imposed upon teachers and students with limited support or consideration of suitability (McNamara & O'Hara, 2004). According to these studies, supporting teachers to become the initiators of innovation rather than passive receivers is a key to understanding the improvement of educational practices in schools.

Due to the break-neck pace of change in education, teachers often feel either ill equipped to handle new initiatives, or are reluctant to employ new methodologies which they judge to be unsound (Hargreaves, 2004). This can create a vicious cycle: new policies which, inadequately supported or poorly implemented, do not result in the immediate success their creators hoped for, are then scrapped and new methods proposed. The cycle begins again, and each time, teachers are blamed for their unwillingness to try something new. In education, this has caused what Abrahamson (2004) calls *repetitive change syndrome*. This is characterized by the change-related chaos and initiative overload which occurs when a system implements more change initiatives than anyone could reasonably handle, resulting in confusion and a situation in which "hardly anyone knows which change they're implementing and why" (p. 3).

In his study about the emotional response of teachers to change, Hargreaves (2004) argued that a thorough understanding of how people deal with change is a key element in the success of educational reforms. Hargreaves pointed to a clear difference in the responses of teachers to mandated and self-initiated change. He concluded that emotional responses reported by teachers to mandated reforms are consistently negative, while teachers were overwhelmingly enthusiastic and animated about their experiences of self-initiated change. This is not because self-initiated change is easier. In fact, teachers described self-initiated change as fraught with "inherent difficulties, inner doubts and external resistance as they struggled to make their initiative succeed" (Hargreaves, 2004, p. 300). Another study also found self-initiated innovation to be a struggle, and reported that teacher-led innovation is an "energy consuming, emotional, and painful process" (Stam, Miedema, Onstenk, Wardekker & ten Dam, 2014, p. 263) which requires determination and vision. The difference in the response to mandated and self-initiated change is not in the ease of implementation, but rather in the involvement of the teacher

as a professional. Hargreaves (2004) concluded that each new initiative must engage teachers' knowledge and professional judgment in order to ensure success.

Significance

One of the most challenging hurdles to undertaking graduate work was being able to accept myself as a scholar. Having graduated from university 20 years ago, I was unsure whether I could effectively reengage in the academic tasks of reading, analyzing and writing, which seemed so at odds with my everyday life. Even ongoing professional development and the applied work of AQ courses did not make me feel confident about engaging in scholarly discourse. When I look back on that feeling, I find it absurd that as a professional educator, I had been made, over time, to feel that my work with students and the pursuit of my own professional and pedagogical goals were not academic endeavors. With an emphasis on changes designed to improve student scores on standardized measures, each new initiative imposed by the educational 'experts' at the school board and ministry level seemed to reduce my confidence in my own ability to interpret educational theory and make professional judgments. Through my reading, however, I realized that teachers are, without acknowledging it, engaged in research every moment of every day as they assess students, gather evidence of the efficacy of their methods, and make changes based on new understanding (Sherrington, 2014).

In the course of my academic study, I was introduced to an approach to post-secondary instruction called the Scholarship of Teaching and Learning (SoTL), a concept proposed by Ernest Boyer. In his article, *Scholarship Reconsidered: Priorities of the Professoriate*, Boyer (1997) tried to convince the faculty of post-secondary institutions that teaching should share an equal value with research. Boyer argued that the time had come to "move beyond the 'teaching

vs. research' debate and give the familiar term of 'scholarship' a broader, more capacious meaning, one that brings legitimacy to the full scope of academic work" (p. 16).

This made me think that if post-secondary instructors should be encouraged to value teaching equally with research, then are not teachers of children also scholars who should be credited for the value of the daily research they do in their own classrooms? According to Boyer, what is needed today is a more inclusive view of what it means to be a scholar. Instructors at all levels need to understand that knowledge is acquired through research, synthesis, practice and teaching. Teachers are scholars — researchers, communicators and bridge-builders — in all aspects of their work. This concept of the classroom teacher as a scholar is one I have come to embrace, and it serves as a guiding principle for this project. The research questions developed for this project serve not only a personal interest, but also a professional one. I intend, through my research, to develop a greater understanding about my own role as an innovator and how to position myself for success.

In a forward-looking system like education, which is constantly adapting to prepare students for a world that does not yet exist, reform and re-evaluation are essential. If, as argued above, the most meaningful, and sustainable change in a system begins with the teacher, then supporting teachers to be creative and innovative is of the utmost importance.

Research and Theoretical Framework

Research Framework

While education and business have often shared an uneasy relationship, the concept of professional capital explored by Hargreaves and Fullan in their 2012 book, *Professional Capital: Transforming Teaching in Every School,* pulls concepts from the language of economics and

applies them to school improvement and teacher innovation. Just as I found myself unsure of my role as a scholar, I was initially skeptical of the conceptualization of teachers as 'capital', and the focus on teacher development as a 'system investment'. As Hargreaves and Fullan argue, however, the concept of teachers as sources of professional capital in education acknowledges the importance of teacher skill, technical knowledge and methodological expertise and offers a way to understand how greater outcomes in the area of student achievement can be realized through greater support of teacher innovation.

Characterizing teachers as the holders of professional capital in the educational system accords teachers the pivotal role of "change agents" as they work towards making self-initiated innovations, which can result in improved outcomes for students (Hargreaves & Fullan, 2012). Hargreaves and Fullan discuss the three kinds of capital that make up professional capital; human capital, social capital and decisional capital. This triptych vision of professional capital provides a useful structure for examining studies that address the factors which foster innovation in schools and among teachers. I have used the concept of professional capital in my project to frame the research and the analysis of the findings.

Theoretical Framework

Teaching and schooling are social endeavors. While many behavioural scientists have positioned learning and development as a primarily individual pursuit, anyone who has spent time in a classroom can see the complex social interactions which occur as individuals work together and in tandem to develop new skills and understanding. Vygotsky proposed a theory of development—sociocultural theory—which emphasized the importance of a social context in learning and development (John-Steiner & Mahn, 1996). Sociocultural theory posits that

learning is a uniquely social endeavor, in which knowledge is co-created by members of a society within a distinct cultural and historical context (John-Steiner & Mahn, 1996). This approach was in direct contrast to many of Vygotsky's contemporaries who were intent on developing more simplistic biological and psychological explanations for human learning. In sociocultural theory, knowledge and understanding are developed through a constant dialectical interaction with others, which makes learning a negotiated and evolving process, rather than a fixed achievement.

This framework provides a useful lens through which to view discourses on teaching and innovation, as it acknowledges the complex set of social circumstances faced by teachers every day. Each school, classroom, and indeed each student and colleague offer their own unique social and cultural characteristics, which must be taken into account. If learning is a constant dialectic, then sociocultural theory can provide a way to view teaching and learning as an ongoing event, one which is constantly shifting, making it even more important to create a structure for self-regulation and individualized innovation.

Together, the concepts of professional capital and sociocultural theory have acted as guiding principles for this study. The emphasis on the social, interactive and emerging nature of professional educational practice embraced by both of these perspectives provides a useful lens through which to examine the diverse factors that serve to foster and sustain teacher innovation.

Review of the Literature

As discussed earlier, the concept of *professional capital,* developed by Hargreaves and Fullan (2012) provides a research framework for this project. By examining the three types of capital—human, social and decisional—within a school, Hargreaves and Fullan offer a way to

investigate the strengths and challenges faced by educators within a complex social setting. They argue that a data-driven, business capital approach to education and teaching is overly simplistic, and reduces a highly skilled and nuanced profession to performance values displayed on a spreadsheet (Hargreaves & Fullan, 2013). Understanding teacher innovation, a significant factor in positive school change, requires a broad view of the role of teachers within a school and how they learn and develop through the course of a career. In order to locate this meta-synthesis project in current educational theory, it is important to review the literature that connects to the topic of teacher innovation. This literature review will offer a discussion of the research and scholarship that examines teacher innovation as a function of the professional capital of teachers within the education system.

Human capital is described by Hargreaves and Fullan (2012) as "the qualities of the individual, their qualification and competencies on paper" (p. 37). While the latter — qualifications and competencies on paper — are determined and regulated by teacher training programs and licensing bodies such as the Ontario College of Teachers, the individual qualities of a teacher often determine the impact a teacher has in the classroom (Hargreaves, 2004). In a study of teaching and teacher policy in 25 member countries around the world, the Organization for Economic Cooperation and Development (OECD) determined that teachers are primarily motivated by the intrinsic value of teaching—making a contribution to society through the development of their students (McKenzie et al., 2005). Educational theorists have also acknowledged the significance of this motivation on the part of teachers. Ali (2011) studied innovation oriented teachers and concluded that change efforts by these teachers were motivated by the "conception of their role as teachers, [and by] their sense of commitment to their students" (p. 1635). In a study to identify the reasons why teachers undertake innovative practices, Emo

(2015) determined that when teachers perceive a positive outcome of a change, they are willing to take the risks inherent in innovation. Davies (2013) agreed, citing positive student response as a key factor for teachers in the initiation of change in the classroom. Zehetmeier (2015) describes the outcome of effective, teacher initiated change on students as a 'virtuous circle'; in a positive school environment, factors fostering innovation "led to impact, which led to fostering factors, which led to impact" (p. 125). This research confirms the experience of many teachers, myself included: human capital within school systems is developed and maintained in the same way that teachers support students—by developing confidence and supporting positive outcomes.

The emotional impact of innovation is closely tied to motivation. Teachers with high human capital engage emotionally with their students, and invest of themselves when planning and implementing innovations (Hargreaves, 2004). In an effective classroom, teachers are authentic participants in the process of learning, and engage emotionally with their students (Hatt, 2005). Teacher training does not directly prepare a teacher for this emotional investment, but teachers who demonstrate high human capital find value and motivation by engaging emotionally with their students in the learning process (Hatt, 2005). Indeed, this type of vulnerability can engender discomfort on the part of the teacher (Lasky, 2005), but ultimately, students respect and understand that teachers who take risks affirm their own incompleteness and their willingness to learn together (Greene, 1986). This concept has been characterized as 'pedagogical love', which acknowledges and celebrates the emotional investment teachers make in their relationships with students (Hatt, 2005). When teachers demonstrate pedagogical love, they bring heart to the curriculum, binding students and teachers together in a mutual pursuit of learning. While pedagogical love may still entail a certain power dynamic, which characterizes

the traditional classroom design, this is mitigated by the mutuality of the learning relationship. Noddings (2012) calls this the 'ethic of care', and asserts that the "ethic of care binds carers and cared-fors in relationships of mutual responsibility" (p. 235). This is closely tied to Freire's (1970) belief that serious education should also acknowledge the authentic emotional bonds of teaching and learning, and hooks' (2003) assertion that teaching itself is an act of love in which teachers and students see each other as complex whole people engaged in a mutual pursuit of knowledge and understanding.

Human capital is dependent on relationality. An effective learning relationship is emotional and motivational. Creating this kind of relationship in the classroom is essential to innovation on the part of both the teacher and the learner. The human capital which a teacher brings to the learning transaction can be the key to the "co-emergence of learning and knowing, being and becoming for all participants in the classroom" (Hatt, 2005, p. 682).

What is unclear from the literature on relationality is how the characteristics of human capital directly influence how and why teachers decide to undertake and sustain innovations in their own practice. While teachers may feel open and emotionally present with their students, they may not be willing to take a risk which might make them professionally vulnerable (Lasky, 2005). Abrami, Poulsen and Chambers (2004) found that the most significant factor in teachers undertaking a new initiative was the expectation of success. If teachers believe that their efforts may not be successful, "they may neither take the initial risk, nor continue to persevere" (p. 211). Concern with the success of a new initiative can inhibit risk-taking by teachers, particularly if they might be seen as less competent by colleagues and administration. In her case study of an innovative project at an Ontario secondary school, Raskit (2006) recognized that innovations take place within a wider context and the support or criticism of their efforts by administration

can affect a teacher's decision to make a change. A greater understanding of this may lie in the second component of professional capital described by Hargreaves and Fullan (2012): social capital.

Social capital refers to the collaborative power of the group. While an individual teacher might demonstrate human capital in his/her own practice, it is social capital which allows teachers to bring their skills and abilities to a larger collective. Pil and Leana (2009) argue that current reform efforts which focus primarily on the role of administrators as instructional leaders, and bringing in outside experts to 'fix' the system have been largely ineffective in accomplishing sustainable improvement in education. Their large-scale study of New York public schools revealed that in schools where teachers reported high social capital — the positive relationships between educational professionals in a school — student achievement increased. The study also showed that social capital had benefits for educators. In schools with high social capital, mentorship flourished and new or struggling teachers gained skills and improved confidence.

Social capital is characterized by its focus on collaboration. Collaboration has been identified as one of the key skills for the 21st century workplace (Ontario Ministry of Education, 2014; Starko, 2014). When people work together in a collaborative way, creativity and innovation can be maximized. As discussed earlier, the sociocultural theory of human behaviour is based on the belief that all learning is experienced socially (Mahn & John-Steiner, 2002). The concept of the *zone of proximal development*, in which a less skilled person learns in collaboration with those of greater skill, is a key to understanding learning and mentoring relationships (Sawyer, John-Steiner, Moran, Sternberg, Feldman, Gardner & Csikszentmihalyi, 2003). In the past, studies of creativity and innovation have at times been characterized by the stereotype of the lone, eccentric genius labouring away, in a secluded studio or laboratory. The

modern reality, say many creativity theorists, is that innovation often involves a social aspect, but is, by its very nature, a collaborative pursuit (Amabile, 2006; Sawyer, 2007; Starko, 2014). This has been supported in studies of educational institutions and the workplace (Starko, 2014). Amabile and Pillemer (2012) found that collaboration in the workplace fosters a broader exchange of ideas and abilities. Through working together, individuals shared their strengths, and supported increased domain mastery in each member of the collective. In this way, collaboration, a form of social capital, serves to maximize human capital, thereby leading to increased personal motivation, and a stronger collective outcome (Amabile & Pillemer, 2012). Hargreaves and Fullan (2013) described this as "us[ing] the group to change the group" (p. 37). It follows then, that collaborative team-based initiatives that people voluntarily commit to, allow participants to identify needs and respond with creative and appropriate solutions.

In the traditional school environment, teachers are frequently isolated in classrooms as a result "of an 'egg crate' model of instruction" (Darling-Hammond et al., 2009). As a result, a collaborative environment must be fostered and supported. A key part of developing social capital in schools is the belief in the professionalism of educators. In the past two decades, the use of high-stakes standardized test scores and credit acquisition data as a method of rating teacher effectiveness has resulted in a 'hunkering down' mentality for many educators (Tschannen-Moran, 2009). Research on the importance of relational trust in schools has emphasized how maximizing trust in an organization can support collaboration, and by extension, innovation. Tschannen-Moran (2014) defines relational trust between professionals as "one's willingness to be vulnerable to another based on the confidence that the other is benevolent, honest, open, reliable and competent" (p. 17). This vulnerability is directly related to Hatt's concept of pedagogical love, a key component in Hargreaves and Fullan's definition of

human capital. A school system that demonstrates relational trust "holds in higher regard the professional expertise of teachers and…gives teachers greater autonomy and discretion" (Tschannen-Moran, 2009, p. 227). Research findings by Tschannen-Moran (2009, 2014) have directly linked the willingness of school faculty to collaborate with each other to the sense of trust within their organization. In a study on leadership and student achievement, Leithwood and colleagues (2010) found that even after external factors have been taken into account, "trust remains a strong predictor of student achievement" (Leithwood, Patten, & Jantzi, 2010, p. 679). Bryk and Schneider (2003) also recognized trust as a key element which defines the success of high-performing public schools. They argue that the existence of social trust at all levels of a school — teachers and students, teachers and parents, teachers and administration, administration and the community — was a significant factor in the ability of schools to achieve meaningful reform and improvement. In fact, their study concluded that schools with "chronically weak trust reports…had virtually no chance of improving in either reading or mathematics" (Bryk & Schneider, 2003, p. 43). Relational trust supports the structure of social capital by seeing educators as professionals and valuing their input in supporting collaborative inquiry and innovation.

The third component of Hargreaves and Fullan's (2012) concept of professional capital is decisional capital — how an individual develops their capabilities over time, in particular, the ability to use informed and evidence-based judgment in workplace situations. Hargreaves and Fullan relate this to the wisdom that court judges develop over the course of a career by dealing with cases by themselves and with others in a reflective and collective manner. Innovation requires an element of risk-taking, but, as Hargreaves and Fullan caution, for greatest benefit to all stakeholders in education, it must be accomplished in a measured, informed manner.

Decisional capital is built through experience, mentorship and professional learning throughout a career. While many schools and school boards have new teacher mentorship programs in place, there is an increasing understanding that mentorship can be extended to educators at all times in their careers. The Ontario Ministry of Education document, *Mentoring for All* (2015), characterizes mentorship in itself as an act of learning. Rather than seeing mentorship as a relationship which inherently reinforces a power dynamic between mentor and mentee, this document reframes mentoring as a collaborative and reciprocal learning experience which "serves as a means for job embedded deprivatization of practice and fosters reflection, learning and growth of mentors themselves" (p. 4). This re-energized view of mentoring as a reciprocal learning relationship supports the development of relational trust, collaborative innovation and leadership at all levels of the school community.

Professional learning is a significant part of building decisional capital. Indeed, effective professional learning has been directly linked to student-achievement gains (Darling-Hammond et al., 2009). Traditionally, teachers have been offered professional development, often in a 'one-off' workshop or presentation that stresses a particular priority of the administration or school board (King, 2014). In an interesting conundrum, provincial guidelines for teachers stress that professional learning is "ongoing" and "self-directed" (Ontario College of Teachers, 2012), while at the same time insisting that professional development days be "used for teacher professional learning related to key provincial initiatives aimed at improving student achievement" (Ontario Ministry of Education, 2007, p. 2). Teachers are often pulled in different directions, as they are asked to create engaging and sustainable innovations to suit priorities over which they have no control.

Research overwhelmingly supports the efficacy of ongoing teacher learning as a self-directed, collaborative process in which teachers use their professional knowledge to determine the strategies which will best serve student achievement. Hargreaves (2004) found that professional learning and reform processes which engage teachers' knowledge and commitment to their students are most likely to bring about effective and sustainable change. Teachers need to see professional learning as practical, job-embedded opportunities to discover challenges and seek solutions in a collaborative environment (Darling-Hammond et al., 2009). Job-embedded professional learning is firmly grounded in the location and context of a teacher's work experience, and provides an alternative to many professional learning offerings, which are 'one-off' experiences led by outside experts unfamiliar with the site specific issues faced by education professionals. Darling-Hammond and colleagues (2009) were particularly critical of the current state of professional development in a 2009 United States policy document. They asserted that teachers lack the time and opportunity to learn from mentors and work collaboratively, calling the current state of training "episodic, myopic and often meaningless" (p. 2). In Ontario, there has been a response to this type of criticism. The newly revised draft of the Professional Learning Framework from the Ontario College of Teachers commits to supporting the "complex, holistic, interrelated, self-directed, contextual and evolving nature of relevant and meaningful ongoing professional learning" (Ontario College of Teachers, 2015). Indeed, many educational innovations have failed because the need for teacher learning was not acknowledged or understood (King, 2014; Vermunt & Endedijk, 2011). Vermunt and Endedijk (2011) found that although teachers often prefer professional learning that can be applied immediately to the classroom, teachers (like their students), need extended learning opportunities which are collaborative and supported in order to sustain long-term innovation. Teachers need a balance of

collaborative opportunity and support for developing their own individual approach to teaching practice. Understanding professional learning as a "complex process involving the interconnectedness and interdependency of teacher agency" (King, 2014, p. 103) is essential to creating the conditions necessary to build decisional capital within a school community.

Two specific forms of professional learning which support the collaborative, inquiry based model described above, action research (AR) and professional learning communities (PLCs), have been widely embraced in North America by school boards and the government bodies which regulate education. Action research is a situated research methodology which attempts to seek out research questions specific to a particular situation, collect data and then offer a practical way forward for the researchers to create situation specific recommendations (Creswell, 2012). PLCs are groups of professionals who come together within a school or a region to develop initiatives or approaches to address specific challenges, or explore particular areas of professional learning (Owen, 2015).

These two approaches can also be combined, as a PLC could use an AR methodology to address a specific school-based concern (Davies, 2013). These two approaches have been widely supported by school boards for several reasons. First, PLCs and AR projects can serve to establish collaborative networks among teachers (Aubusson, Steele, Dinham & Brady, 2007; Davies, 2013, Owen, 2015). In addition, the collective nature of these projects offers greater evidence of teacher learning when compared to the solitary reflection or independent learning that often accompanies the single-session workshop of the traditional professional learning model (Frank, Zhao, Penuel, Ellefson & Porter, 2011). When effectively supported and implemented, PLCs have been shown to be highly effective for teacher learning, and in developing the decisional capital of educators (Owen, 2015). Davies (2013) found that teachers

involved in a PLC discovered that through the collective work of the group, "the boundaries of professionalism were widened as teachers saw themselves as capable of making good educational decisions about their pupils' learning and also being trusted to make them" (p. 69).

While it is clear from the research mentioned above that PLCs can be a very positive step in developing collaborative practices and supporting professional learning among teachers, there are some aspects of PLCs that require caution. Although meant to serve as self-directed teacher learning, PLCs, and the AR projects which they often undertake, have the potential to be co-opted by educational administrators who may use this organizational structure to promote their own priorities rather than support professional learning. Little (2002) recognized that PLCs have the potential to inadvertently equate change with improvement. She argues that sometimes the demand for change is motivated by outside initiatives, which may or may not lead to improvement, rather than based on priorities from within the learning community (Little, 2002). What began as a way for educators to develop collaborative approaches to a relevant challenge has at times become a way for administrators and school boards to direct agendas and determine teacher professional learning priorities. This approach to the PLC has become so prevalent that the Elementary Teachers Federation of Ontario (ETFO) released a directive regarding PLCs. It states that while ETFO recognizes the potential of the PLC format, the organization is

> …becoming increasingly aware of situations where a Professional Learning Community is not collaborative, where shared decision-making is not the norm, where the PLC is under-resourced, and the focus is only on improving student results on EQAO tests. (ETFO, 2007)

The statement goes on to explain that ETFO will not support PLCs which, among other things, are involuntary, do not have a collective decision-making structure and if any aspect of membership in the PLC will be used as a part of a teacher evaluation process (ETFO, 2007). Little (2002) echoes this concern, recognizing that a PLC which does not work on a voluntary collective structure can serve to reinforce negative and counter-productive practices within a school community. Building decisional capital within a school is a complex process. As discussed above, researchers agree that simply putting the structures in place is not enough; care must be taken to be sure that adequate supports are granted to the collective professional learning of educators in a school setting.

Once decisional capital is built within an organization, it is important that the learning community be able to access the expertise of skilled professionals. There is strong evidence that distributing, or sharing, leadership within a school can achieve real results for the entire community (Leithwood, Patten & Jantzi, 2010). Harris (2007) discussed several studies, which tie a wider distribution of leadership in a school to positive influence on teacher effectiveness and student engagement. Her research revealed that, "student outcomes are more likely to improve when leadership sources are distributed throughout the school community" (p. 319). Leithwood and Strauss (2009) found that shared leadership was a key aspect to the success of 'turnaround schools'. Their findings indicated that with the development of a more collaborative environment, "a sense of school-wide responsibility for student success began to pervade the professional cultures of these schools" (p. 29).

Research confirms that if leadership is distributed, then so is responsibility, which seems to result in the creation of a stronger sense of community and collective purpose within the school. By supporting capacity-building in the area of decisional capital, schools will see

broader input from staff, which will allow for shared visioning, collective decision-making, and increased accountability (Copland, 2001). Educators who take the initiative to develop and implement innovative programs or practices are likely to find the risks mitigated by confidence in their professional abilities and the safety net created by a network of competent, supportive colleagues.

Juxtaposing Professional Capital and Teacher Innovation

The purpose of this meta-synthesis project is to examine the research findings from studies that connect the concept of professional capital with teacher innovation. As discussed in this review of the literature, many studies have examined individual elements of human, social and decisional capital in relation to the innovation of teaching practice. This study seeks to understand how teachers and schools have supported innovation using the three components of professional capital. Through an analysis and discussion of the interpretive findings of multiple studies, this meta-synthesis project will offer some insight into how schools can foster the conditions necessary to support self-initiated and sustainable innovation by teachers in a school community.

Defining Innovation

The word innovation is often used to describe a change which is new or different from the status quo. In this study, I will use the interpretation advanced by Emo (2015). She defines innovation as "those initiatives which are new to those who introduce them" (p. 172). This project is framed by the concept of professional capital which contends that teachers are professionals who are able to use their knowledge and judgment to make decisions pertaining to their instructional practices (Hargreaves & Fullan, 2012). In addition, this project uses the lens

of sociocultural theory, a theoretical orientation which views all learning as a social endeavor, which affects and is affected by a variety of contextual factors (John-Steiner and Mahn, 1996). In this project, innovation defines a practice that is new to the individual who implements it based on the individual's assessment of need and efficacy, even if the initiative is already in place in other contexts, or being used by other educators.

Research Questions

Education is understood as a means of improvement—self-improvement and the improvement of society at large. Compulsory publicly funded education was conceived of as a way to ensure a minimum standard of literacy and numeracy, in a population which was increasingly entering into an industrial workplace that made such skills necessary (McCulloch & Richardson, 2000; Oreopoulos, 2006). The goal was to improve the skills of the individual student in order to support social and economic progress. While the outcomes are more complex today, improvement continues to be the goal (Fullan, 2006). Students in the contemporary compulsory education system are encouraged and at times required to pursue and submit evidence of their 'improvement' to their teachers. But what of the teachers themselves? Does the education system promote or demand self-improvement throughout the course of a teaching career? If so, how are teachers motivated to pursue their own goals while setting goals and ensuring the achievement of their students? Guiding research questions for this project were the following:

- Why are teachers motivated to undertake and sustain self-initiated innovation?
- What conditions support teachers to innovate their practice?

- How do schools support teacher resiliency when facing the challenges of self-initiated change?

This project examines the conditions necessary to support teachers to take risks and develop innovative practices. Using the meta-synthesis methodology, I will discuss the findings of relevant studies as they relate to creating conditions to support self-initiated innovation by education professionals.

Methodology

This project was designed to examine research questions by bringing together literature pertaining to self-initiated teacher innovation. In order to best accomplish this, I undertook a qualitative meta-synthesis of articles reporting current research studies related to this topic. The meta-synthesis is similar to the meta-analytic technique, but was developed to be specifically suited to summarizing research from qualitative studies. The meta-analysis is a well-known method of aggregating and comparing quantitative data from original studies (Creswell, 2012). However, meta-analysis draws conclusions specifically from the data accumulated from multiple studies, and offers new analytical results based on the broader picture offered by this data. Due to the specific focus on quantitative data, the meta-analysis is less effective for analyzing qualitative studies when the purpose of the analysis is to compare the interpretive findings of multiple studies with the goal of developing new understandings. A meta-synthesis goes beyond the traditional literature review, which typically provides a summary and foundation of knowledge on a particular topic. While a literature review can offer an overview of research in a particular field, it is not considered an adequately critical and rigorous examination of research to offer a new perspective or research direction (Chenail, 2009). In contrast, meta-synthesis seeks

to develop new knowledge based on existing qualitative research with the purpose of a new or fuller understanding of a phenomenon, or possibly the development of new theory (Aspfors & Fransson, 2015; Thorne, Paterson, Acorn, Canam, Joachim & Jillings, 2002).

The meta-synthesis methodology was developed in response to the increased acceptance of qualitative studies as offering a vital perspective on specific issues and areas of policy development (Chenail, 2009). The incredible variety of research methodology used in qualitative studies required a method of interpretation that went beyond meta-analysis. Meta-analysis focuses on the numerical or statistical data of multiple studies, but rarely considers the interpretive findings of these studies. As a result, meta-analysis was not a method which was well suited to qualitative studies as the means of data collection and methods of summarizing study results could not be standardized. Meta-synthesis, by contrast, is primarily concerned with the interpreted results and outcomes of a study, rather than its scientific or statistical data. This focus requires an understanding that while each study stands alone, the interpretive findings can be collected, summarized, and integrated into common thematic categories for overall analysis. In this way, the integrity of each study and its unique methods of data collection are preserved, while at the same time allowing the collected findings to offer new insight into a specific issue or phenomenon (Chenail, 2009).

This methodology is also consistent with the framework of sociocultural theory, as meta-synthesis, by its very nature seeks to maintain the integrity of the interpretative findings of each study rather than focusing on primary raw data. In keeping with the sociocultural perspective on knowledge as evolving and co-created, Noblit and Hare (1988), stressed that the outcome of a meta-ethnographic synthesis should be seen as an interpretation, rather than a final truth. Qualitative methodology is in a constant state of evolution and reinvention, influenced by the

research contexts and the emerging concerns of the researchers. Sociocultural theory sees each new phenomenon as an evolving interaction, as individuals are both influenced by, and in turn influence, their social environment. The meta-synthetic methodology is well suited to this framework as it seeks to develop awareness about a specific topic through a broad understanding of the research that has already been done. The results of a meta-synthesis are meant to promote debate and critique, allowing the resulting discussion to serve as part of an ongoing process of understanding rather than a specific factual finding (Beck, 2003). This has proven to be essential for policy-makers and advisors as the demand for evidence-based decision-making has increased in both the private and public sectors (Sandelowski, Docherty & Emden, 1997). Rather than implementing a new study which is both costly and repetitive, researchers and policy advisors in many disciplines have supported meta-synthesis as a way to generate new understanding by using pre-existing qualitative research that might otherwise be relegated to relative obscurity (Sandelowski, Voils & Barroso, 2007). Consistent with this approach, the interpretive results of this project are meant to serve, not as evidence, but as information to consider in the ongoing discussion about supporting innovation in teaching practice.

Just as qualitative studies utilize a wide variety of data collection methods, there is no standard procedure for undertaking a meta-synthesis. The lack of standard terminology and standardized procedure can be both positive and negative aspects to this type of research. On the positive side, meta-synthesis can be adapted to each unique application. However, on the negative side, the lack of standardized procedure means that each researcher must seek to establish his or her own procedure and ensure the transparency and integrity of the meta-synthetic analysis.

Despite the lack of a commonly accepted meta-synthetic procedure, some researchers have proposed frameworks and conceptual guidelines, which can be very helpful to researchers. Noblit and Hare (1988) developed a process for qualitative synthesis they called meta-ethnography in which the researcher develops a research question, seeks out relevant studies and "translates them into one another" (p. 319). This process of reciprocal translation calls for the establishment of common metaphors based on the interpretive data in each study. In this way, common language is established, allowing divergent interpretive data to be analyzed with the understanding that ultimately, the "researchers make a whole, which is something more than what the parts by themselves imply" (Beck, 2003, p. 319). Scruggs, Mastropieri and McDuffie (2007) compare the treatment of each study in a meta-synthesis to the way a qualitative researcher treats individual study subjects. They proposed that each identified research report be treated as an individual interview subject, ensuring that the data is then integrated with the findings of other studies much in the same way that qualitative researchers might integrate the comments of individual 'informants' to draw conclusions.

Because, compared to a meta-analysis, the sample size used for a meta-synthesis is small, statistical instruments are rarely used. As a result, researchers can treat each study with more focused attention, allowing each one to stand as a distinct part of the research. Sandelowski et al. (1997) provided a list of issues to be addressed when selecting studies for a meta-synthesis. These include: determining topical similarity, setting inclusion criteria, determining methodological comparability, and explicating methods and techniques for synthesis. These guidelines, like those from researchers mentioned earlier, do not constitute a pre-determined structure, but rather provide a set of recommendations, which are helpful in guiding a researcher through the process of completing a meta-synthesis. In this way, the individual researcher is able

to adapt the meta-synthetic methodology to suit the individual study while still maintaining research transparency, and the integrity of each chosen study.

Criticisms of the Meta-Synthetic Approach

It is important to note that there are several significant criticisms of the meta-synthetic approach. The first of these is the potential loss of the individuality of each study chosen for the interpretation. As qualitative studies are often defined by their unique data collection methods and their situation-specific findings, there is the risk that some of this specificity will be lost as results are generalized and compared with those of other studies (Boo, 2008). While this can be seen as a risk, it can also be argued that the positive aspects of preserving the findings of the studies by supporting their contribution to new understanding far outweigh the possible negative outcomes of this concern. Another criticism is the lack of transparency in the selection of the studies for meta-synthetic review. As with meta-analysis, there is concern that some studies may be included or excluded in order to skew the research results or ensure the support of a specific hypothesis (Sandelowski et al., 1997). In response to this criticism, meta-synthesis researchers attempt to make the selection process as transparent as possible, describing in very specific terms how research studies were located and why they were, or were not, included. In fact, researchers argue that one contributing factor to supporting transparency is a bias toward inclusion in the selection of studies. Sandelowski and colleagues (2007) argue that it may be difficult to determine the relevance of an individual study immediately, and that the researcher's own bias may influence an assumption of relevance when including or excluding a specific study. Even in cases of poor methodology, researchers argue that the bias should remain towards inclusion of studies (Sandelowski et al., 2007). When making decisions regarding inclusion and exclusion of research studies, transparency is the greater imperative and including reports with less rigorous

methodology will only increase the depth and breadth of findings while demonstrating that the researcher is not excluding specific studies in order to achieve a specific outcome.

Meta-Synthesis Search Methodology

This project used three primary ways of locating studies for the meta-synthesis: keyword search, expert suggestion, and bibliographic investigation. To begin, I searched available databases using keyword search techniques, including the Nipissing University e-library:

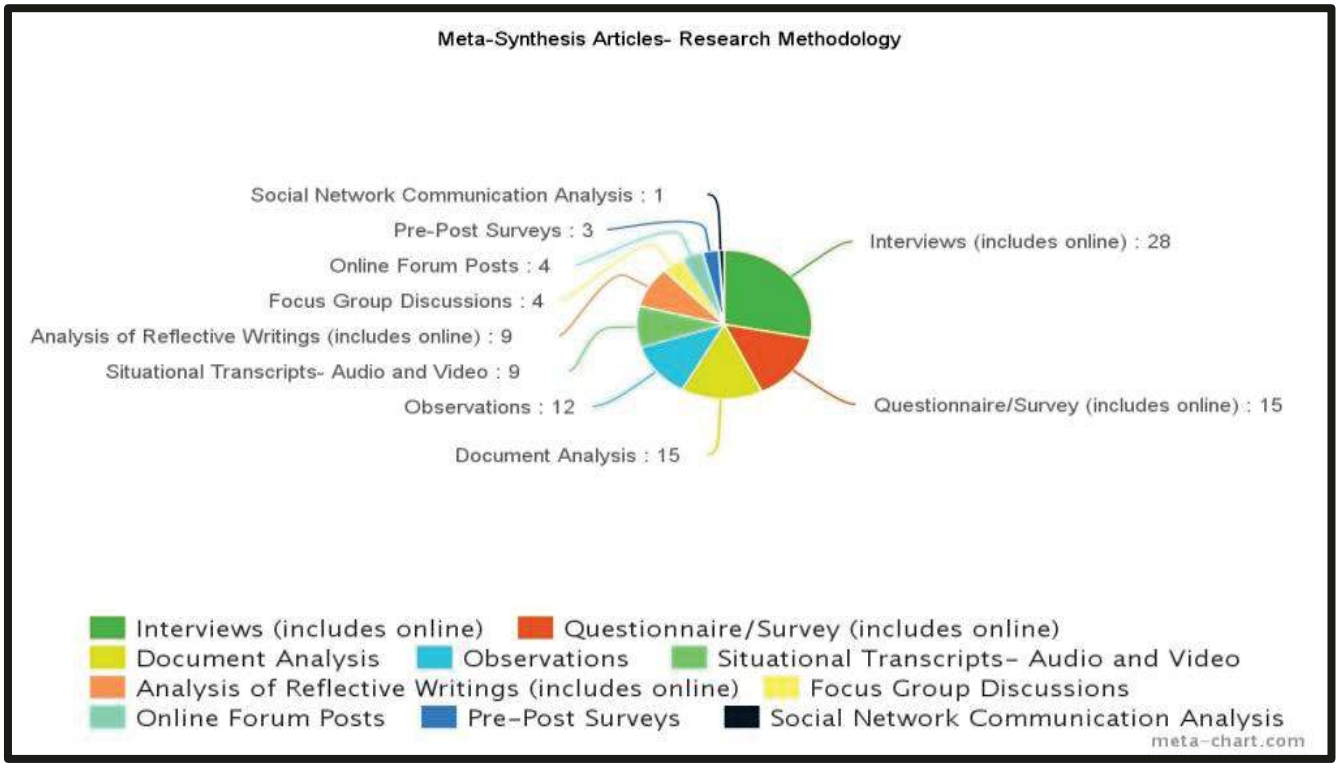
a) Education Research Complete
b) ERIC (EBOSCO host)
c) CBCA Education

I began with the terms 'innovation' and 'teacher' or 'teaching'. I also used the search term 'self-initiated' which narrowed the search results considerably. Adding the term 'school' offered some studies which explored innovative programs which were adopted on a school-wide basis. Some of these were useful as they described or included information about why individual teachers chose to participate and why such programs may have influenced innovation. Because of an inadequate search return from these few keywords, I began to add terms branching out from my main topic which included 'teacher learning', 'teacher creativity', 'professional development' and 'collaboration'. I also redid some of the searches including the words 'sustainable' and 'support/ing' to combinations of the above keywords. This search yielded 23 studies. Of these, four were eliminated following the reading of the abstracts. This was not because of concerns with methodology, but because the innovations reported were not in any way associated with teacher initiation but were imposed programs in which teachers were

obliged to participate. For this reason, these studies could not be considered topically similar to my research questions.

Following the keyword search I used expert suggestion as a way to expand my list of studies. When I read a study found by keyword search, or used in my literature review, I paid close attention to the studies mentioned specifically by the authors of the paper. If these experts had used the research and if the study seemed topically similar to my research concerns, I performed a search using the Nipissing University e-Library, or Google Scholar in order to find these studies and read their abstracts. Searching specific authors was also useful, as I was able to

Figure 1: Types of Research Methods used in the Meta- Synthesis Articles



find other studies documented by experts in my field of inquiry. In this way, I found another seven studies to add to my meta-synthetic sample. The final, and perhaps least rigorous form of searching, was through a direct bibliographic search. Using studies which were chosen as effective research materials for the meta-synthesis, and other supporting documents that I was

reading to expand my knowledge and assemble a literature review, I searched the bibliographies and reference sections, pulling articles which, based primarily on their titles, seemed as if they could hold some relevance to this study. This was a time consuming and less fruitful way to assemble more studies, as I was basing my search solely on the title and could not know until I read the abstract if the article would hold promise for my study. I excluded many of these immediately as they were research reports, or literature reviews and not documented reports on a study. The combination of my search methods yielded 27 high quality studies to include in this meta-synthesis.

Inclusion and Exclusion Criteria

In my search process, I adhered to the bias of inclusion as described above. I did, however, specify several inclusion criteria for myself as I assessed each study. To begin, each study I chose was published in a recognized and peer-reviewed journal, ensuring a level of methodological acceptability. Secondly, I made the decision to exclude any articles published before the year 2000. This gave me a 15 year window of useable research which ensured that the terminology and educational theory were consistent. Next, though the included studies document research from all over the world, I excluded any articles which were not published in an English language journal. While 'Google Translate' can be a useful tool to offer access to scholarly research published in a language other than English, I was concerned that if I accessed the article through a digital translation tool, I could not be assured of the quality of translation nor could I ensure that the nuance or consistency of terminology would be maintained. Finally, I made the decision to include mixed-method studies. While several of my chosen studies include some aspect of quantitative data collection, all of the mixed-method studies used include a discussion of the quantitative findings which is consistent with the interpretive nature of an

exclusively qualitative study. In these cases, the quantitative research results are used in combination with the qualitative findings and serve to support, and or enhance, the understanding gained through the qualitative data collection (Figure 1).

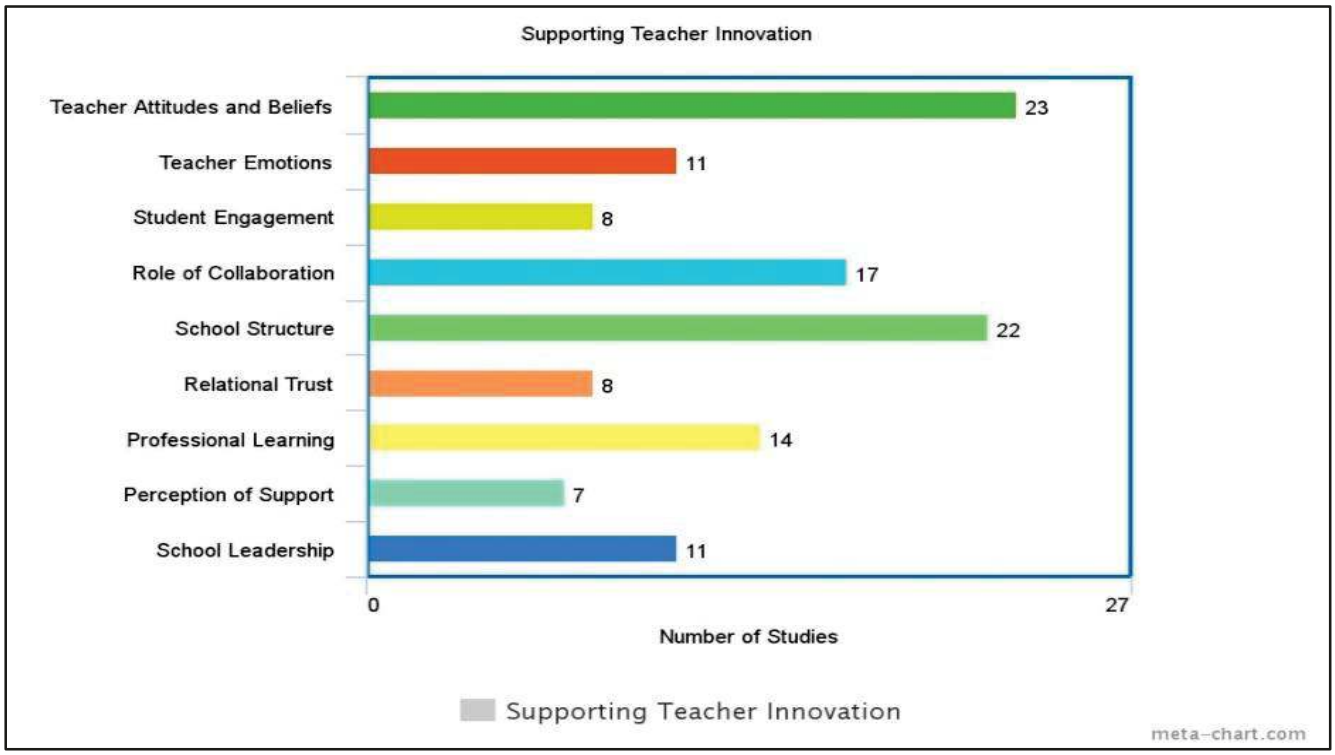
Discussion

After a detailed reading and an analysis of the findings from the 27 articles used for this meta-synthesis, a number of thematic categories emerged. To structure these categories, I used Hargreaves and Fullan's (2012) framework of *professional capital*, a concept discussed earlier in this paper. The three components of professional capital discussed by Hargreaves and Fullan are: *human capital*, the individual qualities and competencies brought to the job by each teacher; *social capital*, the collaborative and collective resources which exist in the school environment; and, *decisional capital*, the development of expertise, informed judgement and individual capabilities over time. The emergent themes from the research were grouped, with three themes connecting to each of the three components of professional capital, for a total of nine themes. The nine emergent themes are: teacher attitudes and beliefs, teacher emotions, student engagement, role of collaboration, school structure, relational trust, professional learning, perception of support and school leadership. These nine themes were tracked throughout the findings of the meta-synthesis as a way to evaluate the most pervasive and significant themes (Figure 2).

When I originally conceived of this project, I intended to focus specifically on self-initiated teacher innovation, excluding all innovations that were imposed—either through professional learning or administrative initiative. However, as I worked my way through the articles, I realized that this was a problematic and relatively irrelevant distinction to draw.

Teacher innovations clearly came from many sources and were inspired by a variety of experiences. For example, Stam and colleagues (2014) found that teacher innovations were inspired by a complex mix of top-down and bottom-up processes. It became apparent that teachers often modelled their innovations on something they read, heard from colleagues or experienced during a professional learning experience. Emo (2015) found that teachers develop

Figure 2: Tracking the Frequency of the 9 Themes in the Meta-Synthesis Articles



an innovation for many reasons, including a professional development experience of their own choosing, conversations with colleagues, changes in schedules, or newly available technologies. As a result, I adjusted my parameters by removing the 'self-initiated' distinction, allowing for a more expansive explanation of why teachers initiate innovations and what factors support their efforts.

In the following discussion, I will examine the significance of each theme and offer, for each, an analysis from the collected findings from the articles. The nine themes do not appear in equal number in the twenty-seven articles. Therefore, I have made a decision to regard the themes as either major or minor themes. Major themes are those that appear in a large number of the articles, while minor themes are those which appear the least often in the articles. Two themes in particular can be regarded as major themes. Teacher attitude and belief, and school structure appear in 23 and 22 articles respectively. Three themes in particular can be regarded as minor themes. Student engagement and relational trust each appear in eight of the articles, and perception of support is mentioned as significant in only seven of the twenty-seven articles. The other four themes appear in the articles from eleven to seventeen times. The relationship among the nine themes will be expressed in a graphic at the conclusion of this chapter.

Theme #1: Teacher Beliefs and Attitudes (Human Capital)

This theme occurred most frequently in the findings of the studies, with 23 of the 27 articles addressing the impact of teacher beliefs and attitudes in supporting and sustaining teacher innovation. Findings from the studies connected teacher belief and attitude to how innovations are perceived and implemented by teachers. To begin, teacher beliefs can impact the decision to make changes to teaching practice and methodology. Several studies indicated that the reform-orientation of the teachers themselves can lead to innovation (Ali, 2011; Emo, 2015; Raskit, 2006; van Veen, Sleegers & van de Ven, 2005). Emo found that undertaking innovation can be directly related to a teacher's individual attitude. When it comes to innovation, study results indicate that "the strongest of the taxonomic motivations were challenge, curiosity and imagination" (Emo, 2015, p. 191). Bakkenes, Vermunt and Wubbels (2010) connected classroom experiences, positive or negative, to teacher attitudes toward beginning or sustaining

an innovation. These experiences can create a drive to make changes or improvements, and also alter a teacher's attitude about the efficacy of the innovation. Their study indicated that both positive and negative classroom responses are significant in determining if a teacher will undertake innovative practices. A belief in the efficacy of methodology and materials is also a motivating factor. Phelps and Graham (2008) concluded that teachers are motivated by their belief in the perceived usefulness of an innovation. In addition, teachers may be motivated by the hope to improve inferior resources, such as outdated or ineffective textbooks (Emo, 2015). The belief that change is required in order to support efficacious practice can motivate teachers to confront the often difficult challenge of innovation. Stam et al. (2014) found that when they perceive the need for new practices, teachers were more willing to confront the "tensions, conflicts and contradictions" which often make up the 'boundary experience' that characterizes change and innovation (p. 261).

The relationship between teacher identity and innovation is also a significant finding in many articles. How teachers see themselves as professionals was found to be a key aspect in their willingness to undertake innovation. An understanding of their role as an independent change agent seems to be significant in creating new pedagogical structures (Ali, 2011; Davies, 2013; Emo, 2015; van Veen et al., 2005). This was particularly clear in the findings of the articles as they relate to self-determination and autonomy in innovative practices. It was clear in the findings of Little (2002) that to ensure successful outcomes, teachers need to believe in their own innovations. This is particularly relevant when innovations are integrated into current practices. Russell and Schneiderheinze (2005) point to the importance of allowing teachers to negotiate the process of innovation, regardless of whether the impetus for change comes from a source internal or external to the teaching situation. Raskit (2006) agrees, arguing that teachers

will be more likely to innovate using an externally promoted strategy if they are able to adapt it to their situational needs. This is particularly true for externally developed or pre-packaged innovations. Vennebo and Ottesen (2015) argue that external perspectives are "negotiated through processes of recognition, transformation and rejection" (p. 212). Without the ability to make decisions about suitability, and subsequently adapt a particular approach, an innovation is unlikely to succeed. This requirement for self-determination is directly related to the reality of isolation in the daily work of a teacher. Fallon and Barnett (2009) argue that a certain amount of autonomous decision-making in innovative practices is necessary as the reality of school structure dictates that teachers most often implement these strategies on their own in a classroom. Supporting innovation requires an acknowledgement that teacher identity as autonomous professionals is related to the development and implementation of new methodology. Teachers are more likely to make positive change if they "see themselves as innovators and curriculum designers rather than reactors to outside influences" (Emo, 2015, p. 192).

Beliefs and attitudes can also affect how teachers view the process of innovation. Several articles specifically refer to how innovation can be a difficult process, and if teachers have adopted a positive mindset for change, they will be much more likely to proceed with innovative practices. Edwards, Kirwin, Gonyeau, Matthews, Lancaster and DiVall (2014) argue that a commitment to a culture of improvement is essential to seeing the change process as positive. They contend that teachers need to understand that because change can be challenging, "obstacles should be expected, and that professional growth comes from overcoming them" (p. 145). A positive attitude towards innovation can often be affected by the leadership in the school. Raskit (2006) insists that if teachers believe that they could be blamed for an innovation

that is at first unsuccessful, they will be unlikely to make the attempt. If in contrast, teachers are willing to regard challenges as opportunities, and are not afraid to discuss difficulties and seek help, a culture of support for innovation can be built (Phelps & Graham, 2008). Inevitably, innovation often leads to an experience of friction as old and new ideas may conflict (Bakkenes et al., 2010). A positive attitude to confronting the obstacles of change can make the difference between moving forward and falling back into old patterns (Bakkenes et al., 2010).

The concept of congruence features prominently in many discussions about teacher beliefs and attitudes. The success or failure of many innovations was found to depend on how well the proposed change matched, or demonstrated congruence, with a teacher's own belief system. Often determined and reinforced by their unique experience in the classroom, individual teacher beliefs about educational practices were found by many studies to have a major impact on the adoption and implementation of new practices (Bakkenes et al., 2010; Casey, 2012; Emo, 2015; Owen, 2015; Vennebo & Ottensen, 2015; Wallace & Priestly, 2011). Russell and Schneiderheinze (2005) found that when contradictions occur between beliefs about the learning process and the proposed innovation, teachers require advanced learning in order to discover how they might bridge this pedagogical gap. Even if a teacher can understand the potential efficacy of a new approach, deep pedagogical change can be a shift which is accompanied by a great deal of uncertainty and concern (Tondeur, Devos, Van Houtte, van Braak & Valcke, 2009). Wallace and Priestly (2011) associate this with the concept of teacher 'sense-making' when approaching an innovation (p. 361). Their findings supported the understanding that "congruency between teacher beliefs and the philosophy of [an] initiative was a key factor in teachers' enactment of the innovation in their classrooms" (p. 376). These studies demonstrate

that understanding the success or failure of an innovation may be related to how new concepts connect to a teacher's belief system.

The aspect of teacher beliefs and attitudes most often mentioned in the articles was the importance of personal confidence. Just as teachers understand that students who believe they can be successful are more willing to take risks, the studies show that educators may not undertake an innovation if they have doubts about their own abilities (Phelps & Graham, 2008). In their study of 933 teachers in Montreal, Quebec, Abrami et al. (2004) found that expectancy of success was the most significant factor in undertaking a new innovation. They found that teachers "need to believe that they can successfully implement the innovation within their own context or they may neither take the initial risk nor continue to persevere" (p. 211). Successful innovators believe in their own efficacy, and this confidence can lead to increased risk tolerance, which can be of key importance in undertaking new practices (Davies, 2013). Goodyear and Casey (2015) found that feelings of competence often needed to be fostered and facilitated to ensure a lasting innovation. Emo (2015) argues that in order to embrace innovation, teachers have to create situations which produce uncertainty in their jobs. In order to risk this type of uncertainty, teachers must have the confidence to believe in the likelihood of their own success. Gaining confidence can support self-analysis and create a professional orientation toward improvement and positive change (Davies, 2013). Phelps and Graham (2008) found that teachers who are successful innovators are confident in their professional abilities and therefore prepared to take risks inherent in developing new practices. The results of these studies make it clear that teachers, like the students they teach, need to feel confident when trying something new. Scaffolding and supporting professional learning will promote skill building and a belief

that success is achievable. Without this belief in their own efficacy, teachers are unlikely to embrace innovation in their teaching practice.

Theme #2: Teacher Emotion (Human Capital)

While teacher emotions are closely tied to beliefs and attitudes, assigning a separate thematic category was important because of three key findings uniquely connected to emotions. First, the results of many of the studies showed that cognitive and methodological changes are often accompanied by emotional turmoil in teachers attempting innovation. Bakkenes et al. (2010) found that teachers reported struggle and friction as they attempted change, experiences which gave rise to powerful emotions. In their case study of a reform-oriented teacher, van Veen and colleagues (2005) determined that when a teacher experiences setbacks in the journey towards innovation, emotions such as anger, frustration and shame may arise, leading the teacher to modify goals and fall back into old patterns. Unlike many studies which focus on the rational and measurable aspects of innovation, the study of teacher emotion can lead to further understanding by "emphasizing the importance of attending to teachers' emotions as basically inseparable from their cognitions" (van Veen et al., 2005, p. 918). Stam et al. (2014) found that innovation itself can have a strong emotional impact on teachers. Their research indicates that not enough significance is placed on supporting teachers as they confront the change process. They reported that

> [l]earning from innovating is not an easy thing. It is an energy-consuming, emotional and painful process, in which self-confidence, belief in one's own capacities and belief in the innovation itself are made to hang in the balance… (p. 263)

Failure to acknowledge the importance of emotion in the face of innovation could have significant implications for the success of any reform process.

Secondly, emotions affect the change process in a positive way, as they can be motivating factors in undertaking change. Abrami et al. (2004) connected hopefulness with the pursuit of innovation. While change often involves struggle and friction (Bakkenes et al., 2010), capitalizing on the hope that teachers demonstrate when innovating their practice can lead to "meaningful and sustained educational improvement" (Abrami et al., 2004, p. 212). This feeling of hope relates directly to the need for autonomy discussed earlier. Wallace and Priestly (2011) found that teachers are more likely to experience positive emotion when they feel empowered as professionals to adapt and implement innovations as they see fit. Emo (2015) discussed similar findings, recognizing that teachers attribute higher value, and therefore positive emotion, with what they control. Teachers are more likely to be motivated to undertake innovations if they experience the positive emotions associated with autonomy and self-determination.

An especially interesting finding of two of the studies was the motivating factor of boredom. Experienced teachers are often stereotypically characterized as set in their ways, and content to rely on tried and true methods. Owen (2015) in contrast, found that many teachers were motivated to make changes due to boredom with the curriculum. Emo's (2015) research supports this finding, stating that "teachers in the study said their innovations began due to realizing their own boredom" (p. 187). She characterizes the influence of the emotion of boredom as an unexpected finding, and like Owen, recognizes that teacher innovation can be motivated by many different factors, including emotions.

The final connection between emotion and innovation discussed in this theme is the influence of confronting vulnerability. Although teachers carry a significant level of authority in their daily practice, the isolated structure of the classroom places the teacher as the lone adult in a classroom of students for most of the work day. This situation ensures that all successes and failures in instructional methodology fall firmly at the feet of the teacher. For this reason, teachers can feel extremely vulnerable when trying new methods (Abrami et al., 2004; Bakkenes et al., 2010; Emo, 2015; Fallon & Barnett, 2009; Phelps & Graham, 2008; Russell & Schneiderheinze, 2005). Although, as discussed earlier, this relates to the need for the belief in their own ability, vulnerability can be a very powerful emotion, one which can result in avoidance when faced with the contradictions and tensions inherent in new practices. When faced with these contradictions, Russell and Schneiderheinze (2005) found that teachers responded by narrowing their goals as a way to reduce the vulnerability they felt when implementing an innovation in their classroom. Bakkenes et al. (2010) found that this feeling could be so strong that some teachers "made sure that they would not learn certain things by organizing their lessons, materials or experiments in such a way that the results would certainly prove that the new approach did not work and their existing theory of practice would be confirmed" (p. 540). Fallon and Barnett (2009) found that the feeling of vulnerability can be related to taking risks in front of students, and from a concern that failure would call into question the capabilities of the teacher as a professional. Edwards et al. (2014) agreed, arguing that teachers must feel supported by their school community in order to risk being vulnerable in front of their students and colleagues. These studies show the importance of acknowledging the complex emotions associated with innovation.

Theme #3: Student Engagement (Human Capital)

As discussed earlier, human capital is related to the capabilities of the individual teacher (Hargreaves & Fullan, 2012). One of the most important characteristics of a teacher is the ability to engage students, drawing them into the learning process (Hatt, 2005). Many of the studies in the meta-synthesis point to the importance of student engagement in motivating an innovation, gauging its success, and supporting its sustained practice. Studies which examined the factors motivating teacher innovation found improving student engagement to be a significant result (Ali, 2011; Davies, 2013; Edwards et al., 2014; Emo, 2015; Goodyear & Casey, 2015; Owen, 2015; Zehetmeier, 2015). Although it has been difficult through research to connect directly the impact of a specific innovation to achievement, the link between student engagement and student learning is well established (Emo, 2015; Pil & Leana, 2009; Owen, 2015). Emo (2015) found that improving student learning was a powerful motivator for teacher innovation, and can involve new instructional methods or improving available learning materials in an effort to improve engagement. Owen (2015) cited many instances in which teachers sustained their use of new practices because of the positive impact on student engagement. Recognizing the response of students to new practices can also be a motivating factor for teachers to expand their innovation or pursue further professional learning (Zehetmeier, 2015).

Positive student engagement can also mitigate feelings of vulnerability for teachers when trying something new. Davies (2013) found that teachers trying a new innovation "were surprised and motivated by the positive response of the learners" (p. 67), an outcome which made the teachers feel less vulnerable in the face of uncertainty. Goodyear and Casey (2015) also found that teachers were motivated to continue to take risks because of the positive student response to new practices. These studies demonstrate the importance of supporting the

development of human capital within the school system. Improving student engagement is a significant motivator for undertaking innovation, and the positive response of students is a powerful force in sustaining innovative practices.

Theme #4: Role of Collaboration (Social Capital)

The role of collaboration in supporting teacher innovation was discussed in many of the studies. Of particular significance is the influence of social interaction on learning. According to sociocultural theory, an important framing concept for this project, human beings learn through interaction, progressively co-constructing all knowledge within a social setting (John-Steiner & Mahn, 1996). Coburn and colleagues (2013) agreed, stating that the introduction of a professional learning community as a vehicle for professional learning and teacher development is directly related to the power of social interaction to support innovative practices. Wallace and Priestly (2011) found that sociocultural analysis can be used to show how social interaction provides a connection point for individual beliefs which can collectively act back on society to "facilitate or impede reform-based teaching over time" (p. 363). In collective endeavors, teachers can alternatively play the roles of learner and expert, allowing the zone of proximal development to include members of the group flexibly in both roles as the collaborative process evolves (Stam et al., 2014).

All of the studies which included mention of the importance of collaboration indicated that social interaction can provide both the impetus to begin an innovation, and the support to sustain it. In the discussion of an ethnographic case study, Casey (2012) observed that while individual reflective practice can lead to positive change, it should be part of a collaborative process if it is to be truly effective. In fact, connection with colleagues was determined by

several studies to be of primary significance when beginning innovations. Similarly, Emo (2015) found that none of the teachers in her study believed that a social or professional relationship with colleagues was *necessary* to their teaching practice, but that the opportunity to interact had a major influence on deciding to initiate innovations. In a study of three schools, Owen (2015) found that teachers involved in innovative projects affirmed the importance of their team in supporting teachers to change their beliefs and build new skills. In these studies, the collaborative structure provided support and sustained a high level of collegiality—two aspects which are essential to providing a safe environment to take the risk of innovating (Ali, 2011; Fallon & Barnett, 2009).

Collaborative practices were also found to be important in sustaining an innovation. Coburn et al. (2013) found that a collaborative structure allowed teachers to form professional ties with like-minded teachers who continue to seek out expertise and support from each other in order to sustain a new practice. The existence of professional learning communities and communities of practice was shown in several studies to act as support systems necessary to turn an innovation into a sustainable form of practice (Coburn et al., 2013; Goodyear & Casey, 2015; Owen, 2015; Skerrett, 2010). Frank and colleagues (2011) found that even teachers who exhibit the highest level of expertise in implementing a particular innovation were vulnerable to returning to old methods when they lacked social interaction and support. The study showed that "teachers found it difficult to sustain high levels of implementation in the absence of interaction with colleagues" (Frank et al., 2011, p. 151). These studies affirm the importance of collaboration not only for initiating innovative practices, but supporting their continued use.

These studies allow an interesting comparison between the influence of formal and informal collaborative structures. In their study of teacher reform networks, Coburn and

colleagues (2013) discovered that social and political policy can have a significant effect on teacher collaborative networks. Policy impacts network formation as it influences the construction and support of formal professional structures. In their study, the provision of resources through policy initiatives gave rise to strong social and collaborative structures for teachers. Goodyear and Casey (2015) discussed the impact of a resource professional accessed from outside of the school setting—a *boundary spanner*—on the likelihood of sustaining an innovation supported by a community of practice. This boundary spanner formalized the collaborative network and allowed teachers to access expertise and moral support as they worked through the implementation of an innovative practice.

However, Coburn and colleagues (2013) found that these formal collaborative networks are subject to rapid decline should these resources be withdrawn. They reported that without "continued support for regular and sustained interaction and a shared focus that initiatives can provide, ties can decay over time" (p. 329). Several of the studies reported the significance of informal collaboration in reflective practice and the moral support needed to risk a new innovation. Lohman and Woolf (2001) contend that informal and unplanned social interactions allowed teachers to "acquire the information and insights that helped them to…explore innovative instructional strategies and practices" (p. 65). Skerrett (2010) also argued that teachers benefit from less formal collaborative opportunities. In most schools today, she says, there is "little or no time for more informal and authentically collegial collaboration around issues of curriculum, teaching and learning" (p. 652). Interestingly, both formal and informal collaborative practices can act as support for reflection and change, and can be equally damaging when that support is withdrawn.

It is important to mention here that while collaboration is clearly a positive factor in supporting innovative practices, many studies acknowledged that the data showed clear limits to the levels of collaboration undertaken by teachers. This can be directly related to the fact that teacher isolation is an indelible feature of a teacher's professional life. Fallon and Barnett's (2009) study of the efforts by an individual school to transform its organizational structure revealed significant inner conflicts in teacher collaborative structures. They found that the move to a collaborative structure was greeted with great enthusiasm, but when it required staff to question the underlying principles of teacher autonomy, they found that "participants kept critical analysis of other's practices, as well as the tougher questions about their work and how to improve it, completely off the agenda" (p. 10).

Russell and Schneiderheinze (2009) reported that teachers in their study stated that while collaboration was beneficial and necessary for supporting innovation, it also created more tension for them as they were forced to confront and challenge their own methodology. While a teacher's job is profoundly social, Stam et al. (2014) contend that in the traditional classroom setting, teachers have little need for cooperative skills in their regular work activities. To combat this, these researchers argue, teachers themselves (who ironically often teach these same skills to their students), may need coaching in cooperative skills as they move to more interactive professional environments.

Theme #5: School Structure (Social Capital)

This theme was the second most frequently occurring theme in the articles, with 22 of the 27 articles indicating that school structure had a significant impact on the process of supporting and sustaining teacher innovation. Many of the studies indicated that the physical structure of a

school can have an impact on innovative practices. Aubusson and colleagues (2007) wrote that schools have been found to be highly resistant to change, as "teachers are isolated in the classroom and various pressures prevent interaction" (p. 147). The reality of this physical structure means that teachers are separated from each other for most of their day, a fact which does not preclude innovation, but can certainly inhibit the dissemination of new and innovative practices (Casey, 2012; Coburn et al., 2013; Little, 2002; Tondeur et al., 2009; Vennebo & Ottesen, 2015). Coburn et al. (2013) found that the physical isolation of teachers works against teachers who wish to reach out to others for advice or collegial conversation. Their study revealed that in the absence of supported structures for teacher interaction, teachers did not know where to find expertise, and as a result, proximity was the most common reason for selecting others for discussion. The location of the teachers' classrooms or workspaces meant that they were not always able to access the expertise of colleagues who could provide them with the most effective guidance for their subject area or grade level. Lohman and Woolf (2001) found similar situations in their study. They report that the location of a teacher's classroom in relation to others affected interaction and the use of shared resources. This also applied to informal workspaces as they found that department offices and lunch rooms were used extensively for informal discussions, and the sharing of strategies and resources. The absence of these informal spaces inhibited the opportunities for teachers to discuss innovative practices and share successes and challenges.

Many of the studies acknowledged that isolation was not tied solely to the physical setting of teacher workspaces. Even greater than the influence of the physical school structure on teacher isolation was the impact of the primary working conditions of teachers. Little (2002) described the nature of teaching as "widely familiar and deeply private" (p. 934). Skerrett

(2010) concurred, reporting that study data confirm that teachers primarily work in physical and intellectual isolation from their colleagues. This enduring aspect of teaching practice means that almost uniformly, the nature of a classroom teacher's work ensures that a teacher may be the only adult in a classroom, leaving each teacher out of sight and hearing of one another. As a result, developing innovative practice often occurs in isolation. Fallon and Barnett (2009) reported that teachers feel this type of isolation acutely, and that the norms of classroom teaching "left all to struggle with their problems and anxieties privately" (p. 8). Lohman and Woolf (2001) found that when assessing the success of their own initiatives, teachers primarily use solitary self-reflection to determine their success—a direct result of their professional isolation from one another.

The isolated nature of daily classroom teaching has had a significant impact on how teachers view their professional connections with colleagues. Because very few teachers observe their colleagues' classroom practice, significant norms of privacy have developed within the teaching profession. Many of the studies reported that these often fiercely protected norms were difficult to overcome as teachers attempted to implement innovative practices in a more collective manner. In their study of innovative practices in a single school, Fallon and Barnett (2009) found that while teachers were open to collaboration, the norms of privacy meant that all critical discourse that addressed individual teaching practice was completely excluded from professional discussions. So embedded was this privacy, that even the transformation of the organizational structure of the school did not lead to an alteration in the conditions of teacher isolation. Their data led to the conclusion, contrary to their hypothesis, that the initiation of deeper collaborative practices will not "necessarily lead to a significant dissipation of teachers' perception of isolation" (p. 12).

This discussion of teacher isolation can be connected to the previously addressed theme of teacher beliefs and attitudes. Indeed the norms of privacy and isolation in teaching can directly affect how a teacher develops identity and beliefs about personal teaching practice. Fallon and Barnett (2009) attempted to explain this by recognizing that schools are complex social structures "teeming with differences and the individual educators within them have the need to maintain a certain degree of self-determination over their professional work" (p. 11). Although most studies in this meta-synthesis support the positive effect of collaboration on innovative practice, it would appear that high levels of collegial interaction in teaching practice may prove difficult to attain. Little (2002) discovered that efforts to introduce critical discourse or observation of teaching practice can cause a strain on professional relationships—a situation which teachers, already isolated from one another, generally attempt to avoid. As a result, say many of the researchers, the innovations that teachers undertake are not well disseminated through a teaching staff due to isolation and norms of privacy in teaching practice (Casey, 2012; Fallon & Barnett, 2009; Little, 2002; Lohman & Woolf, 2001; Raskit, 2006).

Another aspect of school structure which was found to impact teacher innovation was the highly prescribed schedule of the school day. With the majority of a teacher's day spent on scheduled in-class instruction, little time remains for devising and preparing to implement an innovation. Even less time exists for reflection on the success of the innovation either independently or with colleagues. The need for more time was one of the most commonly reported influencing factors in supporting the implementation and ensuring the success of teacher innovations (Coburn et al., 2013; Edwards et al., 2014; Emo, 2015; Little, 2002; Lohman & Woolf, 2001; Phelps & Graham, 2008; Raskit, 2006; Sandoval-Lucero, Maes & Pappas, 2013; Tondeur et al., 2009; van Veen et al., 2005; Wallace & Priestly, 2011; Zehetmeier, 2015).

Lohman and Woolf (2001) found that job intensification has left teachers with little time to pursue learning activities and collaborative practices that support innovation. The increase of downloaded administrative tasks, paper work, and the demands of individualized classroom instruction have resulted in reduced time for teachers to develop new initiatives. Having the time to explore new methodology can affect how deeply an initiative is integrated into teaching practice and thereby sustained. Edwards et al. (2014) found that when teachers lacked the time to explore a new technological innovation, they failed to use the innovation optimally but rather used the tools to replicate their current technique.

Lohman and Woolf (2001) reported that teachers "cope with the intensification of their jobs by spending less time interacting with their peers and thinking independently" (p. 69). Raskit (2006) found that lack of time is often a significant factor in a teacher's decision to initiate or participate in an innovation. This can cause negative internal politics if teachers are perceived as resistant to participation in innovative projects. Because most of their work day is entirely occupied by essential teaching tasks, it may be that teachers feel obligated to dedicate personal time to developing new innovations. Teachers who face significant demands in their personal life may find this nearly impossible, thus opening the door to criticism or a perception that they are resistant or unwilling to embrace innovative practices.

Increased levels of mandated workplace demands can also affect the time teachers have to dedicate to innovations which they deem essential for improved classroom practice. Wallace and Priestly (2011) found that teachers "are all too familiar with the extra workload created by multiple and often competing reform initiatives" (p. 358). Often, these new initiatives are implemented to satisfy an administrative priority, and teachers are obligated to participate and implement programs that they may not see as supportive to student learning (van Veen et al.,

2005). The time invested in these outside priorities means that teachers are forced to compromise—sacrificing their self-initiated, site-specific projects to spend time on packaged programming which they are obligated to implement, until the next new thing comes along. In their case study of a 'reform enthusiast' teacher, van Veen et al. (2005) found that increased time spent on projects which were not seen as beneficial to students can cause significant stress and frustration even in the most positive and enthusiastic teachers. They found that, for one particular teacher, "the lack of time means that he cannot really perform his task in a good manner according to his educational standards" (p. 928). As a result of their findings, van Veen and colleagues argue that "explicit attention should be paid to notions of work overload as a factor in growing emotional negativity and decline in commitment or satisfaction" (p. 932).

The concept of school structure as an influencing factor in teacher innovation was considered by many of the researchers to be a primary factor in the success or failure of teacher innovation. Ali (2011) argued that "educational stakeholders need to better appreciate the complex interplay of multi-layered challenges that confound the fundamental change teachers attempt in the classroom" (p. 1638). Despite teacher dedication to innovation, argued Ali, the efforts of individual teachers will have limited impact if the circumstances of school structure remain the same. Casey (2012) agreed, arguing that research shows that changes in individual practice may not have any impact on the school community because of the issues of isolation and compartmentalization supported by school structure. Vennebo and Ottesen (2015) found that structural aspects of schools impact both the physical layout and the embedded frameworks for thinking about teaching and learning. These frameworks can be difficult to alter, resulting in significant constraints for both individual teachers and school communities seeking change. The research on the connection between innovation and school structure seeks to "question exactly

how individuals and groups of actors are able to transcend the culture's established frames for thinking and acting" (Vennebo & Ottesen, p. 201).

Theme #6: Relational Trust (Social Capital)

The importance of relational trust in undertaking and supporting innovation was considered a significant factor by many researchers. As discussed earlier in this paper, relational trust refers to the presumption of professionalism and existence of mutual vulnerability among members of an organization (Tschannen-Moran, 2014). In the meta-synthesis studies, researchers indicated that the existence of relational trust was a required condition to support the risk-taking that comes with innovation. Beginning any reform project requires a belief in the mutual trust of all involved (Fallon & Barnett, 2009). Aubusson et al. (2007) found that any community which supports innovation must create trust first. They argue that, because the process of creating a professional community can be slow and incremental, teachers will take increased risks with innovative practices as the school climate becomes more and more trusting. In schools where innovation became widespread, Aubusson et al. (2007) found that when teachers engaged in peer observation and direct sharing, they often felt vulnerable and open to criticism as professionals. The success of this process was dependent on the existence of trust within the school. They found that in schools where teachers were directly sharing their practice with each other, "at least the antecedents of a trusting, sharing professional learning community exist" (p. 147). Coburn et al. (2013) found that increased trust mitigated the risk of talking to colleagues about the successes and challenges of new reform efforts. The knowledge that the interactions of the professional community are supported by relational trust was found to reduce risk and support innovation.

Relational trust was found to be a significant factor in supporting collaboration. In their study of a school-wide innovative project, Fallon and Barnett (2009) discovered that "trust was the glue that held people together as well as the lubricant that facilitated the work and kept the collaboration going" (p. 9). They found that trust building was a requirement for the process of innovation and restructuring undertaken by the particular school. Aubusson et al. (2007) reported that while a limited collective process may exist in the absence of trust, achieving true community depends on an environment of relational trust and a climate of openness.

As discussed earlier, support for teacher innovation needs to take into consideration the importance of each teacher's professional autonomy. If relational trust is firmly established in a school community, each teacher will be seen as an educator, empowered to make the professional decisions which impact teaching practice. Researchers contend that this affects the process of innovative change directly. Sandoval-Lucero et al. (2013) found that in an innovative action research project, allowing teachers the autonomy to develop their own relevant projects was essential to success. Davies (2013) reported that in a trusting environment, teachers who implemented innovations in their classrooms were supported by their school leadership who increasingly saw them "as professionals who were capable of making good educational decisions about their pupils' learning and also being trusted to make them" (p. 67). Without this trust by colleagues and administrators, argues Davies, teachers would not have been empowered to take the risks often associated with innovation in their teaching practice. Knowing that relational trust exists in a school community is important regardless of whether initiatives are developed by a team or individual approach. Zehetmeier (2015) discovered that even if teachers are innovating their practice in an isolated classroom, the impact of relational trust can be significant. Zehetmeier's study participants directly credited the school culture as being the most

important factor in developing innovative teaching practices. One research participant stated that the "entire school, teachers, pupils, administrative staff, we have a culture of appreciation" (p. 122). The understanding that they are acknowledged as professionals and supported by the school community builds confidence for teachers undertaking innovations. The development of relational trust is significant, particularly in cases where it "has been factored out of the bank of qualities a professional holds based upon their knowledge, skills and capabilities" (Davies, 2013, p. 70). In order to support innovation, schools may need to re-establish or revitalize an environment of relational trust at all levels. The existence of relational trust among all members of a school community can provide the support and professional autonomy necessary for teachers to face the vulnerability that often comes with innovation.

Theme #7: Professional Learning (Decisional Capital)

Professional learning was connected to innovation in many of the studies. Researchers found that a new initiative could be motivated by a professional learning experience or by making a change that could lead a teacher to undertake professional learning to support its implementation. In both cases, teacher learning is seen to be significant to ensure implementation and sustainability of innovation. Bakkenes et al. (2010) found that educational innovations have often failed because proponents did not recognize the need for teacher learning.

In addition, the perception of what constitutes teacher learning can be contentious. What seems to be a common finding is that teachers who undertake innovations also consider themselves to be learners (Ali, 2011; Bakkenes, et al., 2010; Davies, 2013; Emo, 2015; Frank et al., 2011; Owen, 2015; van Veen et al. 2005). Ali (2011) found that teachers who perceive themselves as lifelong learners can have a direct impact on student learning and engagement. In

their study findings, van Veen et al. (2005) reported that teachers pursue professional learning opportunities to accomplish specific goals, to support their own understanding or to avoid professional stagnation. The importance of teacher learning is a common finding, but the recommendations on how best to support teacher innovation through professional learning vary widely.

Several researchers stress the importance of teacher choice in professional learning opportunities. Emo (2015) found that innovations can often be traced to a professional learning experience of the teacher's own choosing. Choice in professional learning can ensure that teachers find what they learn to be relevant to their own situation. Bakkenes et al. (2010) connected the importance of meaning-based learning to both teacher and student learning. Because teachers are motivated to innovate in order to improve student learning, teachers who choose their own professional development experiences can immediately apply their learning to their own instructional context, thus maximizing the impact their learning has on students (Emo, 2015). Lohman and Woolf (2001) found that the success of collaborative learning opportunities was in large part determined by whether teachers' decisions to participate had been by personal choice. By contrast, teachers who are assigned to participate in professional learning experiences may remain resentful of their forced inclusion. However, Lohman and Woolf also brought up a concern about voluntary participation in professional learning activities. They recognized that one challenge of relying solely on self-initiated learning opportunities for professional development was that "the intensification of their [teachers'] work may constrain their participation in such activities" (p. 60). This is a concern that often leads to the demand for accountability from administrators and school board officials.

The importance of location and delivery of professional learning programs for teachers was also the subject of significant discussion in the studies. On one hand, some researchers found that professional learning opportunities organized or accessed outside of the school community offered some significant advantages. Frank et al. (2011) found that at the beginning stage of new learning, professional development provided by outside experts offers the most effective way to support new learning. Bakkenes et al. (2010) supported this claim, reporting that organized learning environments elicited "qualitatively better activities and outcomes than informal learning in the workplace" (p. 546). Kwakman (2003) determined that in many cases the workplace was in fact not the best place to engage in professional development due to structural factors in many schools which result in a lack of time and support for teacher learning opportunities. This study argues that in order to be considered effective learning environments, schools would need to develop adequate infrastructure for learning, a condition which does not exist currently in most schools (p. 168). Kwakman (2003) concluded that teachers should choose learning environments outside of the school because "although the workplace is considered a powerful learning environment in theory, this workplace is not powerful in itself in practice" (p. 167).

Alternatively, other studies asserted that on-site, contextual learning experiences for teachers will be much more effective in supporting teacher innovation. Vennebo and Ottesen (2015) argued that it is important to study professional development in natural settings as the complexity of the school environment cannot be captured by an outside learning experience. Frank and colleagues (2011) argued that expert-led professional development best serves those in the early stages of learning a new practice; later stages of expertise require greater site-specific support such as experimentation and collaborative interaction among colleagues.

One study discussed a combination of these two delivery systems, with on-site learning supported by a *boundary spanner*—an individual from outside the school who supported the teacher learning process. In their study of the implementation of a cooperative learning innovation, Goodyear and Casey (2015) found that the strength of this approach came from the fact that the boundary spanner was able to support teacher learning about the innovation, and encourage each teacher to adapt the model to suit a unique context. Their study sought to provide evidence that effective professional learning "does not only occur in a 'workshop' or a professional development course" (p. 194). The professional instruction offered by the advisor increased the development of teacher competence. This in turn, allowed teachers to implement the innovation using methods best suited to their context, while still using the advisor as a resource for instruction and support, thus increasing the likelihood of sustaining the innovation.

Although there was some debate about location and delivery of professional learning programs, all of the studies that discuss teacher learning agreed that the ability to transform new knowledge into an approach specifically designed for each unique context is extremely important. New concepts need to be integrated into currently used methodologies, and teachers often create new and innovative contexts by combining the two in a manner which best suits their students and their teaching styles (Russell & Schneiderheinze, 2005). Vennebo and Ottensen (2015) found that all perspectives brought into a learning context from an outside source "are negotiated through processes of recognition, transformation and rejection" (p. 212). They assert that innovation lies in the way new perspectives are collectively constructed and reconstructed by each individual teacher or group of teachers. Edwards et al. (2014) elaborated on this process, recognizing that teachers need to adapt professional learning to their own situation in order to create innovations that best serve their students. This process could be

negatively affected if administrators offer professional development experiences for the express purpose of implementing specific pedagogical changes. The risk of this approach, say Edwards and colleagues, is that administrators could unintentionally reduce the chances of innovation by leaving little room for experimentation and reflection. Although the delivery formats and locations may vary widely, researchers agree that professional learning is a significant part of initiating and supporting teacher innovation.

Theme #8: Perception of Support (Decisional Capital)

This minor theme would have easily combined with other larger themes, but it seemed significant to address the specific ways in which teachers may be impacted by the perception of support from their colleagues, their administration, and their school. As discussed earlier in the paper, teacher beliefs play an extremely important role in how innovations are initiated. It follows then, that the perception of support will play a role in how teachers view their own innovative process. Teachers who believe that they are fighting to initiate innovations despite a lack of success or support can progressively be demoralized and disillusioned, often scaling back their own innovative practices (Ali, 2011; Casey, 2013; Frank et al., 2011; Phelps & Graham, 2008; Raskit, 2006; van Veen et al., 2005). Several of the studies detail ways in which entire schools transformed themselves into communities which supported individual teacher innovation. Zehetmeier (2015) referred to this approach as creating a "culture of appreciation" (p. 122). Fallon and Barnett (2009) found that the school they studied was able to engage a collaborative structure to facilitate collegiality and risk-taking. This structure allowed teachers to be emotionally supported as they experimented with new practices, thereby mitigating the risks associated with innovation. In addition, the administration of the school supported this new structure, ensuring that teachers felt safe from attack or negative professional consequences if

their innovations were unsuccessful. Goodyear and Casey (2015) determined that schools which celebrate innovation are expressing support for risk-taking and innovation. Edwards et al. (2014) reported that an institutional approach to supporting innovation allowed for greater comfort with trying new approaches. When the entire faculty committed to engaging in pedagogical and methodological innovation, teachers felt supported by their colleagues. This increased the depth of the discussions about the successes and challenges of individual projects. Faculty members, state Edwards and colleagues, "were forthcoming about what did not work as planned and these outcomes were received in the mindset of continuous quality improvement which contributed to the success of the program" (p. 7).

The allocation of resources was a frequently mentioned contributor to the perception of support for innovation. Because key resources such as time and funding are most often controlled by administrative staff, allocating these resources to teacher innovation projects can be a significant indicator of support. In their study of the impact of resources on teacher networks, Coburn et al. (2013) found that resource allocation to specific projects influenced the formation of networks which supported teacher innovation. This perception of support for their efforts allowed teachers to access learning opportunities and collaborative experiences proactively. Coburn and colleagues also found that these structures declined when the supports were withdrawn.

One key resource which contributes to this perception of support is the allocation of time. Frank et al. (2011) concluded that schools supported innovation by allocating time to teacher projects. They argued that release time was a significant factor in "validating legitimacy of experimentation, some of which may or may not be immediately beneficial in the classroom" (p. 151). Aubusson et al. (2007) reported that a significant number of research participants believed

time to be the most important factor in supporting innovation. They contend that teacher projects, whether collaborative or individual, often do not progress due to lack of time and support. Lohman and Woolf (2001) contend that allocation of resources should include teacher workspaces and common student-free times in order to support the professional discussions which foster individual teacher innovation.

Certainly the allocation of resources can also have a negative effect on innovation if resources are perceived to be unequally available. In examining the micro-politics of innovation, Raskit (2006) found that many teachers were discouraged from trying new innovations because of an unfair allocation of resources. When teachers were not allocated an equal share of resources by the school, it was perceived as a lack of respect and support from their colleagues and administration, resulting in a subsequent decline in their innovative practices. Only one study supports the use of resources as 'rewards' for innovation. Lohman and Woolf (2001) argue that reward systems, such as offers of increased resources, should be considered as "meaningful incentives for participation in such activities to promote the diffusion of teacher expertise throughout the school system" (p. 73). While they argued that rewards would increase the perception of support for those teachers being rewarded, they offered no strategies to mitigate the damage that could be done to the morale of staff if all innovative teachers are not equally rewarded.

Theme #9: School Leadership (Decisional Capital)

Although teacher innovation may in some cases be a solitary pursuit, many of the research studies connected the approach of school leadership with the success of reforms in teaching practice. School administrative leadership can have a significant impact on how

innovation is supported. As discussed in the previous theme, principals and school managers have a great deal of control in allocating school resources to innovative projects, a fact which can influence the success or failure of the project. According to the studies, the approach of administrative leadership can impact innovation in other ways as well. Sandoval-Lucero et al. (2013) found that institutional cultures which support change can be heavily influenced by school leadership. They argue that school cultures that support a school-wide orientation towards innovation "have a clear mission and vision that is consistent among senior leadership" (p. 272). Stam et al. (2014) found that while teachers may be responsible for initiating a new practice, it was "the approach of the managers which was decisive for the innovation succeeding or failing" (p. 262).

Some studies demonstrated the negative impact of an administrative approach which forced teachers to innovate, rather than supporting their self-determined reform projects. Aubusson et al. (2007) found that teachers who were forced to participate in innovative practices remained resentful of the work they were asked to undertake. Results from some of the studies showed that teachers can be discouraged from attempting reform if their efforts are not supported by administration. In one case, a study reported that the findings of a teacher-initiated professional learning community (PLC) were rejected by the principal who refused to accept or implement the recommendations of the PLC (Lohman & Woolf, 2001). This created frustration and anger in the teacher participants, leading them to discontinue their PLC project. Zehetmeier (2015) found that the support of the school principal was specifically important in sustaining one teacher's innovative project. Administrative leaders may unwittingly affect teacher innovation, particularly if they fail to notice the reform efforts of some teachers, while celebrating the efforts of others (Raskit, 2006). While it may be the individual teacher, or a group of teachers who

initiate an innovation, these studies assert that supportive school senior leadership is essential to the success of any project.

Many of the studies also point to the distribution and development of leadership within the school and among collaborative groups as a key factor in supporting and sustaining innovation. Aubusson et al. (2007) found that successful teams devolve their ownership to members rather than assigning a leader or chairperson. They found that an effective learning community was one in which "ownership was shared and each member of the community was committed to working toward commonly agreed goals" (p. 144). Many studies found that as schools scaled up their commitment to innovation, they recognized the need to support the development of leadership among staff. Skerrett (2010) reported the positive impact of collaborative practices that focused on mutual mentorship and in-school apprenticeships as ways to support leadership and build expertise. Fallon and Barnett (2009) found that building leadership capacity within the school community was essential to sustaining a collaborative innovation project. As they tracked the collaborative process in a school, they observed "informal leadership develop among the educators" who were involved in the project (p. 9).

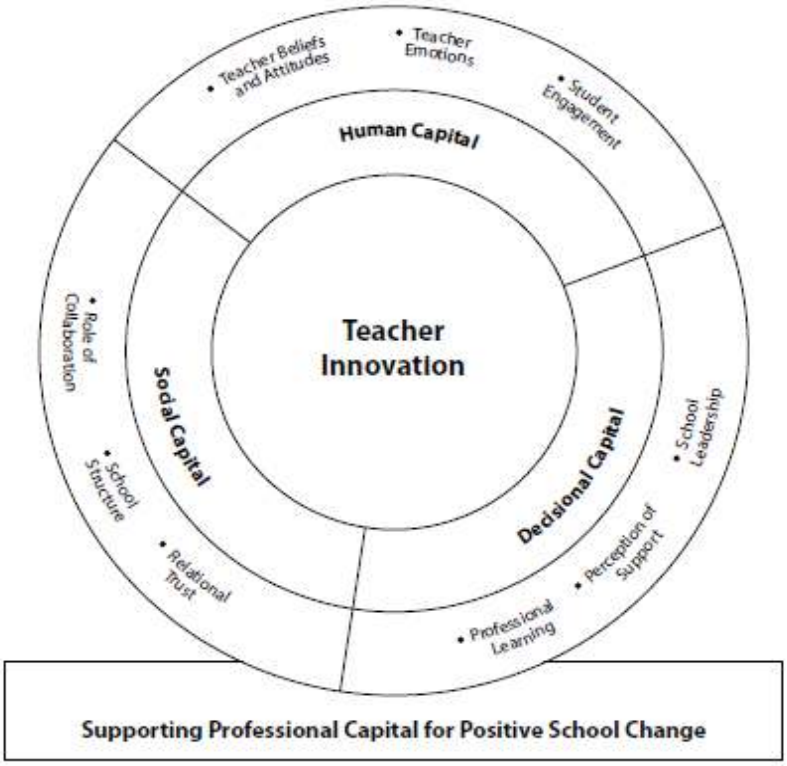
Building leadership capacity can serve to increase teacher motivation to innovate their practice. Teachers reported feeling that they had autonomy in their classroom, but held limited power to make decisions regarding their schools (Lohman & Woolf, 2001). With increased capacity, schools were able to adopt a model of greater distribution of leadership, contributing to the feeling of empowerment teachers reported when making educational decisions about their own classrooms and about large issues which impacted the school (Emo, 2015; Fallon & Barnett, 2009; Lohman & Woolf, 2001; Wallace & Priestly, 2011). Wallace and Priestly (2011) found that improved distribution of leadership can lead to an increased ability for teachers to customize

reform initiatives to suit their own context. They concluded that the "empowerment of teachers made it possible for them to participate in the design of the reform, rather than simply in its reproduction" (p. 377). Supporting the development of leadership among school staff was found to contribute positively to the participation in innovative projects and the collaborative structures which support them.

Summary of Themes

These nine themes offer a way to frame the multi-faceted research about teacher innovation presented in the articles studied for this meta-synthesis. Figure 3 expresses the relationship among the nine emergent themes that were determined by the meta-synthesis.

Figure 3: Teachers' Professional Innovation and Creativity



In the centre of the diagram lies the heart of positive school change—teacher innovation. Surrounding this is a ring which contains the three components of professional capital, each of which supports teachers as they strive to make changes in their practices which positively impact students. The outside circle contains the nine themes divided by their connection to the three aspects of professional capital. This diagram represents the flow of influence among these layers in an inward and outward direction. The entire circle sits on a pedestal, demonstrating that all aspects of teacher innovation are influenced by the fostering of professional capital which in turn supports positive school change. In this way, teacher innovation will influence the building of professional capital at a school, just as the investment in professional capital will support and encourage sustainable teacher innovation.

Analysis

The purpose of a meta-synthesis is to examine the interpretive findings of multiple articles with the goal of gaining new insights or developing a new perspective and a more complete understanding of a phenomenon (Aspfors & Fransson, 2015). For this reflection on the results of the meta-synthesis, I will refer to each of the research questions posed at the beginning of this paper.

Question #1: Why are teachers motivated to undertake and sustain self-initiated innovation?

As discussed earlier, I found that the literature did not support the importance of making a distinction between self-initiated innovation and innovation that was initiated as a result of an outside influence. As my original research questions were formulated in advance of this finding, however, I have left the question as it originally appeared in the introduction to this paper.

Based on the results of the meta-synthesis, teachers are primarily motivated to innovate in order to improve student learning. Many articles touch on this important influence. Emo (2015) found that improving student learning was the most significant factor for teachers who attempted an innovation in their classrooms. Zehetmeier (2015) found that teachers who recognized the need for new ideas and strategies to improve learning outcomes for their students were more likely to develop or pursue an innovative approach. The success of the innovative method was also found to be a very important aspect in continuing or expanding on an innovative practice. Davies (2013) and Goodyear and Casey (2015) found that teachers who attempted an innovation were motivated to continue with the new method as a result of the positive responses of students to new practices.

Another interesting finding was the influence of boredom on the pursuit of innovation. Several studies found that teachers innovate to keep the curriculum fresh and interesting for themselves and the students. Owen (2015) found that teachers are often motivated to make changes because of boredom with the curriculum, and curriculum materials. Emo (2015) also found that boredom with current curriculum or methodology can be a primary motivating factor to pursue professional learning and innovative practices.

The meta-synthesis also revealed that teachers are often pushed into innovation by changes in curriculum, policy, and the introduction of new technology or teaching materials (Bakkenes et al., 2010; Emo, 2015; Kwakman, 2003; Lohman & Woolf, 2001; Stam et al., 2014). I had imagined at the beginning of this project that the innovations which were imposed on teachers would have been less effective and more short-lived than those which were initiated by the teachers themselves. This, however, proved not to be the case. The deciding factor was in fact the ability of the teacher to transform or adapt the externally motivated innovation to suit

their own context. Wallace and Priestly (2011) found that teachers who were able to transform reforms according to their own beliefs were more likely to sustain new practices in their classrooms.

New methods which are offered as a 'package' to be implemented exactly as presented were less likely to be adopted by teachers. Edwards et al. (2014) found that the imposition of new teaching tools without training for local adaptation can sometimes actually reduce innovation as teachers may have little time or support to learn how to integrate these tools effectively into their own context. However, Edwards and colleagues found that teachers who are given time and support to adapt the use of new technology to their particular teaching context are more likely to integrate new methods into their teaching practice. This was particularly true of new strategies which have been developed outside of the school and are presented as a 'system' to be implemented by teachers. Vennebo and Ottesen (2015) found that these innovation systems, often introduced by education authorities to bring about change, "do not easily result in concrete changes in school practices" (p. 200). The main issue, they argue, is that the transfer of knowledge between settings can be problematic due to the differences in the structure and context of educational settings. Innovations that are developed or adapted to a specific school context are much more likely to result in long term and sustainable positive change (Tondeur et al., 2009; Wallace & Priestly, 2011).

Question #2: What conditions support teachers to innovate their practice?

This question was best answered by the discussion of the meta-synthesis. The nine emerging themes covered the variety of conditions which were identified by the studies as essential factors in supporting teachers to initiate and sustain innovations in their practice. When

I began this project, I imagined that the most significant aspects to supporting innovation would be collaboration, relational trust, and school leadership. Certainly, these three themes did emerge as significant, but were not the most commonly cited factors in the articles. Of these three, collaboration was most frequently addressed, with 17 of the 27 studies citing its importance. It is interesting, but not surprising, that collaboration and relational trust are addressed in many articles as overlapping themes. This gives credence to the argument put forward by several studies that true collaboration cannot exist without relational trust (Aubusson et al., 2007; Coburn, et al., 2013; Goodyear & Casey, 2015; Fallon & Barnett, 2009; Sandoval-Lucero et al., 2013).

The greatest surprise for me was the emergence of *teacher attitudes and beliefs* and *school structure* as the two most significant themes in the meta-synthesis. School structure was not something that I had considered at all in my own preparation for this project. The physical layout of the school and the isolation of teachers in their classrooms is something I take for granted about my workplace conditions. For this reason, I had not even considered school structure to be a factor in how I determine, prepare for, or reflect on my own innovative practices. However, as I read the studies and developed the emergent themes, I began to consider how the isolation of teachers in their classrooms, and the highly structured school-day schedule affects every aspect of innovation. The reality is that, because of this structure, I really have no idea what other teachers are doing in their classrooms, and therefore, have no perspective on my own efficacy. A tremendous irony about teaching is that we really only observe other teachers when we are training to be teachers. Once we 'graduate' to our own classrooms, we may never see another teacher teach again; we are left to determine our own success based on our day-to-day practice and the response of our students. If teachers wish to

reflect on their own practice, it is often a solitary pursuit, as the only co-participants in the process are the students. It was clear from the meta-synthesis results that teacher isolation is a barrier to collective and sustained innovation in schools.

The meta-synthesis also allowed me to reflect on the attitudinal norms experienced by teachers as a result of isolation. Although a school is a large cooperative community, with all members ostensibly focused on the same goals, teachers remain fiercely independent in their development and delivery of the curriculum. This independence can be interpreted in a negative way, and teachers who are unwilling to adjust their own practice to fit with school or departmental philosophies may be seen as a barrier to progress. Indeed, I have observed this phenomenon and at times been surprised that even the most effective and collaborative of teachers have taken this approach. I have learned, through this study that this approach has less to do with resistance, and a great deal to do with the conditions associated with teacher isolation. Teachers are personally responsible for the learning which unfolds in their classrooms. This simple fact means that teachers will make complex decisions each day about how to present material, structure lessons, and evaluate student progress. If teachers try a new method and experience limited success, they may fall back into old patterns. This may occur not because they are resistant to new concepts, but rather because they may feel reassured that students are learning effectively with the 'tried and true' methods. It made so much sense to me that this reluctance to embrace change does not demonstrate rigidity or laziness, but instead characterizes an approach to managing the tremendous responsibility classroom teachers have for their students' success. Interestingly, while reluctance to embrace change has been conceived of as a lack of care for students, this study reframes this assumption, understanding that teachers who

seem resistant to change could in fact be making decisions that they feel will ensure greater student achievement.

The second interesting finding was how strongly innovative practices are affected by the attitudes and beliefs of teachers. It was not surprising that so many articles made mention of 'innovation-oriented teachers' (Ali, 2011; Casey, 2012; Emo, 2015; Raskit, 2006; van Veen et al., 2005). It has always been obvious to me that certain teachers have this type of personality and are quick to adopt new concepts in their teaching practice, often to varying degrees of effectiveness. While this approach can be very appealing to administrators and outside stakeholders, I have learned by observation that simply embracing new and innovative practices does not necessarily ensure teacher effectiveness. One of the things I was most interested in when I began this project was developing an understanding of how teachers who do not outwardly demonstrate an 'innovation-oriented' approach have come to be seen as resistant and unwilling to change. The answer came in understanding the importance of congruence. Because of the tremendous individual responsibility they hold to ensure student achievement, teachers must develop methods which suit their individual teaching style and personal approach to classroom structure. A teacher can get advice from others, and learn about different methods, but ultimately must develop a personal process best suited to their own ability. For me, this is what made my first few years of teaching so difficult. I was trying to replicate what I had learned in an academic context, and to implement methods advised by others. It was not until I was able to put various approaches together and transform them into a teaching and classroom management method all my own, that I was able to feel comfortable and confident in front of my class. As I grow and change in my teaching practice, so do my methods, but each change I make remains congruent with my personality and teaching style.

Through this project, I came to a better understanding of the significance of teachers' personal approaches when faced with innovating their practice. If a new technology, method or curriculum is incongruent with a teacher's personal philosophy or approach to teaching, it is unlikely to take hold and become a sustainable part of the teacher's practice. This could be one reason why so many mandated methodologies fail to take hold. Because a teaching staff at a school is likely to be as diverse as the student community, it is unlikely that every proposed change, whether self-initiated or driven by an external source, would resonate equally with all educators. The different responses of teachers could cause conflict as some immediately embrace a new innovation while others struggle to find a way to incorporate it into their current practice. Therefore, what could be seen as reluctance or inflexibility may in fact be an issue of congruence. This new understanding has offered me a way to see how a school community needs to differentiate its response to innovation just as we differentiate our instruction for our students.

Question #3: How do schools support teacher resiliency when facing the challenges of self-initiated change?

Based on the results of the meta-synthesis, schools need to pay attention to the importance of teacher identity, attitudes, and beliefs. These affective aspects of how teachers approach change have, in my experience, rarely been addressed as part of the process of innovation. As mentioned in many of the studies, the identity of teachers as change agents is a significant part of encouraging change, particularly when it is fraught with conflict and challenge. A pre-existing sense of relational trust was shown by the meta-synthesis results to be an essential part of taking a risk. An assurance of support from colleagues and all levels of administration can give teachers the freedom to try something new without fear of professional

repercussions. The double edged sword of teacher autonomy means that when a method is successful, the teacher can take credit, but if a method is unsuccessful, the teacher must also take responsibility. Knowing that the entire school community, including school administration and management, is supportive of the risks associated with positive change can help teachers to face the insecurity of innovation. The perception of support from the school community and school leadership teams can offer a safety net for the potential challenges of innovating teaching practice.

Collaboration, not surprisingly, emerged as a key theme in supporting teacher resiliency when facing an innovation. Many studies pointed to the advantages of developing professional learning communities for the purpose of planning, support and reflection (Aubusson et al., 2007; Little, 2002; Owen, 2015; Skerrett, 2010). Even the existence of informal networks was shown to provide support to teachers taking risks and facing challenges (Coburn et al., 2013). Because the working conditions of classroom teachers leave them most often isolated from their colleagues, schools which support the development of collegial networks were shown to be more effective at encouraging sustainable innovation. Whether professional learning opportunities are self-selected by teachers or offered through an administrative initiative appeared to make little difference in sustainability. The opportunity to collaborate with colleagues to integrate new methods and reflect on challenges and successes was shown to be a primary factor in whether innovations became integrated and sustainable.

Reflection

I chose this study as a way to try to understand the complex responses of teachers (including myself) to the process of innovation. I was curious about why it was that in so many

of my Masters of Education course discussions, experienced teachers were characterized as rigid and unwilling to change, while my personal experience gave me evidence that the opposite is more often true. Through this meta-synthesis I was able to connect the multiple aspects of undertaking and supporting risk and innovation and develop a greater understanding of this process for teachers. Going forward, I will carry with me several important new understandings.

Most significant, I have a more complete understanding of the impact of teacher identity on innovation. I had a grasp of this concept before, but the meta-synthesis has allowed me to articulate this concept with much greater accuracy. Recognizing that teachers each approach an innovation or change with a sense of who they are as professionals makes me realize how the design of a new method may make it more or less adaptable to an individual teacher's practice. This also helps me to understand what is often characterized as resistance on the part of more experienced teachers. The longer an individual has been teaching, the more established their individual identity would become. It may become more difficult for an individual teacher to imagine how to adapt to a new method if it challenges aspects of a teacher's professional identity. When I read Russell and Schneiderheinze's (2005) study about integrating old and new methods, the concept of teachers experiencing tension in response to new innovations made perfect sense. They describe a process through which teachers resolve this tension by integrating the old and new methods, explaining how, without support and collaboration, some teachers may never be able to resolve the tension, resulting in abandonment of the innovation (p. 40). This led me to imagine my own 'teacher bookshelf' with all of the materials, methods and strategies I have developed through the course of my career. When I was new to teaching, my bookshelf had a great deal of room and I was easily able to find a space for something new. With experience, my bookshelf has filled to overflowing, so with each new addition, I must ask myself

where it might fit in and what I should remove or reorganize in order to make space. The stress of reorganizing and finding a space for something might make me more hesitant about accepting a new item on my shelf. Since I have vetted each item which already takes a space on my bookshelf, I realize that I might want to wait a bit when faced with a new possibility, just to be sure that it is worth keeping. This image has been a useful one as I think about my own response to innovation and how I understand my own approach to new methods or materials.

Another new learning generated by this project was the significance of school structure on teacher innovation. Because teacher isolation is a defining feature of my everyday practice, I had not even considered how important it would be. It is like a hidden barrier that, until I recognized it, I would not have even considered it as a factor in how teachers develop and support innovative practices. While I don't think a change in the 'egg-crate' model of classroom teaching is imminent, it is useful to keep this aspect of school structure in mind when planning and supporting innovative practices. Support for collaborative networks, and encouraging common areas for teachers to discuss the challenges and successes of their practice formally and informally, are at least 'baby-steps' toward breaking down the barriers of isolation. Several of the meta-synthesis studies point to classroom observation as a way to learn from others and give constructive feedback on new teaching methods (Aubusson et al., 2007; Bakkenes et al., 2010; Fallon & Barnett, 2009). This, however, is unlikely to take immediate hold in our current system. In my experience, teachers are typically observed only in an evaluative context when administrators are completing a performance appraisal. Until we can develop a system in which teachers can observe each other teach without fear of professional repercussions, collaborating outside of the classroom, or developing team teaching situations may be the best way to combat

the isolation of classroom teaching. Despite this, keeping the structure of schools in mind when planning a school-wide innovation could be very helpful to ensuring its success.

One aspect which I think is important to mention is the significance of time. Many studies referred to time, or the lack thereof, as a significant factor for teachers when innovating their practice. Often the studies recommended offering release time for teachers in order to allow them to pursue professional learning. While this certainly increases the perception of support for teacher innovation, it does not really give teachers *more* time. Although being away from regular teaching duties can offer a chance to learn independently or collaborate with colleagues, the reality is that being away from the classroom is often more work, and takes more time than being in class. Most teachers I know—myself included—feel that the time spent preparing and recovering from a day out of the classroom is often not worth the effort, nor is it beneficial for students. While I understand that the professional learning offered during release time is intended to affect long-term change, the immediate impact is consequential. When I am away, my students lose a day of instruction and activity, so I am left to weigh the importance of *my* time versus *their* time. As a result, I think that release time is not an ideal way to offer teachers more time for developing innovative practices. I would argue for greater flexibility in the school day, reorganizing the student timetable to allow for some common planning time for teachers as a way to support innovation more effectively without impacting instructional time for students.

The most significant new understanding I will take with me from this project is the value of local adaptation. It was reinforced again and again in the meta-synthesis studies that teachers who are able to adapt methodologies to suit their personal style of teaching, and the context of their classroom, were much more successful in implementing and sustaining the innovation.

This allows a greater understanding of teachers who do not immediately embrace a new method. Teachers who do not throw out old methods in favour of new ones are not necessarily ineffective or unwilling to change; they simply manage innovations differently by questioning new methods and innovating their practice in a more measured manner. In her study, Emo (2015) borrowed an analogy from architecture to reinterpret the concept of teacher resistance. In architecture, resistance is not seen as a negative concept, but one in which a structure resists the norm—adapting a design in order to fit into the environment it will serve. Emo argued that

> [t]eacher resistance in an analogical sense is teachers meeting the needs of individuals in the local situation, surmounting the difficulties presented by that group of learners and using craft knowledge to create an educational design or structure (architecture) which elegantly provides thoughtfully designed scaffolding for learners as they develop their understanding of subject matter and of people. (p. 174)

I will carry this concept with me as I face the idea of resistance in my own response to innovation. Explicitly supporting teachers to adapt new methods to suit their own context would greatly improve how changes might be proposed and received by teaching staff. This also provides freedom for collaborative groups like professional learning communities to establish priorities and develop programs to suit the learning needs of particular students or schools.

Conclusion

This project has provided me with the opportunity to discover new understandings from theoretical work that can be directly applied to my work as a classroom teacher. By gaining a better sense of how innovative practices are developed and supported, I can see a way forward for myself, and recognize how to support this process for others. Certainly, there are limitations

to this type of study, as qualitative findings, particularly those based on case studies and small samples, cannot always be generalized to other contexts. However, the prevalence of some themes in the studies certainly warrants further examination. It would be very interesting to continue to investigate how schools and teachers work to overcome the isolating organizational structure of the classroom. I also think it is important that educational administrators at many levels pay attention to the significance of local adaptation. Giving teachers the conceptual understanding of a new method or innovation and then allowing them to adapt it to their context seems to make sense as a way to support professional capital and sustain innovative practices. This meta-synthesis contributes to a greater understanding of how teachers work under specific constraints such as time and isolation, and how innovation involves adapting new understandings to suit their students as well as their own teaching context. The concept of professional capital acknowledges that effective teaching practice is difficult and complex, requiring "technical knowledge, high levels of education, strong practice within schools and continuous improvement over time that is undertaken collaboratively" (Hargreaves & Fullan, 2013). A thorough understanding of how to support teachers in their roles as agents of positive change will inevitably contribute to ongoing and sustainable innovation in schools.

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Appendix A: Meta-Synthesis Article Theme Chart

Meta-Synthesis Articles	Teacher Beliefs	Teacher Emotions	Student Engagement	Role of Collaboration	School Structure	Relational Trust	Profesisonal Learning	Perception of Support	School Leadership
Abrami, Poulsen & Chambers, 2004	x	x							
Ali, 2011	x		x		x	x	x		
Aubusson, Steele, Dinham & Brady, 2007	x			x	x	x	x	x	x
Bakkenes, Vermunt & Wubbels, 2010	x	x					x		
Casey, 2012	x			x	x				
Coburn, Mata, Choi, 2013				x	x	x	x		
Davies, 2013	x	x	x			x			
Edwards, Kirwin, Gonyeau, Matthews, Lancaster, DiVall, 2014	x	x	x		x	x	x		
Emo, 2015	x	x	x	x	x		x	x	x
Fallon & Barnett, 2009	x	x		x	x	x			x
Frank, Zhao, Penuel, Ellefson, Porter, 2011				x	x		x	x	
Goodyear & Casey, 2015	x		x	x				x	x
Kwakman, 2003	x	x			x		x		

Meta-Synthesis Article	Teacher Beliefs	Teacher Emotions	Student Engagement	Role of Collaboration	School Structure	Relational Trust	Professional Learning	Perception of Support	School Leadership
Little, 2002	x			x	x		x		
Lohman & Woolf, 2001			x	x	x		x		x
Owen, 2015	x		x	x	x		x		
Phelps & Graham, 2008	x	x			x				
Raskit, 2006	x			x	x			x	x
Russell & Schneiderheinze, 2005	x			x	x		x		
Sandoval-Lucero, Maes & Pappas, 2013				x	x	x	x		x
Skerrett, 2010	x			x	x				x
Stam, Miedma, Onstenk, Wardekker, ten Dam, 2014	x	x		x					x
Tondeur, Devos, Van Houtte, van Braak & Valcke, 2009	x				x			x	
van Veen, Sleegers, van de Ven, 2005	x	x			x		x		
Vennebo & Ottesen, 2015	x			x	x		x		
Wallace & Priestly, 2011	x	x		x	x				x
Zehetmeier, 2015	x		x		x	x		x	x