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EVALUATING THE CONDITIONS OF COLLABORATIVE ACTION RESEARCH

ON TEACHERS' BASIC PSYCHOLOGICAL NEEDS, EFFICACY AND KNOWLEDGE

A MIXED METHODS STUDY

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EVALUATING THE CONDITIONS OF COLLABORATIVE ACTION RESEARCH

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A MIXED METHODS STUDY

A DISSERTATION APPROVED FOR THE
DEPARTMENT OF EDUCATIONAL LEADERSHIP AND POLICY STUDIES

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Abstract

Research offers accounts of the reasons for variation in the quality of experiences across professional development models (Yoon, Duncan, Lee, Scarloss & Shapley, 2007), which has resulted in "a landscape littered with failed approaches" (Lierberman & Wood, 2001, p. 174) in traditional models and recent approaches have proven ineffective in providing opportunities for teachers that promote change in practice or student learning (Darling-Hammond & Stykes, 1999; Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009; Fullan, Hill & Crevloa, 2005). The purpose of this study is to use basic psychological needs theory, an important aspect of human development, as a lens to determine if redesigning the action research model to include structured collaboration, expert coaching and extended learning time would provide improved support for teachers' basic psychological needs and efficacy. Designed as a single-case embedded study, this is a first-hand account of four teachers' developmental process and how they respond under the specified conditions. The study demonstrates potential links between teacher-led professional development, active meaningful learning, data-based decision making, job-embedded collaboration and autonomy; job-embedded collaboration, active meaningful learning and extended time and relatedness; and the collaborative action research process and job-embedded collaboration and knowledge.

CHAPTER 1:

INTRODUCTION

At the beginning of the 21st Century, evidence began to accumulate which suggested a substantial relationship between teacher quality and student achievement (Avalos, 2011; Darling-Hammond, 2000). This evidence has resulted in a flurry of policy activity at the district, state, and federal levels with respect to teacher professional learning and development as a means to transform teacher knowledge and capacity (Avalos, 2011; Garet, Porter, Desimone, Birman, & Yoon, 2001; Taylor & Colet, 2010). Quality teachers are developed, in part, through high-quality professional development which challenges their current pedagogical principles, knowledge and skills. That teacher knowledge is key to providing quality instruction for students continues to motivate researchers to study teacher learning and development and its relationship to their various professional development opportunities.

The literature on professional development offers a clear picture of teachers' dissatisfaction with traditional professional development. In the past, teachers have provided adverse reports about unstructured professional development programs (Gall & Renchler, 1985; Guskey, Showers, Joyce, & Bennett, 1987). Research also offers accounts of the reasons for variation in the quality of experiences across professional development models (Yoon, Duncan, Lee, Scarloss & Shapley, 2007), which has resulted in "a landscape littered with failed approaches" (Lierberman & Wood, 2001, p. 174). Not only have traditional approaches failed, but even more recent professional development efforts have proven ineffective in providing opportunities for teachers that promote change in practice or student learning (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009; Darling-Hammond & Sykes, 1999; Fullan, Hill & Crevloa, 2005). One understudied aspect of teacher professional development is a

more thorough investigation of the relationship of theories of learning and motivation to teacher professional learning so that more effective professional development models might be developed (Nasser & Sabti, 2010).

Problem of Practice and Research Problem

In 2016, the state of Oklahoma passed Oklahoma House Bill 2957, directing districts to adopt individualized professional development as a qualitative component of the teacher and administrator evaluation system, Teacher and Leader Effectiveness (TLE). The House Bill states that "…for the 2017-18 school year school districts shall incorporate the individualized programs of professional development (p. 8)." Specifically, the individualized professional development should meet the following criteria:

a.   establish an annual professional growth goal developed by the teacher;
b.   be tailored to address a specific area or criteria identified through the qualitative component of TLE;
c.   allow the teacher to actively engage in learning practices that are evidence-based, researched practices that are correlated with student achievement; and
d.   can be supported by resources that are easily available and supplied by the school district and the State Department of Education (H.B. NO. 2957, 2017, p. 10).

To this end, action research was selected by the state as the professional development approach to improve student achievement and promote professional growth (H.B. NO. 2957, 2017). While mandating professional development does not guarantee that professionals will be motivated to engage, experience growth, or that such efforts will result in improved student achievement, it is a potential step for improvement which takes into consideration the professional interests and motivations of teachers as individuals.

However specific this mandate was, state officials did not provide a specific model of action research that should be used, leaving the model open to districts and schools. The bill

alludes to what is considered "traditional individualized action research" which is defined as cycles of contextualized self-inquiry (Carr & Kemmis, 1986; Darling-Hammond & Snyder, 2000). During these cycles, teachers act as researchers asking the questions "What am I doing" "What do I need to improve?" and "How do I improve it?" (Whitehead & McNiff, 2006, p. 1). While beneficial, action research that is conducted this way can be a sterile and isolating process where change is often initiated in the process of making meaning of context with others (Vygotsky, 1978). As it is written in this bill, action research is defined as an individual and personalized idea of learning, and thus lacks grounding in the most current research into professional learning models that stress the social and contextual conditions needed to motivate teachers to engage in improving their practice. Teachers can participate in the process alone, but may not experience the potential for development that comes as a result of a collaborative experience, coaching expertise and extended learning time.

Study Purpose

Research about the conditions necessary to spur teacher learning can bring about a better understanding of professional development designs most conducive to this process (Cobb, McCain, de Silva Lamberg, & Dean, 2003). Scholars have begun to make connections between professional development design and changes in classroom practice, as scholars recognize that adjustments to professional development designs can promote better teacher learning (Wayne, Yoon, Zhu, Cronen, & Garet, 2008). Characteristics of professional development that promote ideal social and contextual conditions for learning like collaborative experience, coaching expertise, and extended learning time, must be in place for teacher learning to occur. The goal of this study was to improve upon the current collaborative action research model using evidence-based practices. This study used collaborative action research (CAR) as a base design and added

structured collaboration, expert coaching, and extended time over the course of two research cycles. The purpose was to evaluate how the addition of these practices to the current model would influence teachers' basic psychological needs, thereby promoting efficacy and the development of knowledge.

To this end, the researcher, as both a researcher and an administrator, adopted a mixed methods case study approach to this study. First, the current action research model was redesigned to better leverage structured collaboration, expert coaching, and extended learning time. The researcher then assumed a "personal-professional" stance by engaging in the reflective process along-side the teachers, providing greater insight into the process (Orland-Barak & Becher, 2011). The following research questions framed the study:

1) How did the additions of structured collaboration, expert coaching, and extended learning time to the action research professional development model work both individually as well as collectively to support teachers' psychological needs?

2) How did the social and contextual conditions of structured collaboration, expert coaching and extended learning time during the action research professional development model shape teacher efficacy and knowledge?

CHAPTER 2:

REVIEW OF LITERATURE

Teacher professional development is characterized as in-service teacher education (Tan, 2014) provided through formal experiences such as workshops, book studies, lesson studies and mentoring or through informal experiences such as reading educational books, articles or watching documentaries (Gender, 2000). These experiences aim to develop teachers' beliefs, attitudes, knowledge and practices (Carlisle & Berebitsky, 2011; Elmore & Burney 1999; Guskey, 1986, 2002). When these experiences result in teachers making changes in their mental models of teaching and learning, it is thought to be the result of a process of change called professional development (Richardson & Placier, 2001).

The mental models represented by a preservice teacher before entering the classroom have to be adjusted to the context of their classroom. It may explain why some researchers such as Mtwetwa and Thompson (2000) define the role of professional development as an attempt to close the gap developed between preservice and actual teaching experience. Teachers who have teaching experience also need adjustments in their mental models as they encounter new students or contexts, as well as changes in curriculum and technology as a result of school, district and state mandates. Whether novice or career, professional development should enable teachers to improve their practice in ways that facilitate student growth (Gordon, 2004).

Professional development experiences should provide access to the most recent scientific developments in teaching and learning which strengthen teachers' skills and challenge mindsets, attitudes, beliefs, and perceptions, building their knowledge. Shulman (2013) suggests that there are one or more kinds of teacher knowledge:

1. Content knowledge;

2. General pedagogical knowledge (general principles, classroom management, and organization);

3. Curriculum knowledge ('Tools of the trade' such as materials and programs);

4. Pedagogical content knowledge (the amalgam of content and pedagogy);

5. Knowledge of learners and their characteristics;

6. Knowledge of educational contexts (ranging from the classroom to the governance of districts to the character of communities and cultures);

7. Knowledge of educational ends, purposes, and values and their philosophical and historical grounds (pp. 6-7).

When these types of knowledge converge as a result of professional development, teacher growth occurs (Clarke & Hollingsworth, 2002). As professional development experiences develop growth in teachers' knowledge types, it is likely to produce positive results in teaching and therefore student learning (Blandford, 2000). After all, ideal professional development is about teacher learning, how to learn, and transforming this knowledge into practice for the benefit of their students' growth (Avalos, 2011).

The Transition from Traditional to Reform Models of Professional Development

Due to the weight of a teacher's influence on instructional decisions (Corcoran, 1995; Corcoran, Shields, & Zucker, 1998), researchers and practitioners acknowledge the importance of providing high quality ongoing learning experiences for teachers (Cohen & Hill, 2001; Darling-Hammond, 2010; Fullan, 2010). Many countries have found the need to increase teacher capacity by emphasizing professional development reform initiatives (Akiba, LeTendre, & Scribner, 2007) that challenge schools and districts to provide opportunities for teachers to increase content knowledge, pedagogical practices and student growth (Stewart, 2013).

While it is a widely held belief that professional development for teachers is key to changing student outcomes (Darling-Hammond, et al. 2009; Guskey, 2002; Klingner, 2004), bringing about change in teachers using some professional development models is one of the most challenging aspects of reforms (Anderson, 2002; Desimone, Porter, Garet, Yoon, & Birman, 2002; Lee & Luykx, 2006). These reform efforts make the assumption that the models of professional development being used are effective. The logic behind the effort is rational, but what reformers do not realize is that they are making mandatory a broken solution for which there was still much work to be done in the design options that lead to measurable outcomes. There is a need for qualitative studies to determine how professional development affects the development of teachers (Desimone & Stuckey, 2014; Koellner & Jacobs, 2014).

Research on traditional models, despite their popularity, have generally been found to be an ineffective means of nurturing change in teacher knowledge and practice. The workshop model, institutes, courses and conferences, all traditional forms of professional development, actually limit the development of teacher knowledge by detouring participants from taking an active learning stance (Gulstan, 2010; Ramnarain, 2008; SACE, 2008). Instead, teacher's learning stance is one of passive learning from an expert authority (Lieberman, 1995; Lieberman & Miller, 1990). This deficit approach discourages teachers from asking questions and having meaningful exchange among their peers about teaching techniques (Hargreaves, 1995). These traditional formats also lack the time, the activities, and the content necessary for engaging teachers in meaningful exchange that leads to change in their classroom practice (Loucks-Horsley, Hewson, Love, & Stiles, 1998).

These traditional models have been ineffective because they were often an add-on activity that was separate and distinct, segmented from teachers' daily work (Fullan, 1995). This

add-on activity usually occurred either after school, on the weekend or during the summer, outside of the teacher's classroom (Loucks-Horsley et al., 1998). Episodic traditional models do not allow the time needed for rigorous, cumulative learning (Darling-Hammond, Hyler & Gardner, 2017). "The reality is that teachers often go straight back to their regular ways of teaching, following professional development, because 'most professional development activities are separated from the classroom, and thus from the opportunity for teachers to be supported as they put what they are learning into immediate use" (Collet, 2015, p. 269). These defects provide a rationale for why there was no cumulative effect on the development of teacher knowledge. This model alone, without other effective characteristics, typically produced technical knowledge in isolation of other types of knowledge (Hargreaves, 1995) because teachers rely on memorization of subject knowledge, when internalization is needed (Cohen, McLaughlin, & Talber, 1993; Darling-Hammond & McLaughlin, 1995; Porter & Brophy, 1988). Thus, teachers often lacked satisfaction and motivation towards traditional models (Darling-Hammond, 2006; Lieberman, 1995).

In light of these shortcomings, reform models of professional development began to emerge a solution to the criticisms of the traditional models of professional development. Reform models of professional development focus on how to make adjustments to designs in ways that lead to changes in teacher behavior in the classroom (Peterson, McCarthy, & Elmore, 1995). Models that are representative of reform professional development include: mentoring, coaching, peer observation, lesson study, collaborative research, professional learning communities, interschool visitation, and study groups. These models are driven by models of adult learning theory and are embedded within the school day through formal and informal learning opportunities. Researchers agree that these types of activities may be more effective in changing

teacher practice because of their responsiveness to teachers' goals, needs, how teachers learn, and their ability to encourage collective participation of teachers (Ball, 1996; Darling-Hammond, 1997; Darling-Hammond, 1995, 1996; Hargreaves & Fullan, 1992; Little, 1993; Sparks & Loucks-Horsley, 1989; Stiles, Loucks-Horsley, & Hewson, 1996).

Characteristics of Effective Professional Development

The need for the design of more effective professional development models has been well documented by researchers (Falk, 2001; Little, 2001). Innovative designs should be based on the most effective features of current professional development formats due to the relationship between professional development, teaching practices and student achievement (Yoon, Duncan, Lee, Scarloss & Shapley, 2007). Identifying the key operational characteristics of professional development models that promote growth in teachers' professional knowledge is instrumental in developing high-quality learning experiences that result in improved student outcomes. There is not one particular technique that has been decided upon to bring about and sustain change (Fullan, 1991; Lieberman & Wood, 2001; Schmoker, 2006; Tallerico, 2005). Early researchers described effective professional development as curriculum-focused, pedagogical, job-embedded, meaningful, ongoing, and provides modeling, feedback, and access to collaboration, practice, and reflection (Abdal-Haqq, 1995; Hiebert, 1999; Little, 1988; Loucks-Horsley et al., 1998). Additionally, research applies the concepts of program coherence (Desimone, 2009; Tallerico, 2005), authentic practice (Lave & Wenger, 1991; Little, 2001; Webster-Wright, 2009), structured follow-up (Desimone, 2009) relevance to a specific group of students (Murphy, 2005) current challenge, choice, learning style and personal experience (Tallerico, 2005) as productive to intended outcomes. Later research also established the need for professional development designs to be based on the teachers need, interest, choice (Lipowsky, 2010; Müller & Papenkort,

2013; Zehetmeier, 2010); and involve experts (Guskey & Yoon, 2009; Lipowsky & Rzejak, 2015; Timperley et al., 2007). Murphy (2005) adds that the plan should be well-developed and take place in a trusting environment.

Gallagher et al. (2017) have made more contributions to the effectiveness of PD models with consensus that success is contingent upon collective participation, content-focused, needs-aligned models that provide curricular resources, materials, and meaningful formative assessments that can be directly applied to the classroom. Most recently, in a review of 35 studies, Darling-Hammond (2017) identifies several key elements of professional development design to include:

1. Content focused (Little, 2001; Desimone, 2009)
2. Active learning
3. Collaboration in job-embedded contexts
4. Models and modeling
5. Coaching and expert support
6. Duration of time

This study supports the work of Tallerico (2005) who found that specific elements such as a focus on content knowledge, active learning, and duration of time are as essential as the format used. Each of six elements, their effect and contribution to effective designs are explored.

Active learning that is meaningful and aligned. Active learning, the result of andragogy or adult learning theory, has been linked to improvement in teacher practice and attitudes (Darling-Hammond, 1997; Johnson, 2011; Johnson & Fargo, 2010). When teachers are engaged in an active learning design, there is an emphasis on learning through inquiry (Flint et al., 2011). In contrast to traditional models of that involve lecture, at the heart of adult learning,

teachers are collaborative and self-directed (Cranton, 1996). Teachers are directly involved with interactive, sense-making activities such as authentic artifacts, collaboration, feedback and reflection in a highly contextualized setting that connects them to the students in their classroom (Darling-Hammond et al., 2017) During collaboration, teachers have the opportunity to present, grapple with and resolve problems of practice (Bates & Morgan, 2018). In the active learning stance, teachers participate in follow up activities such as recording and analyzing lessons, coaching, modeling, and feedback on implementation, allowing teachers to practice and reflect on new learning (Bates & Morgan, 2018). These types of activities help to increase teachers' conceptual understanding and pedagogical knowledge (Bates & Morgan, 2018).

During active learning, teachers find professional development meaningful when it is self-directed, builds upon preexisting knowledge, and supports their personal and school-based initiatives (Bransford, Brown, & Cocking, 2000; Hiebert, 1999; Knowles, Holton, & Swanson, 1998). Lee (2005) found that administrators typically provided professional development on the latest educational fads instead of making the experience meaningful by personalizing learning to meet the needs of individual teachers. Personalizing learning including context, individual teachers' needs and experience are important considerations in PD designs and have been proven to be more effective for teachers (Antoniou & Kyriakides, 2013; Flint, Zisook, & Fisher, 2011).

Active learning is self-directed. As indicated by Ball (1996), teacher development takes place when teachers control their learning, its targeted outcomes, and the agenda. Teachers are rarely involved in the decision making of what is needed to make changes in their classrooms (Elmore, 2007; Fullan, Hill, & Crevola, 2006; Little, 2001). Assisting teachers with their understanding of important elements in decision-making will help them to take an active stance in planning their own learning. When planning, teachers should be knowledgeable of Guskey's

(2003) finding that content and pedagogical knowledge are most frequently noted to be vital for quality professional development. Equally, aligning classroom goals with that of the school, district and state goals and assessments provide coherence (Peneul et al., 2007). When there is program coherence, professional development efforts towards making change are more likely to be useful (Birman et al., 2000). Therefore, even though teachers should be self-directed, helping them to focus goals on content knowledge, rather than generalizable strategies will help the teacher to become proficient with academic content so that they can later use other teaching strategies (Birman et al., 2000; Penuel et al., 2007). It is crucial that teachers are provided with the opportunity to be plan their professional development, (Desimone, Porter, Birman, Garet, & Yoon, 2002b) because the experience becomes personal, meaningful and gives them autonomy over the process.

Job-embedded collaboration. Job-embedded professional development is learning that is accessible, inclusive and embedded within teachers' daily work (Abdal-Haqq, 1995; Darling-Hammond & McLaughlin; Hirsh, 2009). Learning is considered most embedded when the learning activity is closest to their daily work in the classroom with students (Croft, Dolan, & Powers, 2010). The advantage of job-embedded learning is that teachers are provided with supports for finding solutions to current dilemmas in their classroom making it both personal and meaningful (Hawley & Valli, 1999; National Staff Development Council, 2010). To ensure that collaboration occurs, structures should be embedded within daily work and during school hours, avoiding the replication of the traditional format as an "add on" activity.

Job-embedded collaboration is undergirded by the idea that professional knowledge is social and situated within the specific context that is shared among colleagues (Putnam & Borko, 2000). Collaboration is defined as group inquiry, consisting of the collective participation in

experimentation (Abdal-Haqq, 1995), and implementation of tested ideas (Little, 1988). During collaboration, teachers develop a shared understanding, and shared investment in learning (Abdal-Haqq, 1995), which helps with the formation of collegiality. This feature of professional development design allows for the building of a collaborative culture where teachers share experiences and encourage one another (Ringler et al., 2013).

Collaborative teams provide the context for exchanging information that develops skill sets (Macinko & Starfield, 2001). During this process, teachers learn from the professional knowledge of their colleagues (Wei et al., 2009) by discussing dilemmas, sharing curriculum, resources, instructional goals, methods and solutions (Garet, 2001) through formats such as mentoring; coaching/virtual coaching; lesson study; action research; peer observation; critical friends groups, data teams, and examining student work (Rock, Gregg, Gable & Zigmond, 2009). Although learning takes place collaboratively, the environment is supportive of individual teachers' construction of meaning and knowledge (Kinnucan-Welsch & Jenlink, 1998).

Guskey (2003) believes that just as teachers work to enhance one another's progress, they can also impede one another's learning. Therefore, for teachers to receive the benefits of collaboration, it too must be structured. The most successful teams offer teachers structured consultation for problem-solving (Burns & Symington, 2002; Graden, Casey, & Christenson, 1985). This type of collaboration takes place in critical friend relationships, with peers who are co-learners and nonevaluative (Costa and Kallick, 1993). Critical friends use structured collaboration referred to as protocols. Protocols provide a conversational timeline and role for each of the participants, allowing for focused problem solving and equality of voice. The aim of structured dialogue is to have evidence-based conversations and provide feedback that lead to solutions to problems of practice (Bates & Morgan, 2018). The use of protocols ensures that

feedback is directly connected to concrete data that is related to the supporting students (Peterson, Taylor, Burnham, & Schock, 2009). Hattie (2012) reported feedback as having a 0.73 effect size on teachers. Including protocols into the professional development design as a form of feedback increases the likelihood of creating and sustaining teacher development over time. "It is this type of collaborative inquiry that enhances professional learning as teachers articulate their thoughts, seek to understand their colleagues, and approach their practice openly enough to make changes" (Bates & Morgan, 2018, p. 624). It is critical that feedback is received in a community of learners bound by trust. "Feedback in the absence of trusting, non-critical conditions, can be internalized as negative and can be detrimental" (Bates & Morgan, 2018). Receiving feedback about problems of practice through a structured yet collaborative environment using protocols over time may ensure a stronger link between professional development and student achievement (Guskey, 2003).

Duration. Prior to the No Child Left Behind Era, on average teachers in the United States received less than eight hours of professional development, typically in an afterschool format (Darling-Hammond et al., 2017). During No Child Left Behind, there was an increase in these short-term approaches when formats using extended amounts of time were needed (Darling-Hammond et al., 2017). Research has revealed that traditional professional development utilizing short-duration formats such as conferences, workshops, and lectures are ineffective drivers of change (Garet et al., 2001). Extended time allows teachers to engage in cycles of learning by identifying a problem and actively working to resolve it. Over time, teachers are also able to apply their understanding of concepts to the classroom and receive follow up support that is typically absent in workshop models (Bates & Morgan, 2018).

According to Desimone (2009), duration includes both the number of contact hours and the period of time over which the professional development is conducted. Studies confirm that professional learning should be ongoing and continue over long periods of time (at least 30 hours) (Desimone, 2009; Wei, Darling-Hammond & Adamson, 2010). In a review of literature, Yoon et al. (2007) found that an average of 49 hours of professional development a year was positively linked to an increase in student achievement by 21 percentile points. Teachers' knowledge can also develop over the course of years as they participate in professional development (Adler et al. 2005). Numerous studies support literature suggesting that professional development that is sustained over time will make a difference (Darling-Hammond, Hyler & Gardner, 2017).

Evidence supports the relationship between the duration of professional development and student and teacher outcomes (Banilower et al., 2007; Johnson, Bolshakova, & Waldron, 2014; Johnson & Fargo, 2010; Supovitz & Turner, 2000). According to Darling-Hammond et al. (2009), this link may be in part due to sustained efforts to apply learning to the classroom and the support of collaborative groups. Job-embedded learning accompanied by duration of time allows teachers time to establish the needed trusting relationships that are critical for collaboration. During this time teachers are afforded the opportunity to understand one another's instructional context, collect data and respond (Bates & Morgan, 2018). Hargreaves and Fullan (2012) also found that instructional practices remain stagnant when ample time is not allowed for the formation of trusting relationships, causing superficial, contrived relationships to ensue, making it challenging to openly discuss problems of practice.

Coaching and expert support. One area in need of development with traditional professional development is the lack of follow up (Darling-Hammond, Chung Wei, Andree,

Richardson, & Orphanos, 2009; Klinger, 2004), modeling and feedback. Hiebert (1999) states that teachers should be provided with opportunities to see new strategies in action. Guskey and Yoon (2009) confirm that teachers need follow-up to implement the strategies that they have been taught. These studies solidify the finding by Joyce and Showers (2002) confirming that when teachers were presented with a demonstration or model of an unfamiliar procedure, followed by practice and feedback, it contributed to teacher knowledge and skills. The role of the instructional coach is a form of embedded professional development (Aguilar, 2013; Kowal & Steiner, 2007) that can provide coaching and expert support, satisfying the need for follow up, modeling, and feedback.

An instructional coach is usually a teacher leader with expertise in instructional strategies (Denton & Hasbrouck, 2009; Kowal & Steiner, 2007), but can also be any instructional leader, researcher or university faculty (Darling-Hammond et al., 2017). Their role is to work one-on-one with teachers in the context of their classroom to implement new instructional strategies that align with the school's goals, building instructional capacity (Darling-Hammond et al., 2017; DeNisco, 2015; Knight, 2007; Neufeld & Roper, 2003). Coaches provide individual, contextualized learning that extends teachers' knowledge through modeling and feedback (Scarparolo & Hammond, 2018). Darling-Hammond et al. (2017) pose that curricular and instructional models and modeling of instruction help teachers to have a vision of practice on which to anchor their own learning and growth. The various kinds of modeling can include

- video or written cases of teaching,

- demonstration lessons,

- unit or lesson plans,

- observations of peers, and

• curriculum materials including sample assessments and student work samples (p. 11).

Unlike that of traditional formats, where teachers are given a description of what to do, Vanderburg and Stephens (2010) recommends that coaches model for teachers in front of the class so that they can see how to implement a practice rather than solely being told. When coaching is included in professional development designs, it is considered an effective means by which teachers develop (Collet, 2015; Podhajski et al. 2009; Sailors & Price 2015).

The effects of teacher motivation on classroom effectiveness is profound (Carson & Chase, 2009). Empirical research has helped educators to understand that external factors play a crucial role in influencing motivation (Dweck, 2006; Eccles & Wigfield 2002; Fredericks, Blumenfeld, & Paris, 2004) because the assimilation of cognitive structures during learning will only take place under specified conditions (Deci & Ryan, 2002). It is therefore worthwhile to focus research efforts on further understanding how external conditions during professional development either nurture or thwart teachers' basic psychological needs, effecting motivational outcomes. Traditional models of professional development have generally engendered dissatisfaction among teachers due to a lack of active learning, collaboration, time, and access to an expert who can provide follow up support through modeling and feedback. Through the additions of effective design features, professional development holds the possibility of deviating from dissatisfying experiences to that of satisfying basic psychological needs of autonomy, competence and relatedness. These design features may also lend themselves to advancing teacher self-efficacy (Ross & Bruce, 2007; Tschannen-Moran & Hoy, 2007; Tschannen-Moran & McMaster, 2009) and knowledge.

Educational research has identified active learning as necessary for positive development to occur (Desimone, 2009). Active learning, which is self-directed or initiated by choice and

interest, is an essential behavior consistent with motivation. Early studies reveal that the teachers' motivation is increased when they select teaching materials and instructional methods (Kaiser, 1981). Gravani's (2012) study proved that when educators where in charge of their learning, they were more likely to be motivated to implement their learning. Teacher satisfaction with PD models is highly correlated with their degree of control (Nir & Bogler, 2007). This autonomous feature, when included in professional development designs, has been shown to increase teacher efficacy (Cheon et al. 2014; Liaw, 2017) likely because of higher engagement which has been positively correlated with teacher efficacy (Skaalvik & Skaalvik, 2016).

Teacher efficacy helps to close the gap between what teachers know and are able to do. Closing this knowledge gap may be in part due to the exchange that occurs during the collaborative process of verbal persuasion. During collaboration, teachers have access to resources such as "advice, instructional materials, social support, knowledge, or information" (Moolenaar, Sleegers, & Daly, 2012, p. 252), increasing feelings of efficacy (Ashton & Webb, 1986; Louis, 1992; Ross, 1995; Ross, Cousins, & Gadalla, 1996). Efficacy is evident in active learning communities when due to verbal persuasion teachers are more likely to implement instructional strategies (Johnson, Bolshakova, & Waldron, 2014) and increase content knowledge (Borko, 2004; Desimone et al., 2002; Hung & Yeh, 2013; Johnson & Fargo, 2010). As teachers gain skill sets (Mostert, 1998; Phillips & McCullough, 1990; Trent, 1998) efficacy is developed because it helps them to overcome obstacles in their practice.

Competence, one of the basic needs, was found to be supported through content-focused coaching (Vogt & Rogalla, 2009). Coaching has also been shown to increase teachers' instructional knowledge and skills (Bowe & Gore, 2017; Kyndt, Gijbels, Grosemans, & Donche, 2016). It is likely that an expert coach provides vicarious experiences when modeling of an

activity is provided. Demonstrations by the coach should increase engagement and willingness to practice new skills (Putnam et al., 2009). After seeing modeling of a new skill by the coach, teachers should then be provided with feedback on the use of the new strategy to improve efficacy (Carlisle & Berebitsky 2011; Elmore & Burney 1999, Grace et al. 2008). Wenger, McDermott, & Snyder (2002) discovered that the accumulation of collaborative experiences within the context of ongoing communication, coaching and apprenticeship for the purpose of solving complex problems, practitioners increase knowledge.

Some studies suggest that the duration of professional development is also related to the depth of teacher change (Shields, Marsh, & Adelman, 1998). Although there is no relationship between the amount of time in professional development and its success, extended amounts of time are needed to see changes in teachers' beliefs and growth of knowledge (Guskey & Yoon, 2009; Lipowsky, 2014; Reinold, 2016; Timperley, Wilson, Barrar, & Fung, 2007). Little (1988) found that when professional development is conducted regularly and for extended periods of time, it ensures that teachers can make progressive gains in knowledge. The accumulation of experiences over time gives teachers an opportunity to increase their learning around a single set of concepts or practices (Darling-Hammond et al., 2017). Extended time with peers also has the potential to provide for relatedness, a need fulfillment.

Reform models of professional development such as EdCamps, which have implemented collaboration, teacher-inquiry and teacher choice have noticed improved teacher practice (Carpenter & Linton, 2015). This is an example of a model which uses some of the effective features of professional development, yet linkages between the features of this model and others on teacher motivation, efficacy and knowledge is yet to be investigated. Motivation research is currently dominated by quantitative studies. Additional qualitative studies of effective design

elements are needed to help understand how external elements create conditions that effect

teacher motivation during professional development. The effectiveness of the professional

development design in this study will be measured by the satisfaction of teachers' basic

psychological needs, changes in knowledge and efficacy. The following chapter proposes a

theoretical framework explaining the satisfaction of autonomy, competence and relatedness

using a collaborative action research format.

THEORETICAL FRAMEWORK

Traditional models of professional development have generally engendered dissatisfaction among teachers due to many (if not all) of the issues discussed in the previous section. Not only are teachers dissatisfied with their experiences with traditional models of PD, but districts and states also continue to search for what will result in improvement in practice. Further research is needed to study the extent to which more recent, innovative PD models provide conditions that support and/or nurture teachers' basic psychological needs, and that provide concomitant growth in knowledge and efficacy as a result. An action research approach to teacher professional development was the reform model used in the study because its basic framework includes several characteristics of an effective professional development model. It also loosely aligns with the conditions researcher suggests are supportive of a teacher's basic psychological needs for competence, autonomy, and relatedness in the professional learning context (Ryan & Deci, 2017; Ryan & Weinstein, 2009). The purpose of this study was to determine if redesigning the action research model to include structured collaboration, expert coaching and extended learning time would provide improved support for teachers' basic psychological needs. As will be argued in this chapter, when their basic psychological needs for competence, autonomy, and relatedness are nurtured during the learning process, it is hypothesized that teachers will be more likely to learn more and feel better about their teaching (efficacy).

Self-Determination Theory

Self-determination theory (SDT) addresses human motivation and behavior by identifying a spectrum of developmental outcomes ranging from amotivation to intrinsic

motivation. SDT contends that motivation is determined by social-environmental conditions where an individual's basic psychological needs of autonomy, relatedness, and competence are either supported or thwarted. Just as there are identified conditions for the development and functioning of our physical bodies, the growth and development of people's personalities and cognition will also only take place under specified conditions (Deci & Ryan, 2002). Only when support for basic psychological needs occurs within social environments can natural propensities for development and an integrated sense of self-occur (Deci & Ryan, 2002).

Basic Psychological Needs Theory

Basic psychological needs theory (BPNT) is a sub-theory of self-determination theory. The fulfillment of needs is essential to activating innate intrinsic motivation in human beings. Needs are defined as a necessity for health (Deci & Ryan, 2012). The needs that must be supported to ensure healthy psychological growth and functioning are autonomy, relatedness, and competence (Deci & Ryan, 2012). As they state: "The healthy human psyche ongoingly strives for these nutriments and, when possible gravitate towards situations that provide them" (Deci & Ryan, 2002, p. 7). The degree to which an individual's basic needs for autonomy, relatedness, and competence are met, determines their ability to merge their new self-extensions with other cognitive functions (Deci & Ryan, 2012). Social contexts are either incubators of need support or threatening and detrimental to the satisfaction of these psychological needs (Deci & Ryan, 2012). As these psychological needs are more fully met, it will result in the development of an individual's overall psychological health (Chirkov et al., 2003; Deci & Ryan, 2012; Kasser & Ryan, 1999; Williams et al., 2006).

Deci and Ryan (2002), define autonomy as an individual's recognition that they are the source of control for their own behavior. The behavior of autonomous individuals originates

from a place of individual interest and integrated values, resulting in self-expression. Research has proven that education reform relies primarily on incentives, pressure, and control (Deci & Ryan, 2016). Often in schools, teachers feel snared by school, district, and state mandates that control the process of their teaching or prescribe and control what or how they should teach (Deci & Ryan, 2016). Even though teachers are ostensibly in charge of decision-making in the classroom, they often feel undermined by mandates for teaching and learning (Ryan, Bernieri, & Holt, 1984). To promote educational outcomes of conceptual learning, competent performance and psychological well-being, reform efforts must provide autonomy on the part of decision makers (Deci & Ryan, 2016). Autonomously motivated individuals have better relationships, demonstrate persistence, and perform at a higher level than those in controlled environments (Deci & Ryan, 2002).

Deci and Ryan (2002) describe relatedness as a community in which its members feel connected, cared for, and have a sense of belonging. Relatedness fulfills the psychological need to feel accepted by others. Much of the research conducted on relatedness and SDT is with individuals or groups of people within one's proximal social context (Deci & Ryan, 2008). They have found that relatedness within immediate social contexts will affect a person's development and functioning (Deci & Ryan, 2012).

Deci and Ryan (2002) refer to competence as the result of an individual's ability to adequately and efficiently convey what one is capable of within one's social and physical environment. In essence, people feel competent when optimally challenged and feel as if the activity in which they are engaging in building their skill or capacity. Theorists believe that humans are motivated to become competent and avoid incompetence, which is driven by a need to have mastery over their environment (Elliot, McGregor & Thrash, 2002). White (1959) called

this urge for individuals to investigate, make necessary changes and become skilled enough to have a direct and immediate effect on their environment, "effectance motivation," which marks the emergence of competence (Elliot, McGregor & Thrash, 2002). According to White (1960, 1963), the result of effectance learning is competence and sense of competence (Elliot, McGregor & Thrash, 2002).

Self-Efficacy

Very closely related to feelings of competence is an individual's sense of self-efficacy. SDT researchers often claim that self-efficacy is a mediator which is situated between need fulfillment and motivation/behavior (Sweet, Fortier, Strachan, & Blanchard, 2012). Self-efficacy theory provides a potential mechanism to explain how personal factors and the environment shape behavior (Bandura, 1977, 1997). Self-efficacy is a learned set of beliefs that are specific to the task and context (Bandura, 1997; Maddux, 1999), making teacher self-efficacy specific to their students and specific learning goals. Thus, teacher self-efficacy can be defined as "…a teacher's individual beliefs in their capabilities to perform particular teaching tasks at a specified level of quality in a specified situation" (Dellinger et al., 2008, p. 752). Self-efficacy plays a vital role in schools because a teacher's belief about their personal efforts and abilities affects student outcomes (Ashton & Webb, 1986; Capara, Barbaranelli, Steca, & Malone, 2006; Geijsel, Sleegers, Stoel, & Kruger, 2009; Raudenbush, Bhumirat, & Kamali, 1992; Ross, 1992; Tschannen-Moran, Hoy, & Hoy, 1998). Furthermore, a teacher's self-efficacy will determine what they do with knowledge (Dellinger et al., 2008) and what course of action they will take in addressing a task or outcome (Bandura, 1997). Teachers with high self-efficacy are open to implementing unfamiliar instructional practices (Guskey, 1988), because they believe that it has the possibility of having a positive effect on student outcomes (Tschannen-Moran & Hoy, 2001).

Improving the State's Action Research Model:

An Overview of the Collaborative Action Research Model (CAR)

This study used collaborative action research (CAR) as a base design from which to understand if the addition of structured collaboration, expert coaching, and extended learning time will provide the conditions necessary to nurture teacher's basic psychological needs, thereby promoting growth in teacher learning and efficacy. Action research is a reflective inquiry-based process in which teacher researchers systematically examine their practice to find solutions to everyday problems. Used as a model for professional development (Noffke & Stevenson, 1995), teacher participation in the process intends to facilitate inquiry into their current practice and change future practice, leading to increased student achievement.

One of the benefits of action research is that it takes place within the context of the teacher's environment. Embedded in a problem or topic that is important to them, teachers investigate this problem by posing questions, gathering data, reflecting upon data and taking action based on their reflection. Many action research models indicate the original steps of the cyclical process developed by social psychologist and educator, Kurt Lewin to plan, act, observe and reflect (Noffke & Stevenson, 1995), but in a different order. Current models use different terms such as assess-plan-implement-reflect (Borko, 2000; Guskey, 2002; Narnett, 2004; Robertson, Hill, & Earl, 2004; Southwest Educational Development Laboratory, 2005), but the concepts are the same.

The main researcher adapted and extended the traditional CAR model by adding protocols, an expert coach and extended time, creating the CARE model. CARE is an acronym for Collaborative Action Research Model Extended. The four phases identified and developed by the main researcher for this collaborative action research extended (CARE) model were: (1)

Assess (2) Plan (3) Act and Reflect and (4) Share. These phases are a combination of prior models with an opportunity to share during phase four giving teacher-researchers an opportunity to experience efficacy through vicarious experiences. The researcher included collaborative discussion protocols in each phase of the process to support structured dialogue. Phase one of the action research process placed the teacher in charge of their learning (i.e., supporting autonomy) by allowing them first to select the problem they wished to focus on. During the assessment phase, the role of the teacher in a collaborative action research model was investigator and learner. As the investigator, the teacher-researcher willingly acted to resolve a matter that was of importance to them, providing them with choice and a sense of ownership. After discussion, a question was selected by the researcher which was within their realm of influence, manageable, and asked a higher-order question that is meaningful and does not already have an answer (Ferrance, 2000). Taking the time to select an appropriate issue of importance is key because it will profoundly shape the inquiry process and will ultimately shape the degree to which the teacher fully engages in the process.

After posing a question embedded within a teacher-researcher-defined problem of practice, the teacher-researcher gathered various forms of contextual data representative of the complexity of their students' learning and perspectives. Self-assessment tools, peer observation of teaching, videos of teaching, student work and interviews were relevant sources of data that teachers might have leveraged. The purpose of the data was to interrupt the current thinking of the teacher, causing them to become uncertain about a concept that they once thought to be true (Ainscow et al., 2003). This interruption to thinking created space for dialogue about values, preconceptions, relationships, and norms. A team of educators then had the opportunity to assist with analyzing the data using protocols to create structured dialogue.

The action research team, comprised of three to four members of the school staff were personally selected by each of the teacher-researchers. The four teacher-researchers, Taylor, Peyton, Erin and Hayden selected fellow peers, the instructional coach and assistant principal to fulfill this role. The role of the collaborative action research team was to assist with: providing background literature; frame data collection and analysis; encourage exploration by collaborating with the teacher as new data emerges during the process; a challenge when needed and ensure that the steps of the action research process are carefully followed by the teacher. The process of collaboration between the team of teachers should have made the teacher-researcher feel as though they have been 'worked with' instead of 'worked on' (Liberman, 1986). The role of the team of teachers was to assist the teacher-researcher by providing an outsider's view of their context and encourages them to formulate theories based on their context. Collaborative research teams provide an outside lens and ask questions of the researcher that may have been missed because they are too close to their teaching to be skeptical or critical of their work (Adler et al., 2005).

The planning phase was for the teacher to use research to identify an intervention and write a plan. The plan included how the teacher-researcher would implement an intervention and record outcomes. To effectively implement the planning phase, the teacher-researcher was provided with adequate resources. The resources included: literature related to the research topic from the instructional coach; job-embedded time for research and collecting and analyzing data provided by the principal, modeling of the intervention and observation and coaching by the instructional coach, and/or access to onsite instructional and behavior coach professionals with expertise in the related problem. Additional research materials such as the CARE training

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materials, and School Reform Initiative (SRI) protcols for collaborative discussions were created by the main researcher.

During the implementation phase, act and reflect, teachers implemented the plan with students in their classroom. The teacher-researcher collected various forms of data as the intervention took place, recording the data systematically. This phase can feel the most isolating as teacher researchers attempt to teach as well as gather and record data. Researchers were given the option to reach out to the instructional coach or their action research team to observe and provide feedback. This is important because the teacher-researcher might have benefited from the support provided through modeling and feedback. During this phase, the teacher-researcher organized the data collected during the implementation phase. The data was then presented to their peers to analyze using a structured process. The dialogue assisted the teacher researcher in reflecting how the intervention contributed to the outcomes revealed through data. This process led the teacher researcher to pose revisions to the intervention or additional questions for study. In the final stage of the process, share, the researcher would share the findings of their research with colleagues.

The Theoretical Underpinnings of the Collaborative Action Research Model

The collaborative action research model, depicted graphically in Figure 1, displays the theory of action underlying the collaborative action research model. The model displays the hypothesized connections between basic psychological needs fulfillment—namely, the needs for autonomy, relatedness, and competence—and aspects of the collaborative action research process. Completing the phases of the action research process embedded with structured collaboration, an instructional coach and extended time, it was hypothesized that such supports would be related to the satisfaction of the internal conditions of autonomy, relatedness, and

competence in the teacher-researchers. Such support and need fulfillment is further hypothesized to be related to increased efficacy and teacher learning.

| **Components** | **Mediating Conditions** | **Short-term Outcomes** | **Long-term Outcomes** |
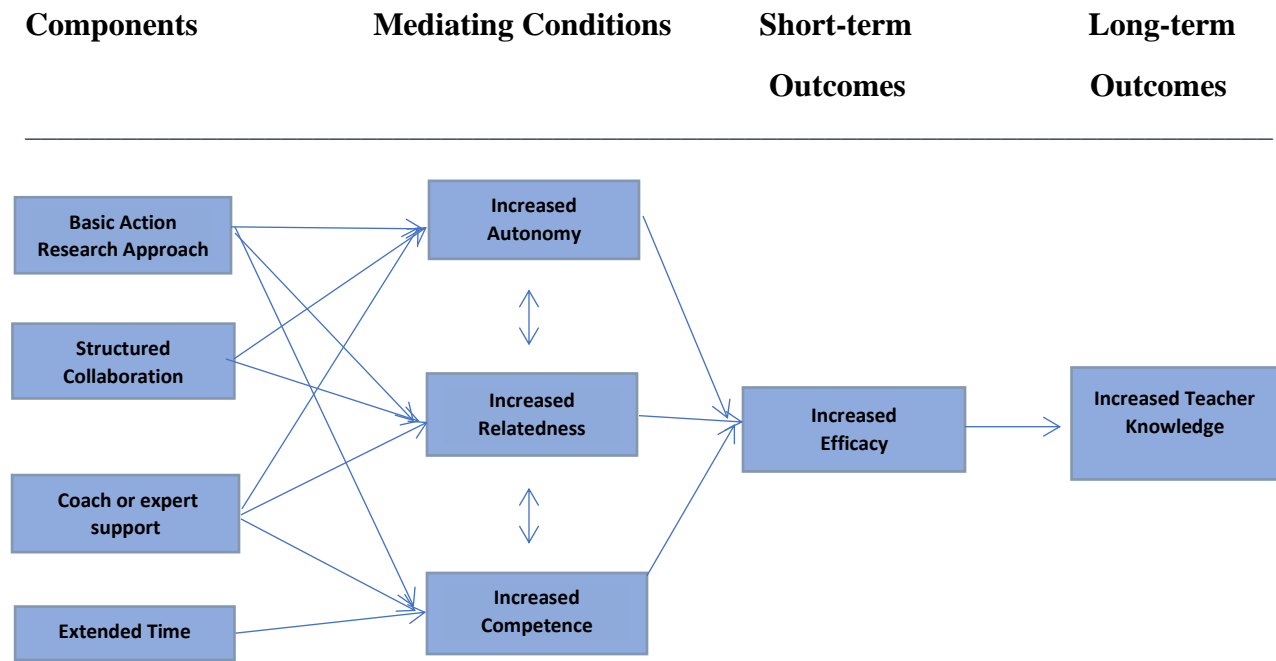
Figure 1. Collaborative Action Research Extended (CARE) Model.

Self-determination theory is used as a theoretical lens for this study because support for teachers' basic needs of competence, autonomy, and relatedness is critical to the process of human development and growth, and teaching qualifies as such an endeavor. For optimal growth, development during professional learning experiences, these basic needs must be nurtured through the social contexts and conditions of the school. Studies have determined that the satisfaction of basic psychological needs is a mediator between social contexts and performance outcomes (Deci & Ryan, 2012). Deci and Ryan (2002) pose that engagement, mastery, and synthesis are present to the degree that the social context supports need fulfillment. Therefore, it is necessary that professional development settings provide for basic psychological needs in order for teachers to have mastery experiences in the classroom.

This model used collaborative action research as a model in support of the development of autonomous motivation on the part of those teacher-researchers engaging in it. The inclusion of additional dimensions of support, such as structured collaboration, coaching support, and increased time, the researcher/designed of CARE hoped to strengthen the connections between CARE activities and BPN fulfillment. For example, structured collaboration between the teachers and their colleagues during various phases of the action research process was included to support relatedness. The structure was proposed as a result of a prior study from Nambia that found that when "structured reflection" was introduced to the action research process, teachers moved towards reflection faster than without the structured process (O'Sullivan, 2002; Ross & Bruce, 2007). Further, when timely and appropriate resources are provided to the teacher-researcher through expert coaching and follow up, it should have provided support for competence. Finally, when teacher-researchers are given choice over the problem of focus and given the time needed to fully engage in the process, it was hoped that teacher-researchers' need for autonomy would be better supported (Ryan & Deci, 2012). This chapter concludes with a deeper discussion of these connections below.

Autonomy Support

Research has demonstrated that many current education reforms rely primarily on incentives, pressure, and control (Deci & Ryan, 2016; Ryan & Weinstein, 2009). Often in schools, teachers feel snared by school, district, and state mandates that control the process of their teaching or prescribe and control how and what they should teach (Deci & Ryan, 2016). Outside control felt by teachers frustrates teachers, making them feel not trusted as experts responsible for making important instructional decisions in their classroom (Koestner, Ryan, Bernieri, & Holt, 1984). Similarly, when teachers participate in professional development, the perceived degree of control they have over what they are learning as well as the process, will

determine the type of motivation they experience. The more controlled they feel, the less

motivated they are likely to be in participating in these and future professional learning

experiences. To promote educational outcomes of conceptual learning, effective performance,

and psychological well-being, reform efforts must provide autonomy (Deci & Ryan, 2016). The

collaborative action research model presented here was specifically designed to provide teachers

with autonomy support.

In addition, action research prompts teachers to strive to improve the outcomes of
When teachers are provided with socio-contextual conditions which support interest and

choice, their need for autonomy can be satisfied (Patall et al., 2008). The collaborative action

research process allowed teacher researchers to select a topic of interest to them. When teachers

act with interest, their motivation is internal; in other words, a manifestation of autonomous

motivation. Choice is also an autonomous supportive attribute because teachers perceive an

internal locus of causality. The provision of choice to the teacher researcher not only enhances

intrinsic motivation, it facilitates internalization because of the satisfaction of autonomy. As

teachers gain new skills and become reflective, they also experience autonomy because they can

rely on their own skills and knowledge, providing for continual professional growth (Oja & Pine,

1987).

In addition, action research prompts teachers to strive to improve the outcomes of

learning for both themselves and their students through implementation of a specific intervention

strategy. This is important because action research facilitates the development of personal

growth and a contribution to a cause larger than oneself, which are intrinsically aspired-to goals,

(Deci & Ryan, 2012), particularly for teachers. Those who pursue intrinsic goals such as those

posed through action research, will likely experience autonomous learning because they do so of

their own volition. Deci and Ryan (2012), posit that autonomous supportive environments will in effect cause individuals to seek satisfaction of relatedness and competence.

Relatedness Support

Teachers likely learn best in collaborative models of professional development because it not only is a foundation for sociocultural theory (i.e., Vygotsky, 1977), but is also supports the basic psychological need for relatedness. Teaching is a complex profession, in which practitioners make decisions that are influenced and supported by their colleagues (Ainscow et al., 2003). Even though teachers execute practices when they are alone in the classroom (Ainscow et al., 2003), they partially reflect upon, interpret and socially construct their teaching experiences (Avalos, 2011). During collaborative groups, teachers exchange information and provide social support (Macinko & Starfield, 2001). Collaboration provides teachers with feedback, encouragement, and group decision making, nurturing the need for relatedness. This is especially important in high-risk environments where collaboration about curriculum and instruction may present a threat to the development of trusting relationships in the absence of relatedness. When collaboration occurs in peer relationships coupled with collegiality, teachers feel free to experiment with problem-solving and new instructional approaches (Oja & Pine, 1987).

Collaborative professional development models, such as collaborative action research, are designed to collaboratively engage teachers in inquiry-based critical examination of practice (Carpenter, Fennema, & Franke, 1996; Englert & Tarrant, 1995; Henry et al., 1999; Loughran, 2002; Luna et al., 2004; Morrell, 2004; Robertson, 2000). During the action research cycle, colleagues will participate in conversations and interactions centered around relevant data from the classroom. Embedding collaboration into the planning process gave practitioners the

opportunity to hear others' perspectives about the possible gaps that need further exploration and provides relatedness support. Fellow teachers who also have a shared history, can assist the teacher by having critical dialogue to negotiate the meaning of the data (Wenger, 1998).

Collaboration during this process can be essential for teachers who need support thinking through the steps for analyzing data. They can draw on the strengths of their research team to assist with each step of the process. Structured collaboration provided objectivity, avoiding negative feelings that could result in subjective feedback from peers. Embedding structured collaboration into the current collaborative action research process allowed for equity of voice, and direct and immediate feedback, enabling the practitioner to remain engaged in the process, to result in effectance competence. Structured collaboration with peers in which there is shared history, responsibility, and dialogue provides teachers with an environment that nurtures their basic psychological need of relatedness, a context needed for deeper teacher knowledge.

Competence Support

Reform efforts ask practitioners to focus on performance, not mastery goals. Performance goals encourage competition because the aim is to appear better than others. Contrary to performance goals, mastery goals used in motivation studies reflect learning that enhances one's competence. Self-determination theory has found that accomplishing a goal or the process of completing a task can be a source of intrinsic motivation (Deci & Ryan, 2012). Studies support that when intrinsic goals are at play, basic psychological needs are satisfied (Deci & Ryan, 2012). Goal setting in the collaborative action research process is categorized as an intrinsically motivated goal because its intention is to contribute to students' well-being.

Collaborative action research extended (CARE) also honors teachers' personal mastery goals. During the planning stage, teachers participated in goal-directed behavior by planning

new learning approaches that relate to the findings of their class data. When the teacher immerses themselves in the effective implementation of the intervention, they are likely to experience competence because they are involved in the process of accomplishing a task or goal. Competence can be gained, not only through mastering new skills but also through completing all steps of the action research process (Elliot, McGregor, & Thrash, 2002). When teachers experience professional growth as a result of the action research process, their new learning will make them more autonomous and competent. The collaborative action research process develops competence in teachers by allowing them to become agents of change in their development, empowering them to solve problems and improve educational practice.

Competence and Efficacy

Self-efficacy affects one's emotions and thoughts leading to variance in the degree of belief one has in their competence to produce results given a particular situation (Bandura, 1997; Tschannen-Moran, 2009). Therefore, developing a teacher's self-efficacy supports the need for fulfilling the basic psychological need for competence. An individual's self-efficacy is an indicator of motivation because their perception of their self-efficacy determines the level of effort and persistence they exert to achieve a goal (Tschannen-Moran, 2009). A teacher's self-efficacy is formed through school contexts and teaching tasks which are permeated by verbal persuasion, vicarious experience, mastery experiences and emotional and physiological arousal (Bandura, 1997; Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). Determining which characteristics of professional development are most suitable to verbal persuasion, vicarious experience, mastery experience and emotional and physiological arousal will be beneficial in understanding how teacher motivation is experienced during professional development.

Verbal persuasion is defined as verbal encouragement from those of significance such as colleagues, coaches and administrators (Bandura, 1997). This encouragement may come in the form of a compelling argument about a new strategy or specific feedback about the teacher's instructional practice. When verbal persuasion motivates a teacher to work harder towards their goal, it can be instrumental in developmental changes (Tschannen-Moran, 2009).

Vicarious experiences emerge from the observation of someone within the teacher's context who can model successes and failures (Tschannen-Moran, 2009). Modeling provides an occasion for the teacher to see an expectation of the practice, compare their capabilities to that of the standard and set a goal of progress for him or herself (Bandura, 1997, Tschannen-Moran, 2009). Modeling should allow the observer to see the skill in action and teach the observer how to manage the demands of the task at hand (Tschannen-Moran, 2009). Mastery experiences is the teacher's perception of their own success in teaching. Self-efficacy is a cyclical experience in which mastery experiences contribute to or diminish the teacher's view of their competence leading to self-efficacy (Tschannen-Moran, 2009). Physiological and affective states influence how a teacher judges their competence which underlies efficacy (Bandura, 1997). A teacher's perception of their environment as supportive or threatening affects their physiological and affective state. It is important to study environmental conditions during professional development that nurture physiological and affective states.

Self-efficacy has a place of importance in teacher development because teacher self-efficacy has been linked to instructional change (Ashton & Webb, 1986; Guskey, 1986; Haney, Wang, Keil, & Zoffel, 2007; McKinney, Sexton, & Meyerson, 1999; Timperley & Phillps, 2003). Teachers with higher self-efficacy may be more likely to attempt and reach their goals, leading to developmental and instructional changes needed to produce notable outcomes.

Research also supports a correlation between teachers' self-efficacy and student achievement (Ross, 1992), providing the need for an understanding of the social conditions needed to develop increased self-efficacy in teachers (Labone, 2004).

Collaboration may supply teachers with an experience of verbal persuasion and vicarious experience. Not only have studies found that collaboration with colleagues are indirectly linked to student achievement (Goddard et al., 2007), but it is also positively connected to teacher's sense of efficacy (Ashton & Webb, 1986; Louis, 1992; Ross, 1995; Ross, Cousins, & Gadalla, 1996). In this study, collaborative protocols were added to CAR to encourage conditions that support verbal persuasion and vicarious experiences. Modeling of a skill and feedback from those on the action research team and the instructional coach may also have encouraged vicarious experiences. Additionally, extended time was used to contribute to mastery experiences. Professional development models that offer encounters with encouragement, modeling of strategies, and specific feedback over time may generate the physiological and affective state needed for increased self-efficacy.

CHAPTER 4:

METHOD

When professional learning takes place in a school context, understanding the social conditions of learning and how teachers engage in and make sense of their learning is a key determinant of the success of any professional development model (Billet, 2006). The purpose of this study is to examine whether or not the redesigning of the current state-mandated action research professional development model creates the conditions needed to meet teachers' psychological needs, increase their sense of self-efficacy, and make sense of their learning. The current action research model was redesigned to better leverage, in particular, structured collaboration, expert coaching, and extended learning time. To this end, a mixed methods design using a single, embedded case study approach used for the evaluation of the CARE PD initiative. Recall that the following research questions, which framed the inquiry:

1) How do the additions of structured collaboration, expert coaching, and extended learning time to the action research professional development model work both individually as well as collectively to support teachers' psychological needs?

2) How do the social and contextual conditions of structured collaboration, expert coaching and extended learning time during the action research professional development model shape teacher efficacy and knowledge?

Research Design

There are countless variables that contribute directly and indirectly to student outcomes, including teachers' participation in quality professional development. Understanding and learning from the variations in individuals in education, settings, and implementation practices, such as professional development, are of primary importance to improving educational outcomes

(Bryk, Gomez, & Grunow, 2010). The study incorporates both qualitative and quantitative data sources, to consider how variations to professional development design create necessary conditions for learning.

Jurasaite-Harbison (2010) argues that a teacher's learning is both cognitively and contextually situated, thus providing the need for a strategy of inquiry that is contextually situated. Case studies, which blend both quantitative and qualitative data sources can provide a wealth of rich data in answering both "what, why, and how" questions (Yin, 2009). Case study, as a research method, is a systematic process which helps to understand complex phenomena in individuals, groups, organizations and domains (Yin, 2009). This method allows researchers to gain a more holistic view of actual events, behaviors, processes, programs, relationships, communities and organizations as they occur (Yin, 2009). Case studies are categorized as intrinsic, instrumental or collective and designed as exploratory, explanatory and descriptive (Yin, 2003). The four types of case study designs include single-case (holistic), single-case (embedded), multiple-case (holistic) and multiple-case (embedded) (Yin, 2009). Embedded designs involve a unit of analysis as well as subunits, while holistic designs are more global in nature (Yin, 2009). Single case designs are used (1) in rare circumstances; (2) to study the conditions of a single case over time; (3) to capture the experiences of a commonplace person place or situation; (3) to study a case previously inaccessible; or (5) to test a theory (Yin, 2009). Multiple-case design differs from the single case design in several ways, but mainly requires replication logic by duplicating the case under the same conditions of the original study or under different conditions based on the original findings (Yin, 2009).

In this particular research study, the researcher attempted to study and document the linkages between the specific conditions created in an action research model used as professional

development and teachers' basic psychological needs, efficacy, and learning (Herr & Anderson, 2015). This personal account of teachers' experiences provides a knowledge base to the research community about how teachers basic psychological needs, efficacy and knowledge might be nurtured or thwarted during professional development encounters (Herr & Anderson, 2015). Mixed-methods, as employed in social sciences, involves the collection, analysis, and integration of both quantitative and qualitative data to understand a research problem. Quantitative methods measure variables and use statistical analysis to attain answers, while qualitative methods use open-ended questions through means such as observations, interviews, and questionnaires—collecting and analyzing data of a textual nature (Creswell, 2015). It is argued that mixed method studies are more able to incorporate more complex research questions, than those used by case study alone (Yin, 2009). By drawing on the strengths of both approaches, it is believed that this inquiry would provide a more comprehensive understanding of the phenomenon than either form can provide on its own (Creswell, 2015). A characteristic of quality mixed-methods research is that: (a) the quantitative and qualitative approaches are rigorous, (b), they are framed using either a philosophy or a theory, and (c) they follow a specific mixed methods design.

The three basic mixed methods designs are: convergent design, explanatory sequential design, and exploratory sequential design. The mixed method design used in this study uses the convergent design. In convergent designs, qualitative and quantitative data are collected and analyzed separately. It is essential that the qualitative and quantitative methods use the same measures to merge the data. The results of the two methods are then able to provide insight into the problem from multiple angles (Creswell, 2015) and compensate for the other's limitations (Herr & Anderson, 2015).

In summary, this study used the single-case embedded study as a method to allow the researcher and others in education to gain insight into teachers' cognitive development by examining the experiences of teachers during action research when used as professional development. The focus on teachers' psychological well-being during their professional development experience orients this case as a psychological case study (Hancock and Algozzine, 2011), using basic psychological needs (BPN) as the underlying theory. This type of design has the potential of unlocking the knowledge for improvement in the context of professional development.

Unit of Analysis, Sample, and Study Site

Designed as a single embedded case study, this is a first-hand account of teachers' developmental process throughout their participation in the CARE model. For reasons of comparability, four teachers from one school within the focal school district were the subunits within this case to determine the effects of the collaborative action research design on their basic psychological needs, efficacy and knowledge. Four teachers volunteered for the study. It is argued that multi-case studies should use four to ten accounts because fewer than four accounts limit interactivity to determine trends and themes and more than ten becomes too complicated to analyze and understand (Stake, 2006). This bounding of the study is consistent with an explanatory case study design, which was chosen because all variables were not available for assessing teachers at multiple school sites.

The study took place at a Title I elementary school, within the focal school district in which the researcher is employed as the principal. Researchers have found that the teachers of students in schools that have high percentages of low-socioeconomic and students of color tend to have lower self-efficacy beliefs (Bandura, 1993; Diamond, Randolph, & Spillane, 2004;

Goddard, LoGerfo & Hoy, 2004; Klassen, Foster, Rajani, & Bowman, 2009, Lee & Smith, 1996; Timperley & Phillips, 2003). These teachers have a greater need for professional development which provides for their basic psychological needs and builds teacher self-efficacy than of teachers who teach higher income students.

Because of reasons that are explicated in further detail below, the co-collaborator—not the primary researcher—recruited the teacher-researchers who participated. These teachers had a range of one to thirty years of teaching experience. The range of years of experience allowed for the selection of teachers with both probationary and career status. The co-collaborator identified teacher volunteers at the school site for the study using a verbal protocol. The four teacher volunteers participated in two, 6-week long, action research cycles. Teachers who volunteered for the project were likely seeking a challenge and are ready for development (Harter, 1978; White, 1959). In this study, each of the four teachers participated in a collaborative action research with a team configuration consisting of an expert coach, and two other teachers that the teacher trusted to provide personal and work-related advice.

Procedures for Case Study

The Federal Policy for the Protection of Human Subjects or the "Common Rule", published in 1991, outlines a system of protection for human research subjects to be used by Institutional Review Boards (IRB) (HHS.gov). The University of Oklahoma has established an IRB board to protect the rights and welfare of human research subjects by ensuring that research aligns with the Common Rule. After submitting the dissertation prospectus for review by the dissertation committee, the committee determined that the study should be submitted to the university's IRB board for further review based on specific questions. This study responds favorably to the following questions:

- "Is an Activity Research Involving Human Subjects?

- Does Exemption 45 CFR 46. 101(b)(1) (for Educational Settings) Apply?

- Does exemption 45 CFR 46. 101(b)(2) or (b)(3) (for Tests, Surveys, Interviews, Public

    Behavior Observation) Apply?" (HHS.gov).

At the recommendation of the committee, an application was submitted to the University of

Oklahoma's IRB board for final approval where procedures for this study were finalized (See

Appendix A for IRB Approval Letter).

      Role of the Researcher and Co-Collaborator. Teachers recruited to participate in the

study were under the protection of the Institutional Review Board (IRB), an administrative body

established to protect the rights and welfare of human research subjects. Due to the positionality

of the researcher as holding authority and decision-making power over the participants as their

supervisor, the IRB recommended that the researcher recruit a co-collaborator to become a

participant-observer, observing and recording teachers' behaviors and interaction during the

professional development process, thereby serving as a mediator maintaining the anonymity of

each participant. Prior to beginning the study, both the researcher and the co-collaborator were

required to complete the Collaborative IRB (CITI) training course, "Protection of Human

Resource Subjects", outlining research ethics for interacting with human subjects during a

research study, in which teachers are considered an informant or source of data (Anderson, Herr,

& Nihlen, 2007).

      Typically, a participant observer undergoes an immersion period in which the co-

collaborator would need to be present within the environment for a period of time learning about

the setting and understanding the culture. In this context, the participant-observer, was also a

leader at the school, thereby providing an advantage during the data collection process. She

shares a common language and historical experience with the teachers, helping her to blend in more easily to capture interactions during collaborative discussions. It was possible that the existing relationship between the co-collaborator and the teachers was one in which teachers felt that they can be vulnerable enough to take risks and share information, even though the co-collaborator would only be considered an insider to the extent that they share common goals (Herr & Anderson, 2015). Therefore, the co-collaborator participated in the delivery of action research professional development (See Appendix B: Overview of Action Research Activities and Appendix D: Consultancy Protocol) and made contributions to collaborative teams during group protocols. As a result of her position as a leader, the possibility remains that she could have been considered an "outsider" to teachers, but many of them selected her to join their collaborative teams demonstrating a level of trust.

Trust between the researcher, co-collaborator and the insiders was important to access necessary data required for the study. The researcher and co-collaborator's openness about the purpose of the study, and confidentiality of the research helped to build trust between the teachers involved in the study and the research team. Gaining confidence from the participants encouraged teachers to carry out conversations during the group and provide authentic journal reflections without regard for the presence of the collaborator. Through this data collection, it is possible to interpret relationships between how the collaborative action research model creates the micro-conditions for a learning culture that fulfills teachers' needs for autonomy, competence, relatedness and efficacy.

Recruiting Participants. A commonplace concern for IRB boards when approving a study is the voluntary participation of informants (Anderson, Herr, & Nihlen, 2007). Procedures should be in place to ensure that a sense of coercion is not felt by those recruited for the study

(Anderson, Herr, & Nihlen, 2007). Prior to the study, the co-collaborator identified teacher volunteers at the school site using a verbal script. The verbal script introduced the research study to all teachers at the research site and included the length of the study, what participants in the study will do, the types of data collected during the study, potential risks involved, access to the consent form and how to send the consent form. The consent form outlined the age requirement for the study, the purpose, number of participants needed, what participants would be asked to do, length of study, benefits and risks, compensation, confidentiality, and research contacts. A copy of the consent form was provided to the research participants and original forms were mailed directly to the university chair.

Observations. During this study, observations took place at the school site where the group spends time. The collaborative action research groups under study usually took place afterschool at a specific time set aside by the school administrator allowing teachers from differing grade-levels to have a common discussion time and for the co-collaborator to be a participant observer. Observational notes were written by the co-collaborator after observing the context of the participants, encouraging trust between participants rather than scripting notes during interactions potentially causing a deterioration of the relationship (Emerson, Fretz, & Shaw, 2011). Observations were used to take into account descriptions of the behaviors of teachers in the study to determine their responses to conditions created by variations in the professional development design.

Interviews. Focus groups, a form of interviewing, consists of a small group of up to ten participants who are led through a discussion of predetermined open-ended questions (Elliot, 2005). Focus groups involved teachers who have provided consent for the study. The purpose of the focus group interview was to illicit responses from participants that describe their overall

experience during professional development. Focus group questions were designed by the researcher (Appendix G). The two focus groups lasted up to 45 minutes and were led by the university supervisor who is also a co-collaborator for the study.

Journals. Additional qualitative data was gathered through participants' journals. "The most powerful action research studies are those in which the researchers recount a spiraling change in their own and their participants' understandings. This reinforces the importance of keeping a research journal in which action researchers can monitor their change process and consequent changes in the dynamics of the setting" (Herr & Anderson, 2015, p. 69). The journal was used by participants to document changes in their daily practice and knowledge that occurred as a result of participation in the action research process.

Basic Psychological Needs, Relatedness & Efficacy Surveys. After using qualitative data to provide a holistic presentation of data, embedded case studies used surveys to collect data specific to embedded units of analysis (Yin, 2009). In this study, basic psychological needs and efficacy are embedded subunits of study. The basic psychological needs survey for the work setting was modified to assess need satisfaction for autonomy, competence, and relatedness (Deci & Ryan, 2000) (See Appendix K: Basic Psychological Needs at Work Survey). A relationship survey (La Guardia, Ryan, Couchman, & Deci, 2000), assessed the need for relationships during professional development was used to determine how relatedness is affected during the action research process. Teachers' self-efficacy was also measured using the Teachers' Sense of Efficacy Scale (TSES) (Tschannen-Moran & Woolfork Hoy, 2001). Each survey was combined as one survey and administered as a pre- and post-survey to determine how the process affects the participants' basic psychological needs, and efficacy.

Timeline. The study was bound by time of one semester or 18 weeks. During the first cycle, a baseline of teacher researchers' basic psychological needs and teacher self-efficacy was obtained through the completion of a survey. After the teacher researchers completed one round of action research lasting four to six weeks, the surveys were again administered to collect post-data. At the mid-point, the teachers also participated in a focus group to receive relevant feedback needed to make adjustments to the model prior to implementing the second cycle. The researcher made adjustments to the professional development design based on feedback from the teacher researchers before the teachers complete the last cycle. Those adjustments include additional action research training with the instructional coach to ensure that each researcher could compete all steps independently as well as creating a journal for participants to record daily reflections (See Appendix H: Action Research Feedback to Participants and Appendix I: Action Research Journal Guidelines and Timeline). After the second cycle, teacher-researchers participated in a focus group to gather additional feedback on the design. Figure 2 displays the study timeline and pacing.

Cycle 1	Cycle 2
Week 1: Teacher researchers will participate in an overview of action research and complete surveys.	*Weeks 10 – 15:* Teacher researchers complete second cycle of action research.
Weeks 2-7: Teacher researchers complete first cycle of action research.	*Week 16:* Focus groups and interviews
Week 8: Focus groups, interviews and surveys will be administered.	
Week 9: Administrator researcher makes adjustments to the action research design.	

Figure 2. Collaborative Action Research Timeline.

Analytical Techniques

  The following strategies recommended for analyzing case studies can be used singularly or in combination: theoretical propositions, developing case descriptions, using quantitative and qualitative data and examining rival explanations (Yin, 2009). This embedded case study design with surveys used a combination of developing case descriptions and quantitative and qualitative data. The main role of the researcher in analyzing the "raw data" collected from observations, focus group interviews and journal writings was to utilize the data to write case descriptions. The researcher then used coding to systematically analyze the cases noting occurrences until patterns emerged (LeCompte & Schensul, 2010). The patterns were reduced into categories useful for interpretation (LeCompte & Schensul, 2010) and deductive reasoning was used to determine the conditions which provide support for competence, autonomy, and relatedness and efficacy (See Appendix J: Categorical Data).

  Triangulation of data (Denzin, 2005) is essential to the validity and reliability of a case study because it ensures that different accounts taken from the perspectives of informants are confirmed through redundancy (LeCompte & Schensul, 2010). Using several sources and types of data further increases the rigor of the study, provides access to different kinds of information for triangulation, and ensures that the research question is answered through at least one set of data (LeCompte & Schensul, 2010). Triangulation occurs at the end of the analysis process when the qualitative and quantitative data is used to validate the other (LeCompte & Schensul, 2010). Due to the small sample size, the surveys were used descriptively to support qualitative findings Through inductive reasoning, data is used to validate or contradict the original theory (LeCompte and Schensul, 1999) until the researcher eventually arrives at an interpretation of the teachers' experiences, explained through the lens of basic psychological needs theory.

Establishing Case Study Validity. Case study designs should strive to meet (a) construct validity, (b) internal validity, (c) external validity, and (d) reliability to establish a quality empirical study (Yin, 2009). Construct validity can be accomplished by identifying how concepts in the study will be measured (Yin, 2009). Construct validity is attained in this study through clearly defining autonomy, competence, relatedness, efficacy, and knowledge. These concepts are measured through multiple sources of evidence including observation, journal entries, interviews, and surveys.

After the research study, the co-collaborator and key participants were given access to a preliminary draft of the case overview and to their individual case to verify the description and interpretation made by the researcher (i.e., member checking or "second reader" verification. Informants were asked to answer the following questions: (1) Is our description of the incident and the reaction accurate? (2) Is the description consistent with your experiences? and (3) Are there constructs we have missed? All teacher-researchers verified the accuracy of the description and that is was consistent with their experiences.

Internal validity seeks to establish a causal relationship between variations in the professional development design and conditions; variations in professional development design to teachers' psychological needs, efficacy and knowledge; conditions to teachers' experiences and teachers' experiences to basic psychological needs, efficacy and knowledge. External validity requires that findings are generalizable to theory (Yin, 2009). Given its small sample size, basic psychological needs theory is used to determine if the study is generalizable to theory.

To achieve reliability, "the objective is to be sure that, if a later investigator followed the same procedures as described by an earlier investigator and conducted the same case study all over again, the later investigator should arrive at the same findings and conclusion. The goal is of

reliability is to minimize the errors and biases in a study" (Yin, 2009, p. 45). Therefore, procedures for recruiting, data collection, analyzing and reporting data have been provided in this chapter. Details related to context, procedures and analysis are detailed in the discussion of the results.

CHAPTER 5:

AN OVERVIEW OF THE RESULTS

The researcher's purpose in conducting this study was obtain an in-depth view of teachers' experiences with a specific professional development design over the course of one semester. More specifically, the researcher aimed to explore how the additions of certain factors created conditions conductive to teachers' psychological development. The following questions were used to guide the study:

1) How do the additions of structured collaboration, expert coaching, and extended learning time to the action research professional development model work both individually as well as collectively to support teachers' psychological needs?

2) How do the social and contextual conditions of structured collaboration, expert coaching and extended learning time during the action research professional development model shape teacher efficacy and knowledge?

Case Study Site Context and CARE PD Program Procedures

Professional learning plans were part of a new initiative by the Oklahoma legislature and the Teacher and Leader Effectiveness Evaluation (TLE) system to improve the quality of professional development through professional learning designs that provide intrinsic motivation. This collaborative action research professional development design intended to invoke intrinsic motivation for teachers, was embedded during the school day in an elementary school setting.

Of 21 Prekindergarten through fifth grade, English Language Development, Special Education, a school counselor and specials teachers in the focal school in which the teacher-researcher participants were selected, 13 (62%) were returning and 8 (38%) are new to the school. In addition to 8 new teachers, two new members of this team include one full time onsite

50

instructional coach and one full time onsite behavior interventionist. Due to 13 of the 21 (62%) teachers holding probationary status, or three years or less in the classroom, 9 (43%) holding alternative or emergency certification, 3 career teachers (14%) who scored ineffective on their TLE the year prior and low overall reading proficiency in K – 5th grades, the principal hired an onsite instructional coach to provide support for instructional practices. 62% of these teachers have begun their career in this Title I school representative of 98% free and reduced lunch, and have struggled with managing classroom behaviors so an onsite behavior interventionist was hired to coach teachers with managing classroom behaviors and provide immediate behavioral interventions to teach students new behaviors. This team of 21 teachers have experience ranging from first year teachers to 26 years in the classroom and they support a student enrollment of 245 PK – 5th grade students.

The principal of the school, also the researcher in this study, has been principal of the school for the past four years. Due to her positionality as evaluator of teachers, the IRB process required the recruitment of a research team to collect data for the study, maintaining the anonymity of the teacher-research participants. This research team included two co-collaborators, the instructional coach and the researcher's university supervisor and committee chair. The role of the instructional coach as co-collaborator included taking observational notes during interactions with teachers as professional development, one-on-one conversations, and group discussions occurred. The university supervisor collected additional data by holding a focus group with action research participants during the fall and spring semesters.

The professional development was delivered in a face-to-face format facilitated by an instructional coach, included an one hour introduction to the action research process, four reflective exercises with steps to arrive at the research question and intervention (See Appendix

B: Overview of Action Research Activities), and the use of School Reform Initiative (SRI) protocols (See Appendix C: Save the Last Word Protocol, Appendix E: Data Driven Dialogue Protocol and Appendix F: Feedback Protocol) embedded within two six-week cycles of collaborative action research. The instructional coach was available to provide necessary research materials, modeling of specific strategies and feedback to participants. For the first six week cycle, teacher researchers met with their self-selected action research team to receive feedback on their research study, discuss data, and receive advice throughout the process and feedback prior to the second cycle. Collaborative discussions using SRI protocols with their action research teams were designed to take no longer than one hour in length. During the second action research cycle, teacher researchers continued the same process as during cycle one with revised interventions, and fewer meetings as requested during the focus group, but with a structured calendar and journal for accountability.

The journals, interviews and surveys were anonymized and other identifiers such as grade level were removed. The rating for surveys was performed using answers on a scale from 1 to 5. See Appendix K for the full survey. In addition to basic psychological needs, teacher efficacy and knowledge from surveys, the researcher was also interested in how teachers perceived the professional development experience. To find out, focus groups were held in the winter and spring semesters immediately following the completion of the first and second cycle. All four teacher-researchers were invited to participate in the focus group and all four attended. Both focus groups were held on the campus of the elementary school where the teacher-researchers worked and carried out their action research plans. Both the first and second focus groups lasted approximately 45 minutes each. The open-ended questions that guided the focus group

interviews are listed in Appendix G. Additionally, the instructional coach participated in an interview after the research was completed.

In the current study the researcher conducted a case study of four elementary teachers in the same Title I elementary school of an urban school district in Oklahoma. All teachers at the school met the criteria for the joining the study because all teachers are apart of the Teacher and Leader Effectiveness (TLE) evaluation process for the state of Oklahoma. Four teachers voluntarily joined the study, providing consent to the university through IRB approved consent forms. The identity of the participants were concealed and pseudo unisex names were given to the four research participants.

Case Study Overview

In this section, the researcher provides a general overview leading up to the professional development followed by an introduction to teacher researchers, Taylor, Peyton, Erin and Hayden's (all pseudonyms) individual cases and experiences with the program/model. The study was introduced to the staff of a Title I elementary school by the principal in mid-September. In an afterschool faculty meeting, teachers listened as she presented an overview of professional learning focus (PLF) plans. The overview of PLFs, inserted language from the state statue naming the types of professional development that could be used in a PLF, which included action research. This was followed by a presentation of data and research regarding the difference between teachers in high poverty schools and those in schools with a lower percentage of free and reduced lunch. The time ended after teachers made connections between the research that had been presented and how they can improve in their professional growth through their PLF this year. The principal explained that she was conducting a study for her dissertation which was

comprised of a redesigned model of action research. All interested teachers were invited to join the instructional coach for additional information after the faculty meeting in a separate room.

Initially, six teachers showed interest in the study where the instructional coach read a verbal script and passed out consent forms to be returned to the instructional coach. All six participants returned consent forms, committing to the 18-week study. During participants' first meeting together with the instructional coach, they were provided with an one hour overview of action research through reading an article and participating in a School Reform Initiative (SRI) protocol (See Appendix D: Consultancy Protocol) to discuss action research and the steps in the cycle. The instructional coach had been provided with 4 activities (Appendix B: Overview of Action Research Activities) for the participants to complete within the next couple of weeks. The activities were a brief synopsis of the steps in the cycle and reflective questions that helped the participants to begin thinking about planning out their action research project.

All teachers at the school were provided with one hour during their regularly scheduled faculty meeting to work on their individual PLFs. During those times, the teacher researchers met with the instructional coach and fellow teacher researchers to discuss their action research project. Additional assistance with projects was provided by the instructional coach, as needed during the week.

Many of the conversations between the action researchers and instructional coach were focused on narrowing the research "topic" and collecting data for the topic. Interactions with the instructional coach included personal visits as well as written emails to teacher researchers with reminders of upcoming "deadlines" to complete their activities. Within a few weeks, two of the participants dropped out. At the end of the first cycle, a focus group was held with the University supervisor. During the focus group, participants shared feedback on their experience with action

research during the first cycle. Teachers were polite with one another, considerate, and built on one another's responses. All participants shared an overall positive experience about what they learned about students and their colleagues, data collection, and the role of the instructional coach.

Participants provided the researcher with insights into how the process could be improved for the second cycle. Journal entries and commentary from the focus group helped the researcher to determine if changes were needed and if so, what those might be in order to improve the participants' experience. During the focus group, participants shared that they experienced difficulty meeting with their teams due to a lack of time. Therefore, for the second cycle, the researcher decided to provide the teachers with structured journals which included a timeline and journal prompts to guide participants through the steps of the action research cycle (See Appendix I: Action Research Cycle 2 Journal Guidance and Timeline). The hope was that the structured journals would eliminate meetings and reminders about timelines, so that participants would use their time to collaborate with their research team.

Patterns that emerged from journal entries revealed that teacher researchers focused on a research topic, rather than research questions; and used the data collected as baseline data and were in need of progress monitoring data. The researcher assigned a new instructional coach with experience using action research to assist participants with their understanding of how to use research questions and data. Prior to beginning the second cycle, the newly assigned instructional coach read a verbal script introducing herself. The new instructional coach was then tasked by the main researcher with sharing action research articles and videos to solidify participants' understanding of the process.

All four teacher-researchers, Taylor, Peyton, Erin and Hayden decided to continue with an additional four to six weeks of the study and their research projects because they saw student growth and reported learning from the process. Once more, teacher researchers met with their action research groups and fellow researchers for ideas, collaboration and encouragement while using the instructional coach for clarification and accountability. The next section presents an overview of each individual teacher researcher followed by a within-case analysis.

Teacher-researcher, Taylor

Taylor volunteered to participate in the action research professional development after receiving feedback through her annual teacher evaluation. Taylor desired to move from the "effective" to "highly-effective" category. Taylor's feedback included the need to involve students in cognitive thinking by asking questions that scaffolded to at least the mid-level of Blooms Taxonomy. As Taylor reflected, s/he realized that s/he mainly asked lower level questions because they were "quick and easy." Additional informal observations of students' classwork on projects and their seeming inability to meet state standards requiring them to independently construct research questions solidified Taylor's decision to participate. The research question guiding her inquiry was: "How can I scaffold 5th grade students to independently formulate a viable research question?"

During the literature review step of the process, the instructional coach provided resources for Taylor in the form of four articles about "Bloom's Taxonomy and Asking Good Questions." Taylor also sought out additional resources through sources such as the Teaching Channel, which provided Taylor with both a model of Bloom's Taxonomy, and expanded her repertoire of knowledge to learn about Depth of Knowledge. The teacher researcher stated in the

focus group that, "Researching it on my own helped me to learn that there are other things besides just Bloom's, like Depth of Knowledge and know how to teach it to the students."

Taylor selected four individuals to support him/her with the implementation of an action research plan over the course of the first six weeks. This team consisted of a 4th grade teacher, 5th grade teacher, the instructional coach and the assistant principal. During the weeks of implementing the intervention, Taylor struggled to engage his/her students in developing higher level Blooms questions. S/he wrote in her journal that the 5th grade students were reluctant to write higher level questions and "gave her push back," so she decided to reach out to the members of the action research team for additional ideas. Although the initial purpose for the meeting was for Taylor to gain ideas on how to explain Bloom's Questioning to students, the time that s/he spent with the team transitioned into: discussing data collection, and how to make the data visible and interesting, as well as use it to increase student participation. Taylor journaled that his/her group members "have both given [him/her] great examples on what I can use to help them generate questions and resources I can consult to help guide me. They have been an asset to my team." The feedback, resources and collaboration gave Taylor a new confidence upon reentering the classroom with his/her students. During the focus group, Taylor spoke of a feeling of "encouragement" after meeting with her team.

During the final phase of the process, action research groups met to present their results. Taylor's group had an extensive discussion that was meaningful and engaging. Taylor discussed the results of using Depth of Knowledge (DOK) questions and pushing students to ask higher level questions. S/he displayed a pie graph representing the number of questions at asked at each level of Depth of Knowledge 1, 2, 3, and 4. The results revealed an overall low number of higher-level questions. 2/48 questions were at level 3 and 4. During their collaboration, a fellow

action researcher provided "supportive and helpful" feedback to Taylor resulting in next steps for Cycle 2.

In the second phase of the first cycle, the research team suggested to Taylor to begin using, "I wonder" statements with the class. Taylor started to see progress during the second week. "The growth is small, but it is there." Taylor was "optimistic" because using "I wonder statements" helped students to moved towards independently thinking. Taylor met with his/her team once more and students continued making progress. Taylor emphasized the role that data played in helping him/her to respond to the needs of the class. S/he describes looking at data after each lesson as "powerful". Taylor reflected in his/her journal "that keeping data on what students are accomplishing helps me to plan according to what they have mastered or what they still need to work on." The class was progressing "as expected" with 20/27 students in the class who were able to write questions in the third tier of Blooms. The students' growth was described by Taylor as "pleasing."

In weeks five and six, Taylor reflected through his/her journal writing on the impact s/he seemed to be having on his/her students' lives. Taylor made a direct link between students' growth in skills and his/her expectations for students. S/he wrote:

> I've learned that the students will perform if they believe that you believe in them. I've learned that I was an enabler with my students because in the past, I allowed them a pass when they felt they couldn't do the work. I now know that I was not the teacher they needed me to be.

Taylor's Reflection on the Professional Development Model. Taylor found the process reflective. "It allowed me to see where I was falling short." S/he also reflected that it pushed him/her beyond his/her typical boundaries and comfort level:

I've been pushing myself to use higher level questioning with them, not just with the

group that I am focusing on, but I've been doing it with the other kids as well. So, we're

all getting, me and the kids together are trying to get out of the comfort zone down here.

Taylor found the most meaningful part of the professional development model to be the

"support" of his/her action research team. Support was defined as "bouncing ideas off" of the

research team throughout the process and having them "critique what s/he was doing." One of

the action research team members also used their plan time to provide him/her with feedback on

implementation. In addition, Taylor explained: "Just the emotional piece being, you know, being

able to have someone to talk to when you get frustrated because you don't think something is

going right or to celebrate."

When Taylor experienced difficulty with the process at the beginning, finding the

experience more challenging than anticipated, s/he contemplated quitting, but a member of

his/her team encouraged him/her to try again. S/he reflected that, "Having my team behind me

helped me to want to keep going. I was like, you know what, we tell the kids that every day.

Why can't I tell myself that? I said, you got that."

Taylor refers to the action research team as a "family or little pocket group" and

responded that "having others to work with helps a whole lot" and "We had a good relationship,

but now afterwards I will say that we have a greater relationship" because now I know that they

are willing to help me and I feel more comfortable soliciting their help. It also changed the way

Taylor saw his/her peers by coming to know that they have many strengths as shared in the

statement, "I know that although it's time to wrap up this PLF (professional learning focus), I

can still go to my peers if I need help along the way."

Taylor stated that it was "nice to focus on one topic because it was about all I could have handled". After one cycle of working on higher level questioning with students, additional time was needed because "[Taylor and the class] were still on the surface and still have a lot of growth to make." Taylor found looking at data for progress monitoring "powerful." If s/he could make changes to the model after the first cycle, it would be "more time to collect data. [Taylor] didn't think [s/he] had enough data yet to see growth."

The difference that this process has made in Taylor's mindset is how s/he looks at problems of practice:

I kind of see my work a little bit different and how I can go about it like if I'm noticing that there is a problem that is arising, we're getting stuck in a rut somewhere, now I know that my mind is just quickly going to shift to okay I need to start collecting data to find out what's going on and then I need to find out how we're gonna fix it…It was like a switch has been turned on in my way of thinking. I now have a new tool that will help me stay on top of my professional growth, not just this one PLF.

Although Taylor doesn't feel that s/he has mastered getting students to write research questions using higher level Bloom's, she does feel that s/he has "made gains" as a teacher. S/he is now able to identify the types of questions that students write and can use data to monitor their progress. "The progress I have made personally is rewarding. I feel like I have a better grip on data assessment more now than I ever had." Students are now interested in knowing what level of questioning they have written "when before they didn't care what level it fell in. They see that it's important to us so, now they want to rise to the bar and it becomes important to them." S/he plans to continue working on questioning until the students have obtained mastery.

If Taylor were giving advice to other teachers who have quit or would consider quitting in the middle of this process, Taylor offers the reflection that "the longer we stuck with it, it didn't seem like it was hard anymore. It was just a part of what we were doing." Finally, compared to other professional development models, Taylor found this process relevant to the needs of the teacher's classroom, providing for autonomy, and making it participatory and engaging, not feeling forced. S/he stated:

> I like this one because it's personal to what we need. Some of the other professional
>
> developments we go to may not necessarily be something that we need to practice, we're
>
> just there because we have to be. But this one is personal and it's guided by us and we
>
> decide we need to help this. So, I like it.

If given the option, she replied, "I'd definitely do it, again."

Teacher-researcher, Peyton

Action research participant Peyton expressed an initial interest in researching differentiation. This choice was motivated by noticing that students in his/her classroom represented a wide range of reading levels. Reading levels ranged from students on a first-grade level, to those who were on-grade level, and others who were on a fourth and fifth grade reading level. Peyton joined the study because s/he thought that research would be a good "starting point" for solving the problem of "how to" differentiate.

While other research participants were actively engaged in the process, Peyton missed the initial meetings outlining the steps for action research. The instructional coach emailed Peyton suggesting that s/he meet with teacher researcher Hayden to "catch up" and to have questions answered since they were both focused on differentiation. Peyton relied on Hayden for a tutorial

of the initial steps of the process. This initial shared experience was important to Peyton because as s/he stated, "getting started was my big thing." Peyton remarked that

> After speaking with her (Hayden) about how she's kind of going about it through her
>
> route that help me figure out how I can go about with testing it since we were both on the
>
> same topic, about differentiation in the classroom. We were both looking at two different
>
> aspects of it, but just getting that feedback, like here's how I'm doing it, that helped me
>
> be like, kind of be a little more clear of how I can go about it, even though it's two
>
> different aspects of it.

Due to Hayden's assistance, the expert coach was seemingly not needed to help Peyton for this part of the study; any person with knowledge of the process would have been helpful with implementation during the early stage.

Two weeks later, the instructional coach contacted Peyton for a follow up, but s/he was unavailable due to amending progress reports. Peyton was finally able to meet with the instructional coach two weeks later, to discuss the use of the SIPPS (Systematic Instruction in Phonics Phonemic Awareness and Sight Words) curriculum to differentiate reading and track reading progress through reading assessments, cold reads and repeated readings. Afterwards, the instructional coach followed up by email to clarify if Peyton would be using fluency and/or comprehension passages to progress monitor and if the sample size would include the entire class or a small group. Peyton answered the instructional coach's email one week later, though s/he continued participating in the action research project by collecting four weeks of data. Throughout the process, Peyton collaborated with other researchers, saying that they were "helpful in ideas on how to implement specifics, things that [s/he] is not good at, specifically

how this was going to work," but detailed that that s/he collaborated most often with Hayden because of their shared topic, differentiation.

During the final phase of the process, Peyton's discussion of the results was brief and the interpretation of informal observational data was clearly presented, but vague. S/he reported a "minimal close in the reading gap" between middle and high reading groups, but the gap between low and middle reading groups remained the same. Students in the low group gained confidence and persevered when reading harder words. Peyton plans to continue the professional development next semester and include more data for the next research cycle.

During the second cycle of action research, Peyton enacted differentiation in the classroom by assigning vocabulary and word meaning activities through an individualized computer-based program, Exact Path. In Peyton's weekly journal, s/he wrote about informal observations of the students' spoken vocabulary to notate progress during the first week. S/he also wrote that students demonstrated "growth in reading comprehension," but no formal assessments were referred to. During the second week, as a vocabulary intervention, Peyton added vocabulary and writing definitions to the students' weekly spelling assignment. In Peyton's journal, s/he noted that there was an increase from 4 to 7 students who passed the vocabulary portion on the spelling test, even though the spelling was incorrect. This journal entry provides evidence of Peyton's work with a small group of seven students to improvement in vocabulary and word meaning.

Both Peyton and his/her third-grade colleague used the same vocabulary interventions in their classrooms. They collaborated regularly throughout the process, providing feedback and ideas to one another. Peyton reports that, "The other teacher she always had really good resources to give me like if I was getting stumped on how to make it more efficient, she always

had good resources to give me." By week three, Peyton had added additional assessments for monitoring progress. S/he wrote in the journal that adding "fun games and class competition" as interventions would improve students' spelling. Spelling is not a part of the initial goal to improve students' fluency from cycle one, nor vocabulary and word meaning from cycle two. The class was also introduced to a "pie" challenge. Students with the most vocabulary growth on Exact Path, Do Now's and Exit tickets would be able to pie the teacher in the face. In the journal entry, Peyton wrote that s/he is pleased with 7 students who answered correctly on the weekly exam. If it is the same small group of 7 students mentioned before, then 100% of students passed the vocabulary exam. The teacher also observed that students improved in spoken vocabulary and in writing. The type of exam used to monitor progress– Exact Path, Do Now's or Exit tickets was not indicated in the journal entry. A journal entry during week four noted an increase in the number of students (7) providing correct responses on the test as a result of adding movement and competition to vocabulary. The teacher researcher was pleased writing that s/he was "seeing promising results" and was very excited about the "improvement seen."

  Peyton's Reflection on Professional Development Model. Peyton described the professional development as a "huge benefit" because s/he knew what the problem was with students, but s/he did not know "how to go about gathering research or exactly where to start." This professional development helped to make the process "concrete" in order to find a starting place. Peyton also liked the autonomy to select the topic of study, because the teacher could make a selection that was relevant to the classroom. S/he stated that this professional development "pertains to your class and what you're trying to teach the students." According to Peyton, focusing on one topic gave him/her the ability to create "change" in the classroom. S/he

noted that the instructional coach provided "guidelines" but was not overbearing, providing autonomy to "move about and do whatever we needed to."

S/he remarked that it was "helpful to collaborate with peers in other grades to see what [s/he] can do to help my students at various skill levels." Prior to being involved in the professional development, Peyton's involvement with others in the school was described as "isolated." S/he stated, "[As researchers] we grew in trying to be a problem solver for our kids and knowing how we can all together work together you know to solve all of these different problems they were having." Moving outside of the normal circle of teachers on his/her grade level team was said to serve as a reminder that "we are in this together."

Peyton's motivation to continue, even though two others had quit, came from a student-centered focus, as well as having a structured way to address the problem in the classroom. S/he did not see quitting as a solution to solving students' reading problem. Peyton's preference was to at least try the model, rather than to give up and risk not finding a solution. She explains,

> The problem would not have gone away regardless. The problem would still be there, and
> my kids are way behind reading level. And you know, with all of this giving me
> guidelines, I knew that I could use the help to actually try to figure out the problem
> without just struggling through on my own.

With previous experience working full time and carrying an 18-hour college load, heavy workloads were not new to Peyton. S/he states,

> I really didn't even notice that there was a huge workload on top of what I was already
> doing, cause I just try to work it in as I was lesson planning, as I was reviewing lessons
> before the next day. It was just a shift in focus on what I was looking at.

Twice, Peyton mentioned how data collection helped him/her to know the needs of students, "to see where they were," "pinpoint issues" and determine where to focus his/her attention. S/he found it especially beneficial for challenging the higher students so that they were maintaining their current reading fluency. The results for students with lower reading fluency was more confidence. "They are volunteering to read, and they never did that before." Peyton's perspective about using data to progress monitor, was that it helped him/her to focus on the positive in his/her work by looking at the progress that students are making instead of the fact that they "were not growing fast enough." Noticing progress, made Peyton's overall outlook less "frustrating."

> Well, I know like, for my class specifically seeing where they're supposed to be academically according to the grade level specific content and seeing where they're at, like you know if I'm not seeing any improvement, that would be very, very frustrating because I'm trying to get them up to that grade level by the end of the year. But now that I'm seeing the …growth and they are improving like that is, uh uplifting seeing that.

Peyton commented in her journal that the research process has helped him/her to "find ways to help my students succeed" and in the focus group remarked that "[Peyton] was seeing a deep level of education going on." Peyton added,

> I was able to see like how they (my students) were improving not only in their reading, but in their spelling. They were volunteering to read when at the beginning of the year, I'd have maybe two or three that would volunteer. By the end of it, everyone was raising their hands wanting to and a lot of it was that they were understanding the text at that point because they had the vocabulary to back up what they were reading. Also, in math, they all of a sudden they are seeing things differently which is something that I was

definitely aiming for.

One of Peyton's biggest takeaways was determining which problem to address with his/her class. "There's still a lot that I need to learn as far as conducting the research definitely, but I definitely at least now know how to even start or what, how to pinpoint exactly what the problem is." S/he added,

> I can actually carry on next year even though I'll be teaching another grade level. Next year we can you know as soon as we see that problem at the very beginning of the year we can start researching immediately and figure out how we can help our kids out. I know how to go about the problem.

If one change could be made to the process, Peyton says that s/he would spend more time collecting data because it wasn't enough time to determine "what I need to do to help my class out." Another challenge to the process was finding time outside of the faculty meeting time provided on Mondays to meet with the team to identify data to progress monitor the intervention. "I was specifically targeting reading fluency so it was difficult at the beginning so I was like how do I even measure that?"

As expressed in the comment, "I'm really excited and I'm going to continue. Right off the bat. I can start from day one or two saying okay where are they at? Where are they struggling? What can I do to get them out of this rut?" S/he expressed excitement over having knowledge of the process so that s/he could work with students who were behind in their reading progress. The progress motivated the teacher-researcher to want to continue the process because they are that much more motivated to see "how much more growth I can get, now, between now and the end of the year." Even though the process was "work," it was actually time saving in the

end and is a process that Peyton would readily recommend to colleagues who were not involved in the process.

Teacher-researcher, Erin

Teacher researcher Erin joined the study to determine if what s/he was trying in the classroom actually worked. S/he shared, "This was a way for me to collect my own data and see if this process, to see if a new thing I was trying in the classroom was actually worthwhile and beneficial for students and their learning." During the initial meetings with action research participants, Erin expressed an interest in focusing on "Aggressive Monitoring," one of the topics introduced by the principal that same year. Erin looked beyond the limitations of his/her own classroom to focus on what was believed to be a common challenge among colleagues at the school. In journal writings and interviews, Erin often spoke in third person because of this. Erin decided to focus on "Aggressive Monitoring" because "teachers struggle" with using data to guide their instruction. It is unstated and therefore, unclear how the Erin has arrived at this belief, but s/he also believes that teachers are confused about the types of questions to ask on their daily exit tickets in reading and that they are not aligning exit tickets to the reading standards.

At the beginning of the research cycle, Erin met with the instructional coach to make the "topic" more concise. Deciding to use Blooms to create Do Now and exit tickets, the research question for the study became, "How can student academic success improve based on teachers' process of generating Do now and Exit tickets using Blooms Questions, Tulsa LETs, and CKLA to monitor the progress of student performance in the classroom?" Over the course of the research cycle, Erin collected Do Now and exit tickets from 3rd-5th grade teachers in reading. Teachers were interviewed to determine the process that they use to create exit tickets. S/he discovered that teachers were challenged with writing a 3-5 minute exit ticket for reading

comprehension. Journal entries and focus group responses do not provide commentary on the type of intervention that Erin implemented to help teachers write exit tickets for reading comprehension.

During the final phase of the action research cycle, Erin presented findings on a laptop. The results showed that not all exit tickets aligned with the "preview"; that higher level questions on exit tickets have no scaffold in place to support students and that questions are related to text, not a specific skill. The graphs presented were a display of the number of questions for each level of Blooms questions, Do Nows and exit tickets. The interactions between teacher researchers during this final phase were positive. Erin states, "Teachers are constantly trying new things; and so many times we're just like giving students grades, right?"

Upon initiating the second cycle of the project, Erin met one-on-one with the new instructional coach to determine changes that could be made with the project. Erin wanted to change the focus of the research from that of a school focus to one that pertained to the students in his/her classroom. S/he wanted to understand what students actually comprehended as they read a text. During the meeting, Erin carried majority of the conversation by generating ideas while the coach "encouraged" his/her ideas, until s/he arrived at an intervention on his/her own. Erin and the instructional coach agreed that the intervention for the second cycle would include teaching students the UNRAVEL strategy to help students interact with and make more connections with the text.

According the instructional coach, Erin "left excited that she had a specific intervention to concentrate on." Erin was able to use the UNRAVEL strategy, not only to understand what students knew about the text, but s/he also employed it to analyze how s/he taught a lesson. In Erin's journal reflection, s/he noticed students using the (U) underlining part of the strategy, but

not other components. Erin described feelings of being "stumped or stuck," so s/he met with his/her research team, comprised of a first-grade teacher, librarian and instructional coach as "good thought partners." The meeting concluded having provided Erin with the advice to use close reading in correlation with the UNRAVEL strategy to see if it helps students to apply all parts of the strategy.

Erin saw relationships with those on his/her action research team develop beyond hallway courtesy into interest in and conversations about one another's project and practices. S/he states,

Now, I'm excited to hear about their projects what they're working on and they're also like reciprocating that feeling so, we're able to have more professional conversations about you know how our students are doing. Knowing that "we are all here for the same purpose was a really strong connection for all of us.

As the team worked collaboratively over the course of the project, Erin noticed that there was so much latent knowledge and that during collaboration, s/he really wanted to "tap into everyone's full capacity." At the conclusion of the cycle, s/he stated that it was nice to be with a group a driven individuals who shared a common goal of finding success for students by using effective classroom strategies.

Erin has by no means called him/herself a master of using the UNRAVEL strategy with students, but s/he has realized that s/he is able to confidently review student work and understand the students' skill gaps in order to determine what skills should be reviewed or retaught. Students made progress. Erin knows because "I have seen gains in their writing where they're able to use stronger vocabulary in their writing." The progress detected with students produced "a really good feeling and has made [Erin] more confident."

Erin's Reflection on Professional Development Model. Erin noted several ways that this model worked to his/her advantage. During the process itself, Erin affirmed that it was helpful and time saving when the instructional coach provided resources by way of articles. As collaboration with the research team began, Erin expressed that "Collaborating with other teachers was the best part, cause then I had an idea and it worked." Meetings with the team made Erin feel validated:

> I think that too often, we think that we as teachers are the only person doing something in particular that benefits student learning and we don't take time to share our experience with others. This meeting was nice to hear from other teachers and feel validated in my attempt at trying something new, as well as gaining insight to what has worked in other classrooms.

Comparatively, this professional development allowed "space for [teacher-researchers] as professionals to have conversations that might be lacking in other kinds of professional development settings." S/he elaborated, "It's nice to have conversations that actually support growth of students and support the practice that we're doing and can help move use forward in making adjustments." In addition, the use of protocols during collaboration provided structure and was an effective way to receive feedback from peers.

S/he recalled that concentrating on one topic made the process less overwhelming; and the faculty meeting time provided by the principal was helpful when finding time to meet with the research team. Erin reflected that, s/he had an existing problem in the classroom and did not know how to approach it until being introduced to action research. Not only did learning and using the UNRAVEL strategy through this model help Erin to solve an existing problem, but s/he liked that it was a skill that would be an intricate part of students' reading development as

they progress through school. S/he expresses, "I think it's great to see a specific strategy that can work for students to interact with harder reading text. They can use this skill in my classroom and they can take it with them." The model made an impact on Erin, professionally.

> I feel like with myself, I feel like this has given, like has reminded me to stay curious, that there are always problems that can be found in a classroom and like what can I do to like promote my own learning and understanding of how to solve problems in education because there are so many. Just like at the base root of my own classroom. I feel like it allowed me to have some autonomy with like what I'm doing in school and it just made me feel good that I'm able to like choose my own path in learning and figuring out what I identify as a problem and like what are some solutions that I can collaborate with other teachers to figure out how to, how to solve something.

Though the benefits far outweighed the challenges, there were a few things that Erin would suggest that the researcher make note of. Erin thought that the process was time consuming and that there is a need for accountability with collecting data in a timely manner. S/he stated,

> I struggled with how to collect data. I didn't even know what I was looking for and then I had to kind of sit down with my group and figure out like what I needed to be looking at when I was collecting my data so that was a challenge in the beginning, too.

S/he would also recommend that the instructional coach assist teacher researchers with organizing the data.

Erin persevered when the process became demanding because of the confidence that it was producing in students. Erin also recognized that the "seemingly" additional work was producing a personal mindset shift in her/him. Lessons that s/he had taught students came

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flooding back to mind, such as "You're not learning if it's not hard." It was a reminder that the process was "hard because it was new, but it's worthwhile and beneficial, it just takes practice."

In summary Erin said, "I think that the benefits outweigh the challenges once you know how to carry out something like this." S/he further explains,

> This process gave me a set of tools that I can now take with me and continue to do. We don't have to, you know do this with a group. This is a tool that we now have that we can do without it being facilitated. If we don't have this group next semester, that's not to say that I won't still be doing this work because I do find it important and I do find it motivating to see how I can improve my practice as a teacher. I thought it was really helpful, the whole process, knowing specifically what I needed in my classroom and how to identify specifically, how to research specifically, and then implementing it. And then tracking it was really helpful for my kids to see their growth as well. And the process also allowed me to reflect on my own practices and it was helpful to see what changes and to make modifications, like my own practice.

Erin plans to continue this process by using exit tickets to prepare students for testing in order to see the type of improvement in student learning that "we hope to see."

Teacher-researcher, Hayden

As a 3rd year teacher, Hayden struggled with differentiating in the classroom so decided to join the action research project. The variability in students' reading levels was Hayden's motivation for joining the study. Students in his/her classroom represented reading levels that were two grade levels above, to slightly below grade level, while others were two full academic years below grade level standards, still striving towards mastery of the alphabet and sounds. "I didn't know how to help at all. I felt that action research would help me figure out what I needed

to do for my next steps." After reflecting on research and data from his/her students, and with assistance from the instructional coach, Erin posed the question "How can I differentiate my grade level curriculum to meet the needs of all students?" Erin's decision to make sight words the centralized focus of the intervention was determined because s/he believed that if students increased the number of sight words, it would result in increased fluency. As an intervention, for 15-20 minutes a day, each student would have their own set of sight words to practice. Practice included using hands-on activities such as using letters and playdough to build words. S/he and the instructional coach predetermined that the data set that would utilized, to track the progress of the intervention would be the SIPPS Mastery and Sight Word Assessment.

After weeks of implementing the intervention, Hayden presented the results of her study. All students had demonstrated growth in sight words. The range of growth varied from 7 words to 17 words in one month. Hayden noted that students recognized more words as a result of the intervention than they did as a result of reading stories from the reading curriculum. Students also demonstrated more excitement and engagement during reading. According to their teacher, they became "intrinsically motivated" to learn their sight words.

The second cycle concentrated only on students who were reading below grade level standards. Again, the focus was sight words, but it was undisclosed in the journal entry if the Hayden would continue the same sight words interventions in the second cycle, as in the first. Even so, Hayden writes that "the intervention is going as expected." Students were increasing letters by 1-2 a week and others are increasing sight words by 3-4 a week. In Hayden's reflection s/he writes that students need to review sight words from the previous week and in "multiple ways in order to retain information." Hayden is "optimistic about the process and students' progress of increasing knowledge of sight words and letters." During week two, Hayden

researcher decided to give students more time practicing sight words, but it yielded the same results as the week before. Even though there was no increase from week one to week two, the s/he journaled that "students benefit from getting enough time to practice their sight words and designated time." S/he remains "optimistic about student progress" but is finding it difficult and overwhelming to "find the time" to meet with the action research team, comprised of a first grade teacher, instructional coach and assistant principal.

A couple of weeks into the study, Hayden met with an individual from her research team to further discuss differentiation as well as the challenge of assessing students given time limitations. S/he felt a sense of relief after realizing that the plan is working and will get better after some logistics are in place. When week three approached, the researcher tweaked the intervention by giving students 5 minutes to review "mastered" sight words and 5 minutes to practice new sight words. Hayden noticed "less success with student growth" because students who were increasing by 3 - 4 words had decreased to 1 - 2 words. Hayden determined that consistency was key. That week, s/he journaled that they felt good and defeated about the student progress, sending mixed signals. S/he is motivated to continue to "tweak the intervention to meet the needs of students." During the last week of intervention, Hayden observed that students increased their sight words from 1-2 and 3-5 even though they were only able to practice the words 3 of 5 days due to circumstances. While reflecting, Hayden wrote that s/he has learned that it may take more than 3 days for students to retain information. In the final journal entry, Hayden,

> "I am feeling better about the process. I feel like this process has helped me narrow down
>
> the focus on what I want my intervention to be. It also showed me how specific I need to
>
> be in my intervention as well as consistent in order to maximize the intervention. I am

feeling good about the progress, I am optimistic that the more I utilize this intervention,

the more students that will increase their sight word retention by 4-5 students per week."

Focused on growth, Hayden declared that "my kids have grown a ton in their sight words.

They're very excited to do them and they're more confident. Confidence is the biggest thing."

When Hayden saw the progress that knowing this process made for his/her students by way of

confidence, motivation and excitement, s/he also became motivated and said, "I've been trying to

push myself to do it in multiple content levels."

Hayden's Reflection on the Professional Development Model. The part of the

experience that seemed to have the most value to Hayden was that of collaboration. Hayden

perceived that the role of the instructional coach was in fact needed to help participants with the

process. Hayden met with the instructional coach for guidance with the process twice to

determine his/her daily routine, and when to administer progress monitoring assessments to

students. S/he was grateful to have another teacher researcher who was researching

differentiation. She recalls that one the action research team members "challenged me and

pushed me on my thinking providing me with how to teach sight words in different ways." In

summary, s/he grew to trust those whom s/he collaborated closely with.

> Everyone in the process was helpful and gave great ideas that kept you on track in the
>
> midst of a very demanding job. When I didn't necessarily feel comfortable asking for
>
> help before, now I do. It's easier now to ask for help when I need it.

According to Hayden's experience, research played a foundational role in the professional

development model by helping him/her to determine the meaning of differentiation and how it is

used. "It helped me define what I was even researching because I can say 'differentiating' and

kind of know what it means, but I learned why and how. It helped me think deeper about it."

Further reflection revealed that Hayden felt the experience was personal and guided by us, effective and meaningful, helpful and interesting.

> I felt so interested and engaged by it as a teacher. Kind of sparks your mind as a teacher. The whole process has helped me increase my growth mindset not only for myself, but my students. I have seen how they have grown, but I have seen probably more of how much I have grown as a teacher and it's helped me to improve in a lot of aspects.

Hayden continues by saying that this professional development has,

> Given me more confidence to look at what I need in my classroom and to be able to do it, because when I was going into it, I was like oh my gosh, I have this problem where I have kids reading at a third grade level. I have kids that don't know their letters and I don't know how to help them. I felt like, hopeless that I didn't know if I was a competent enough teacher to help them. This action research process has given me a foundation for how to be specific in what I can do to differentiate for each individual student. It has given me a plan on where I should start and how to implement practices. I know that with action research that I can identify the problem and the purpose of the action research. I can research information and find what will benefit my students most. I can find ways to implement the differentiation and consistently take data to see how my students are growing. I feel that I have learned a lot in how to do the action research and I feel that I now will be able to implement not only for one subject but plan for all subjects.

Hayden continued the process by applying her knowledge not only to sight words, but also to fluency. Hayden describes this model as a "need." S/he reflected that it was a need because "I was stuck and it made me think differently. It's what I needed to be successful, more successful." In summary Hayden shared,

I feel that because of this process, I will now be a more effective teacher because I will be able to meet each student where they are and give students what each of them need to be successful. And now I feel like because of this process I can look at the problem and figure out how to fix it or how to help my kids where they need it most.

CHAPTER 6:

WITHIN-CASE ANALYSIS

Self-determination theory (SDT) explains motivation and behavior by examining the influence of social and cultural contexts (Deci & Ryan, 2002). Namely, motivation and behavior are influenced to the degree to which basic psychological needs for competence, relatedness, and autonomy are satisfied within an environment. Through continual exchanges with the environment, individuals draw and depend upon nutriments that are fundamental to healthy functioning (Deci & Ryan, 2002). Social and cultural contexts are either antagonist or supportive of optimal outcomes in motivation, personality, and behavior. SDT researchers argue that these psychological needs are the basis for making predictions about conditions that promote natural human propensities to grow and be active self-integrating beings (Deci & Ryan, 2002). Basic psychological needs theory (BPNT), a sub theory of SDT, views competence, relatedness and autonomy as sources of autonomous self-regulation and when supported by social and psychological environmental factors, lead to the formation of specific motivation, personality, and behaviors (Deci & Ryan, 2002; Reeve, Ryan, Deci, & Jang, 2008). Humans naturally gravitate towards environments that provide for these needs (Deci & Ryan, 2002). When these three psychological needs are met within individuals, optimal growth, development, and psychological well-being result (Ryan & Deci, 2000).

The purpose of this study is to examine whether or not the redesigning of the action research professional development model through the additions of structured collaboration, expert coaching, and extended learning time supports teachers' psychological needs for learning as well as to increased efficacy and knowledge. This chapter of results presents the within-case analysis which addresses the primary research questions. It describes four teachers' experiences,

the degree to which their basic needs were met, and the conditions of the professional

development design that may have supported need fulfillment. According to the study

participants, specific components of the professional development design may have helped

nurture teachers' basic psychological needs, efficacy, and teacher learning. These findings

emerged from a careful analysis of each teacher-researcher's journal responses, observations,

focus group interviews, and surveys. The researcher presents the experiences of each case by

organizing the data according to the specified themes.

Qualitative data. Each case was coded using categorical aggregation, and the frequency

of each theme range from low, medium, and high. Table 1 below provides a key for the

frequency of theme occurrence based on the categorical coding of each teacher-researcher's case.

(See Appendix J)

Table 1

Frequency of Occurrence

	Frequency of Occurrence Interval
Low	0 – 3 times
Medium	4 – 7 times
High	8 times and above

Quantitative data. The Basic Psychological Needs survey for the work setting, modified

to assess need satisfaction for autonomy, competence, and relatedness (Deci & Ryan, 2000), was

administered twice, once at the beginning of the study and again after the first research cycle, to

determine the influence of the participants' experience on their basic psychological needs. Due to

the small sample size, the surveys are used descriptively to support qualitative findings. In the

section that follows, each account describes how Taylor, Peyton, Erin and Hayden experience conditions of structured collaboration, expert coaching and extended time with the CARE model and how it effected their basic psychological needs of relatedness, competence, and autonomy. When identified as a theme, a summary of each of the teacher-researchers' basic psychological need and corresponding conditions are explained.

Taylor

Teacher-researcher Taylor's experience with the CARE model is described in this section. The outcomes of the frequency with which s/he experienced the fulfillment of basic psychological needs, efficacy and knowledge are explained in Table 2. During Taylor's experience with the CARE model, s/he exhibited high levels of relatedness, autonomy, and knowledge as indicated through observations, journal entries and feedback from the focus group. Taylor's experience is confirmed by correlating levels of relatedness and autonomy from survey results. In Taylor's case, data-driven decision making, active meaningful learning, and job-embedded collaboration are noted as conditions by which s/he may have experienced increased levels of autonomy and relatedness. Taylor's experience with the CARE professional development design is accounted for in the detailed analysis.

Table 2

Analysis of Taylor's Frequency of Experienced Focal (and Other) Study Outcomes

Category	Level Experienced
Autonomy	High 8
Relatedness	High 13
Competence	Medium 6
Efficacy	Medium 7
Knowledge	High 9
New Category	Level Experienced
Data-driven decision making	High 9
Active Meaningful Learning	High 8
Job-embedded collaboration	High 11

Relatedness

Relatedness refers to feeling connection and a sense of belonging within a community in a way that makes the individual feel cared for by others (Baumeister & Leary, 1995; Bowlby, 1979; Harlow, 1958; Ryan, 1995). From the start of the study, Taylor met with fellow researchers to engage in an overview of the action research process using "Save the Last Word" structured discussion protocol (Appendix C). The collaboration continued with planning and the literature review, supported by activities and articles from the onsite instructional coach. Taylor completed the activities, but when implementing the plan in the classroom, s/he began to display a need for encouragement. The need for relatedness makes one seek feelings of security in their

relationships. Taylor soon became discouraged after students gave him/her pushback after requiring more from them than s/he previously had. The frustration became so intense that Taylor contemplated quitting the project and sought the action research team's connection. Taylor indicated feelings of relatedness after being encouraged during job-embedded collaboration. Taylor remarked:

> And just the emotional piece of being able to have someone to talk to when you get frustrated because you think something isn't going right or to celebrate. I was at a point where I was ready to say, okay; I'm lost, I'm done (but a teammate kept him/her from quitting).

She reflected, "Having my team behind me helped me to want to keep going. "So I was like, you know what, we tell the kids that every day. Why can't I tell myself that? I said, you got that." This project was a challenge for Taylor; after all, s/he admitted that using higher-level Bloom's was not his/her strength. Taylor ran into roadblocks attempting to implement the plan in the classroom and demonstrated a need for relatedness by soliciting the action research team's advice and feedback. Taylor felt the need to present the problems s/he was facing to the team, displaying openness and honesty. Taylor then relied on the team to provide honest feedback to improve student outcomes. This investment in the academic outcomes of Taylor's class may have connected members by a common purpose and give Taylor a sense of belonging. Taylor journaled that his/her group members "have both given me great examples of what I can use to help them generate questions and resources I can consult to help guide me." As s/he continued the project, s/he continued meeting with the research team using structured discussion protocols embedded as conditions for relatedness support. Additionally, Taylor received follow up classroom visits from a member of the action research team.

Table 3 presents a summary of the relatedness themes in Taylor's case. In a summary of Taylor's experience, s/he shared that "the support of the research team was the most meaningful." Taylor expressed a potential connection with those on the team as mentioned in the statement,

> We had a good relationship, but now afterward, I will say we have a greater relationship because now I know that they are willing to help me, and I feel more comfortable soliciting their help. I know that although it's time to wrap this PLF, I can still go to my peers if I need help along the way. I changed the way I see my peers by coming to know they have many strengths. The group was my family or little pocket group.

Taylor's need to be cared for by others may have been nurtured through the experience of structured collaboration in which s/he received emotional and instructional support over 18 weeks. Taylor's team provided professional and personal guidance over time, potentially helping him/her to see their benevolence and reliability, placing him/her at ease when sharing frustrations and celebrations. These attributes of competence, benevolence, reliability, honesty, and openness are conditions for trust to develop between the team members. Taylor suggests a sense of security in his/her relationships with the action research team, through stating that even after the study, s/he feels comfortable enough to continue collaboration. Taylor states, "I know that although it's time to wrap up this PLF (professional learning focus), I can still go to my peers if I need help along the way."

Table 3

Summary of Relatedness Themes in Taylor's Case

Need	Need Fulfillment	Supporting Condition
Emotional support during the strain of breaking away from old practices	Feelings of encouragement after speaking with the group	Job-embedded collaboration
Frustrated and contemplated quitting	A colleague made Taylor rethink the decision to quit.	Job-embedded collaboration
Requested meetings to "bounce ideas" off of the team. A connection was needed for feedback, ideas, advice, and resources.	"The support of the research team was the most meaningful." "They are willing to help me." "I feel more comfortable soliciting their help." "Supportive and helpful feedback."	Structured protocols, Job-embedded collaboration Instructional coach
Team to solve the problem of practice	"We had a good relationship, but now afterward, I will say we have a greater relationship." "They have been an asset to my team."	Extended time

The action research team seems to have become a well-rounded and trusted group that met the instructional and emotional needs presented by Taylor during the study, making the relationships meaningful. Taylor and his/her colleagues' may now enjoy a strengthened relationship after experiencing caring instructional and emotional exchanges over time. It suggests that structured job-embedded collaboration and extended time with the same team may have contributed to feelings of relatedness.

Descriptive survey results uphold the qualitative findings of the study. Relatedness survey results exhibit fourteen of fourteen favorably answered questions as indicated when the respondent selected "agree or strongly agree". Overall, Taylor strongly feels cared about, close to, able to be him/herself, and that his/her feelings are taken into consideration during the experience. Taylor also experienced cooperation from the people that s/he worked. In question nine, it is evident that Taylor considers the action research team, "friends." Taylor experienced a change over time in relatedness support as understood when s/he initially rated, "I pretty much keep to myself during the professional development experience." as 'strongly agree' but changed it to 'somewhat disagree' on the second survey.

Autonomy

Autonomy refers to being the perceived initiator of one's behavior in alignment with personal interests and values (deCharms, 1968; Deci & Ryan, 1985b; Ryan & Connell, 1989; Deci & Ryan, 2002). Taylor signaled a need for autonomy when deciding on a research question. S/he selected a research question based on the needs of students in his/her class and personal, professional goals. Active meaningful learning is predicated upon self-directed learning that focuses on a topic of meaning to the individual or the school. Professionally, Taylor was motivated by annual evaluation feedback because s/he wanted to increase from an effective rating to a highly effective rating. Feedback from the annual evaluation challenged Taylor to involve students in higher-level cognitive thinking by asking questions scaffolded to at least the mid-level of Bloom's Taxonomy. Based on informal observations of students' classwork, Taylor agreed that students wrote low-level Bloom's research questions. Admittedly, s/he also uses them because they are "quick and easy." When Taylor was allowed the choice to select a topic of interest, it placed him/her in control of their behavior. The provision of choice also allowed Taylor to use a topic aligned with personal interests and values. During the research project,

Taylor actively worked to solve the problem that was of interest and value. In this regard, choice and active meaningful learning may have been conditions for autonomy fulfillment. Taylor expressed how choice and active meaningful learning may have nurtured autonomy by stating,

> I like this one because it's personal to what we need. Some of the other professional development that we go to may not necessarily be something that we need to practice; we're just there because we have to be. But this one is personal.

Taylor was in control of the professional development experience by being allowed the autonomy to decide on the members of their action research team. Subconsciously aware of his/her strengths and weaknesses, providing this choice may have allowed Taylor to place value on faculty members whom they trusted to make the best contribution to the project. Answering the research question connected to a relevant problem of practice involved initiating collaboration time with the research team to receive feedback, advice, and encouragement. Taylor initiated the frequency with which s/he collaborated with the team based upon the demands of students in the class and if s/he felt able to independently resolve the problem. When Taylor approached the team for help, s/he experienced the liberty of making her own decisions. During the literature review, although the instructional coach provided resources, Taylor sought out resources of interest to help him/her understand the topic s/he selected. Taylor remarked, the autonomy to "research it on my own helped me to learn that there are other things besides just Bloom's, like Depth of Knowledge and know how to teach it to the students." This statement helps to understand that Taylor may have displayed a need for autonomy by researching independently and may have experienced need fulfillment when provided with the option to do so. Taylor's experience of being in control of their choices during professional development is better understood when s/he said,

I like this one because it's personal to what we need. Some other professional

developments we go to may not necessarily be something that we need to practice; we're

just there because we need to be. But this one is personal, and it's guided by us, and we

decide we need to help this.

Throughout the action research process, data results are used to make decisions about

instructional shifts and when to meet with the action research team. Ikemoto, and Marsh (2007)

define the term data-based decision making (DBDM) widely as a systematic process of

collecting and analyzing data for decision making. Systematically collecting and analyzing data

allowed Taylor to notice when an intervention was not going as expected and make decisions to

change course. This process is referred to as data-driven decision making. Data-driven decision

making may provide for autonomy support because it enables researchers to have the

information they need for independent planning and decision making. One of Taylor's journal

entries reveals that "keeping data on what students are accomplishing helps me to plan according

to what they have mastered or what they still need to work on." Sometimes, decisions to meet

with the team were initiated after reviewing data, which suggests that data-based decision

making may have been one of the conditions for autonomous decision making. Taylor describes

data-driven decision making as "powerful." During collaborative meetings, discussions about

data were extensive, engaging, and meaningful, leading to decisions for instructional changes.

Taylor accepted recommendations from the action research team and implemented changes in

the classroom.

When autonomous individuals experience their behavior as an expression of the self,

such that, when actions are influenced by outside sources, the actors concur with those

influences, they feel both initiative and value with regard to them (Deci & Ryan, 2002).

In the first week of the second cycle, data demonstrated that students moved from DOK1 (Remember) to DOK2 (Understand and Apply). In week two, students moved from DOK2 (Apply) to DOK3 (Analyze). By week four, at least one-third of the class understood the different levels of Blooms. By the end of the study, 20/27 students in the class were able to write questions in the third tier of Blooms. The data-based recommendation was meaningful for student outcomes, and Taylor journaled that it increased students' interest level in the type of questions they had written, "when before they didn't care what level it fell in."

Six out of seven survey questions constructed to determine autonomy, confirm qualitative results. Taylor strongly agreed that s/he could determine his/her own needs, and express ideas and opinions without being controlled or pressured. An increase in Taylor's sense of autonomy can be seen in question one, when in the initial question, "I feel like I can make a lot of inputs to determine my own needs in this professional learning experience." answered, 'somewhat agree' and on the final survey, answered, 'strongly agree.' Table 4 summarizes the autonomy themes in Taylor's case. Overall, Taylor's experience may indicate one in which choice, active meaningful learning, and data-driven decision making played a role in autonomy fulfillment.

Table 4

Summary of Autonomy Themes in Taylor's Case

Need	Need Fulfillment	Condition
Research question for project	Personal interest, value "It's guided by us, and we decide we need to help this."	Choice, active meaningful learning
Selection of Action research team to assist with project	Personal interest, value	Choice
Resources on Blooms Questions	Personal interest, value "Researching it on my own helped me to learn that there are other things besides just Bloom's, like Depth of Knowledge and know how to teach it to the students."	Choice
Ideas, feedback, encouragement	Value, frequency initiated by researcher	Choice, data-based decision making
Instructional changes	Notice when an intervention was not going as expected and make autonomous decisions to change course "Keeping data on what students are accomplishing helps me to plan."	Choice, data-based decision making

Knowledge

Taylor utilized data in the form of student work and informal observations to become knowledgeable of students' needs and determine the focus of the research study. Prior to this professional development experience, Taylor lacked the pedagogical knowledge needed to assist his/her students with writing higher-level research questions. Taylor's lack of knowledge may have persuaded him/her to use lower level of Bloom's questions with students. During the

literature review, Taylor used resources in the form of articles that were provided by the instructional coach intended to build instructional knowledge. Taylor expanded his/her knowledge of higher-order thinking questions by conducting research independently. S/he expresses, "Researching it on my own, I learned that there were other things besides just Blooms, like Depth of Knowledge and know how to teach it to the students." This statement may indicate that Taylor has increased pedagogical knowledge. When asked on the survey, "How much are you able to get the instructional materials and equipment you need?" Taylor initially answered, "a moderate amount" but changed it to "a lot" on the second survey because Taylor learned to access research materials to gain the knowledge that s/he needs.

Taylor may have obtained additional pedagogical knowledge during structured, job-embedded collaboration. Through journal entries, we learn that when Taylor solicited feedback from the action research team, they provided knowledge in the form of ideas about data collection and how to make data visible to students. Taylor's growth in knowledge is confirmed in the focus group statement, "I feel like I have a better grip on assessment more now than I ever had." At the end of the first cycle, the team provided Taylor with a new idea to use "I wonder" statements during the second cycle. Taylor remarks, "They have given me great examples of what I can use to help them generate questions and resources I can consult to help guide me." Evidence of growth in pedagogical knowledge is noted in Taylor's statement that s/he has "made gains." A survey question asked, "To what extent can you craft good questions for your students?" Taylor initially answered "a moderate amount" but changed it to "a lot" on the second survey demonstrating an improved skill set. Taylor acknowledges, "The progress that I have made personally is rewarding." The pedagogical knowledge gained from collaboration may have

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enabled Taylor to craft and teach higher-level thinking questions during a 5th-grade lesson and monitor the intervention's effectiveness through data.

Action research is a structured reflective process. Taylor believes that his/her knowledge of the action research process served as a "new tool" that allowed him/her to "see where I was falling short." By engaging in this experience, Taylor became aware of his/her beliefs about students, a type of educational knowledge. During action research, researchers gather data about their context to make informed decisions about the focus of the research project and an intervention. When Taylor collected data about students through informal observations and student work, it allowed him/her to learn about the students' instructional needs in his/her class. Taylor's prior beliefs that students were not able to write higher-level questions seem to have been disrupted by the tracking of data. Taylor captured students' growth as well as his/her reaction to growth.

> Students seem to be moving towards higher level DOK/Blooms. The growth is small, but it is there. The teacher-researcher was "optimistic. Students were grasping how to do it themselves. The researcher journaled that s/he remained "optimistic." When 20/27 students were able to write questions in the third tier of Blooms, Taylor describes their progress as "as expected."

After observing steady growth in student data, Taylor's became more optimistic, and his/her beliefs changed to that of "expectation." Taylor reflected, "I've learned that the students will perform if they believe that you believe in them. I've learned that I was an enabler with my students because, in the past, I allowed them a pass when they felt they couldn't do the work. I now know that I was not the teacher they needed me to be." The data collection phase of the action research process helped to confirm to Taylor that with appropriate instruction, students

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were indeed able to perform the tasks that s/he initially deemed too difficult for students. In keeping with Taylor's newfound belief of high expectations for learning, Taylor notes the new knowledge or change in behavior that will take place after his/her involvement in this experience.

> I kind of see my work a little bit different and how I can go about it like if I'm noticing that there is a problem that is arising, we're getting stuck in a rut somewhere, now I know that my mind is just quickly going to shift to okay, I need to start collecting data to find out what's going on, and then I need to find out how we're gonna fix it.

Table 5 presents a summary of the knowledge themes in Taylor's case. Finally, although not considered educational knowledge, Taylor gained knowledge of how to persevere through difficult situations by pushing him/herself beyond what s/he thought possible. S/he reflects,

> I've been pushing myself to use higher-level questioning with them, not just with the group that I am focusing on, but I've been doing it with the other kids as well. So, we're all getting, me and the kids together are trying to get out of the comfort zone down here.

Table 5

Summary of Knowledge Themes in Taylor's Case

Need		Condition
Knowledge of students' instructional gaps	Student work, informal observations	Data-based decision making
Knowledge of students' ability	Tracking results of intervention "I've learned that the students will perform if they believe that you believe in them. I've learned that I was an enabler with my students because, in the past, I allowed them a pass when they felt they couldn't do the work. I now know that I was not the teacher they needed me to be."	Data-based decision making
	"Optimistic" about student growth	
Pedagogical knowledge to assist students with writing higher-level research questions	"Researching it on my own helped me to learn that there are other things besides just Bloom's, like Depth of Knowledge, and know how to teach it to the students."	Resources from instructional coach; research; job-embedded collaboration
	"I feel like I have a better grip on assessment more now than I ever had."	
	"They have given me great examples of what I can use to help them generate questions and resources I can consult to help guide me."	
	A survey question asked, "To what extent can you craft good questions for your students?" Taylor initially answered "a moderate amount" but changed it to "a lot" on the second survey	
Reflective educator	A "new tool" that allowed Taylor to "see where I was falling short."	Steps of action research, instructional coach, structured collaboration

Peyton

Peyton, an anomaly among the cases due to a delayed start and limited collaboration with the other action researchers, qualitatively exhibited high levels of autonomy, but moderate levels of competence and relatedness. Active meaningful learning and data-based decision-making are highlighted as frequently occurring as potential conditions for attending to autonomy support during Peyton's professional development experience. Quantitative survey descriptions, however, reveal healthy levels of relatedness. The analysis below explains Peyton's viewpoint of how active meaningful learning and data were essential to creating learning conditions for autonomy support.

Table 6

Analysis of Peyton's Frequency of Experienced Focal (and Other) Study Outcomes

Category	Level Experienced
Autonomy	High 8
Relatedness	Medium 4
Competence	Medium 4
Efficacy	Efficacy 2
Knowledge	Low 3

New Category	Level Experienced
Data-Based Decision Making	High 9
Active Meaningful Learning	High 8

Autonomy

The action research framework, which requires that the researcher begins with a research question, created a need for Peyton to have autonomy through choice and decision-making. Data helped Peyton to decide what the students in her classroom needed. S/he noticed that students in his/her classroom represented a wide range of reading levels ranging from students on a first-grade level to those on grade-level and to others who were on a fourth and fifth-grade level. According to data, Peyton believed that students in his/her class needed a fluency intervention. Peyton considered the project to be a good "starting point" for solving "how to" differentiate in fluency. As a self-directed project, Peyton selected a topic of interest and value, placing him/her in control of their behavior, and capitalized on the conditions for active meaningful learning. Peyton commented that s/he liked the "autonomy to select what they would work on and that it pertains to your class and what you're trying to teach the students." On the survey, when asked, "I feel like I can make a lot of inputs to determine my own needs in this professional development experience." Peyton answered, strongly agree on both surveys. The provision of choice and the ability to collect, analyze, and make decisions based on data may have provided Peyton with the skills to be an autonomous decision maker.

Peyton, late to the study, initiated the project by collaborating with a fellow researcher to learn the steps of action research. Without job-embedded collaboration as a potential supportive condition, Peyton may not have started the study. Instead, after collaboration, s/he was able to initiate the research project even though it was later than the other researchers. Peyton is also placed in control of their professional development experience by deciding on the action research team. Subconsciously aware of his/her strengths and weaknesses, providing this choice may have allowed Peyton to place value on faculty members whom they trusted to make the best contribution to the project. Peyton likely selected members whom they could trust to provide

feedback without pressure. Among those was the instructional coach. S/he noted that the instructional coach provided "guidelines" but was not overbearing, providing autonomy to "move about and do whatever we needed to". On the survey, when asked, "I feel pressured during this professional development," Peyton disagreed. The teacher-researcher also acted to collaborate with a grade-level colleague outside of the action research team, acting with interest, and placing value on having collaboration during a common plan time. When asked, "When I am with my action research team, I have a say in what happens, and I can voice my opinion," Peyton responded favorably.

Peyton's ability to become an autonomous decision maker grew as s/he collected, analyzed, and made instructional decisions. During both research cycles, all researchers were asked to track data to determine the intended intervention's effect. Systematically collecting and analyzing data through data-based-decision making allowed Peyton to notice when an intervention was not going as expected and make decisions to change course. Monitoring data points throughout the process allowed Peyton to determine when to implement, adjust, or provide an additional intervention. Relevant data provided a way for Peyton to make informed instructional decisions. Twice the teacher-researcher remarked that data collection helped him/her know the needs of his/her students, "to see where they were," "pinpoint issues," and determine where to focus his/her attention. Based on the outcome of data, instructional and motivational decisions for students were made. The instructional decisions that Peyton made included decisions to add vocabulary and writing definitions to assessments, games, class competitions, exit tickets, do now's, and movement to vocabulary. Throughout the process, Peyton made autonomous decisions to add interventions in response to student data at a frequency that outpaced his/her ability to meet with the action research team. Therefore, many

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times, Peyton was making autonomous decisions more often. Table 7 presents a summary of the

autonomy themes in Peyton's case. As Peyton reflected on the process, s/he shared that his/her

ability to be self-directed provided the autonomy that was needed to make decisions for his/her

classroom. When asked on the survey, "There is not much opportunity for me to decide for

myself how to go about my work during this professional development process." Peyton strongly

disagreed.

Table 7

Summary of Autonomy Themes in Peyton's Case

Need	Need Fulfillment	Condition
Research question for project	Personal interest, value	Data-based decision making, Choice, active meaningful learning
Selection of Action research team to assist with project	Personal interest, value	Choice
Initiating the project	Interest, value	Choice, job-embedded collaboration
Frequency of meetings with action research team	Value	Choice, data-based decision making
Respond to student outcomes with instructional changes	Value	Choice, data-based decision making

Data-Based Decision Making (DBDM)

Data collection and monitoring proved meaningful during job-embedded collaboration.

As Peyton tracked students' progress, s/he noticed that students were demonstrating

improvement not only academically but socially and emotionally, in correspondence to the

instructional decisions that s/he made. During the focus group reflection, Peyton remarked that:

The results for students with lower reading fluency was more confidence. They are

volunteering to read, and they never did that before. They were volunteering to read when

at the beginning of the year, I'd have maybe two or three that would volunteer. By the end

of it, everyone was raising their hands wanting to, and a lot of it was that they were

understanding the text at that point because they had the vocabulary to back up what they

were reading. Also, in math, they all of a sudden, they are seeing things differently,

which is something that I was definitely aiming for.

Students' advancement in social, emotional learning, in addition to academic growth, caused

Peyton to reflect that "I'm seeing a deep level of education going on."

Peyton explained how data played a role in his/her outlook on student growth. The

persistent academic growth noted in data trends caused Peyton to see "promising results" and

"improvement" in the following recorded journal entries:

Students demonstrated growth in reading comprehension. There was an increase from 4

to 7 students who passed the vocabulary portion on the spelling test. Pleased with seven

students who answered correctly on the weekly exam. The students also improved in

spoken vocabulary and in writing.

During the focus group s/he commented, "I was able to see like how they my students were

improving not only in their reading but in their spelling." As a result of seeing consistent positive

outcomes in student data, Peyton said that his/her outlook was "less frustrating" because the data

helped to focus on the progress that students were making instead of students who "were not

growing fast enough." S/he further explained:

If I'm not seeing any improvement, that would be very, very frustrating because I'm

trying to get them up to that grade level by the end of the year. But now that I'm seeing

the growth and they are improving like that is, uplifting seeing that.

Although a win in Peyton's view, s/he also saw data as challenging at the beginning when trying to determine exactly what data points to monitor. "I was specifically targeting reading fluency, so it was difficult at the beginning, so I was like how do I even measure that?" Also, when asked if there was one change that they could make to this process, Peyton said, s/he would spend more time to collect data because it wasn't enough time to determine "what I need to do to help my class out."

Erin

This section gives a detailed description of teacher-researcher Erin's experience with the CARE model. Table 8 summarizes the frequency with which s/he experienced the fulfillment of basic psychological needs, efficacy and knowledge. During Erin's experience with the CARE model, s/he exhibited high levels of autonomy and relatedness evidenced in observations, journal entries and feedback from the focus group. Erin's survey results confirm qualitative data. Erin's case helped to determine that conditions such as data-driven decision making, active meaningful learning and job-embedded collaboration may be essential to the fulfillment of basic needs during the professional development experience.

Table 8

Analysis of Erin's Frequency of Experienced Focal (and Other) Study Outcomes

Category	Level Experienced
Autonomy	Medium 8
Relatedness	High 8
Competence	Medium 4
Efficacy	Medium 4
Knowledge	Medium 7

New Category	Level Experienced
Data-Driven Decision Making	High 9
Active Meaningful Learning	High 9
Job-embedded collaboration	High 10

Relatedness

The need for relatedness makes one seek feelings of security in their relationships. This need for relatedness is seen in Erin's case through interactions with the action research team. Erin's sense of community potentially began after selecting a research team that would provide meaningful support for student growth during job-embedded collaboration. Erin's comment, "It's nice to have conversations that actually support growth of students and support the practice that we're doing and can help move us forward in making adjustments," gives insight into a potential need for relatedness that would support student growth goals. Erin's comment shows that structured collaborative conversations with the action research team may have created conditions that were supportive of Erin. After creating an initial research draft, Erin's team used the

"Consultancy protocol" (Appendix D) to provide feedback on Erin's plan. After experiencing a feeling of being "stumped or stuck," Erin turned to the action research team for emotional and instructional support. S/he demonstrated a need for relatedness when soliciting the advice and feedback of the action research team. Erin then relied on the team to provide honest feedback to improve student outcomes after being vulnerable about the needs in his/her class. Support for Erin's relational needs is provided in the form of additional strategies to consider. Erin gave additional feedback on the experience, sharing that the protocols were a structured way of collaborating, making it helpful. Erin expressed feelings of validation after structured job-embedded collaboration:

> I think that too often, we think that we as teachers are the only person doing something in particular that benefits student learning, and we don't take time to share our experience with others. This meeting was nice to hear from other teachers and feel validated in my attempt at trying something new, as well as gaining insight into what has worked in other classrooms.

Investment in the academic outcomes of Erin's class potentially connected members by a common purpose and gave Erin a sense of belonging. During the focus group, Erin spoke of knowing that "we are all here for the same purpose was a really strong connection for all of us." Erin disclosed that this type of emotional support in the form of instructional strategies might have caused relationships to develop "beyond hallway courtesy." The researchers experienced increased interest in each other's professional growth and the growth of their students. At the end of the first cycle, Erin received feedback from the lead researcher that s/he needed further training, understanding all steps of the action research process. Erin was open to brainstorming new ideas and to advice during collaboration with the instructional coach because of the need

that was created from feedback. During the meeting, Erin carried the majority of the conversation by generating ideas while the coach remained positioned in a supportive role to "encourage" ideas.

After collaboration, Erin decided to utilize the UNRAVEL strategy to help students interact with and connect with the text. According to the instructional coach, the teacher-researcher "left excited that she had a specific intervention to focus on." As s/he continued the project, s/he continued meeting with the research team through structured collaborative activities as potential conditions for relatedness support. Erin's team used the "Consultancy protocol" (Appendix D), anytime they met about topics such as data collection and ideas. During a discussion, the team gave Erin the advice of using close reading. S/he describes the collaborative team as "good thought partners." Erin, seemingly placing value on job-embedded collaboration as a form of relatedness support, shared that compared to other models, this professional development experience allowed "space for us as professionals to have conversations that might be lacking in other kinds of professional development settings."

By participating in sensemaking with a group over time, Erin experienced a sense of community and belonging. Erin encountered being cared for by others through emotional and instructional support during job-embedded collaboration over 18 weeks. Erin potentially thought of the team as reliable and benevolent after receiving professional guidance during challenging moments. Erin speaks of the competence of his/her team when s/he insists that through structured collaboration, s/he was able to see everyone's knowledge and "tap into everyone's full capacity." These attributes of competence, benevolence, reliability, honesty, and openness are conditions for developing trusting relationships between team members. The action research

team seems to have become a trusted group that was able to meet the instructional and emotional needs presented by Erin during the study, making the relationships meaningful.

The instructional and emotional support provided by the team appears to have strengthened the relationship between Erin and his/her colleagues. It suggests that structured job-embedded collaboration and extended time with the same team may have contributed to feelings of relatedness. Erin reports that by the end of the study, "Now, I'm excited to hear about their projects what they're working on, and they're also like reciprocating that feeling so, we're able to have more professional conversations about you know how our students are doing."

Erin's comments concerning relatedness focus on the professional talents of colleagues, their shared interests in supporting students, and an increased interest in their professional work projects. A summary of Erin's relatedness themes can be found in Table 9. These sentiments are echoed in survey results ratings where Erin "found her colleagues caring, friendly, cooperative, and likable." Even though Erin experienced relatedness support, it is believed that Erin saw her relationships with colleagues as strictly professional, as s/he rated "neither agree nor disagree" about "experiencing the action research team as friends, or close."

Table 9

Summary of Relatedness Themes in Erin's Case

Need	Need Fulfillment	Condition
Emotional support Feeling "stuck or stumped"	"It nice to feel validated in my attempt at trying something new."	Structured protocols, Job-embedded collaboration
Ideas, feedback, advice, and resources to support student outcomes	"left excited that she had a specific intervention to focus on." "good thought partners."	Structured protocols, Job-embedded collaboration. Instructional coach
Connection with the team to have professional conversations	"space for us as professionals to have conversations that might be lacking in other kinds of professional development settings." "It's nice to have conversations that actually support growth of students and support the practice that we're doing and can help move us forward in making adjustments."	
Connection with team to solve problem of practice and provide support for student growth	"We are all here for the same purpose was a really strong connection for all of us." Relationships developed "beyond hallway courtesy." "Now, I'm excited to hear about their projects what they're working on, and they're also like reciprocating that feeling, so we're able to have more professional conversations about you know how our students are doing.	Structured protocols, Job-embedded collaboration, Extended time

Autonomy

Action research, a project initiated by individual researchers, presents a need for Erin to select a research question to solve an existing problem in the classroom or school. Erin elected to focus on "Aggressive Monitoring" during the first cycle because it was a school focus and text strategy for students during the second cycle. Erin chose Aggressive Monitoring during the first cycle of research because s/he found it to be a common challenge among his/her colleagues in the school. Erin commented that "Teachers struggle with using data to guide their instruction." Erin chose to use the UNRAVEL strategy with students to help them interact with and make more connections with the text. Erin found this particular strategy meaningful because "I think it's great to see a specific strategy that can work for students to interact with harder text. They can use this skill in my classroom, and they can take it with them." Erin used action research as "… a way for me to collect my data and see if this process, to see if a new thing I was trying in the classroom was actually worthwhile and beneficial for students and their learning." On the survey, when asked, "I feel like I can make a lot of inputs to determine my own needs in this professional learning experience" on the survey, Erin initially responded "somewhat agree" but changed it to "strongly agree" on the second survey. Erin was placed in control of his/her behavior when allowed the choice to select topics of interest and value, capitalizing on the conditions of active meaningful learning. As active meaningful learning is predicated on self-directed learning using a topic of meaning to the school or individual, active meaningful learning could be how autonomy was supported.

Erin was also placed in control of decision-making when selecting the members of the action research team. Erin could have subconsciously selected the research team based on his/her strengths and weaknesses, placing value on team members who would make up the differences,

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making the best contribution to the project. During the research project, Erin actively involved team members to solve the problem that was of interest and value. The collaborative discussions initiated by Erin involved feedback, advice, and encouragement in which Erin determined the frequency of collaboration.

During the second cycle, Erin received feedback that s/he or she should collect and analyze data to determine the intervention outcomes. Data results were used throughout the action research process to make decisions about instructional shifts and when to meet with the action research team. Erin noticed when an intervention was not going as expected and make decisions to change course by systematically collecting and analyzing data. After deciding to utilize the UNRAVEL strategy with his/her class, Erin wrote notes in his/her journal, notating the progress that students were making. Erin noticed that "students are using underlining, but not other parts of the UNRAVEL strategy." Erin was prompted by this realization to meet with her action planning team, meaning the outcomes of data may have signaled when to decide to solicit feedback from the action research team. The research team used the data to provide meaningful feedback and ideas, including the close reading strategy. Erin used the suggestion in the classroom, noting that by the end of the four weeks, "I have seen gains in their writing where they're able to use stronger vocabulary in their writing." Knowledge of how to systematically collect and analyze data may have provided the condition needed for Erin to make autonomous instructional decisions and when to meet with the team. A summary of Erin's knowledge themes is provided in Table 10.

Table 10

Summary of Autonomy Themes in Erin's Case

Need	Need Fulfillment	Condition
Research question for project	Personal interest, value	Data-based decision making, Choice, active meaningful learning
Selection of Action research team to assist with project	Personal interest, value	Choice
Frequency of meetings with action research team	Value	Choice, data-based decision making
Respond to student outcomes with instructional changes	Value	Choice, data-based decision making

Hayden

Teacher-researcher Hayden's experience with the CARE model is provided in the case analysis. As summarized in Table 11, Hayden displayed high levels of efficacy in qualitative findings, confirmed by quantitative descriptions. Data-based decision making may have been an essential condition that Hayden needed from her experience with the CARE model. Hayden's experience with the CARE professional development design is accounted for in the detailed analysis.

Table 11

Analysis of Hayden's Frequency of Experienced Focal (and Other) Study Outcomes

Category	Level Experienced
Autonomy	Medium 6
Relatedness	Medium 4
Competence	Medium 7
Efficacy	High 8
Knowledge	High 11
New Category	Level Experienced
Data-Based Decision Making	High 8

Efficacy

Hayden demonstrates a belief in his/her ability to change the outcomes of students. S/he potentially began the experience with high levels of efficacy supported by the statement made during the focus group, eluding to the idea that s/he was already a successful teacher. "What I needed to be successful, more successful." An additional comment that supports existing efficacy is Hayden's statement that this professional development has given "more confidence." Hayden says, "This has given me more confidence to look at what I need in my classroom and to be able to do it." Favorable survey results on the initial survey indicate high levels of efficacy in fourteen of fourteen questions. High levels of efficacy were maintained throughout Hayden's experience with collaborative action research, as demonstrated by favorable survey responses in the second survey. She recalls, "I didn't know how to help at all. I felt that action research would help me figure out what I needed to do for my next steps." Even though Hayden did not feel competent in

his/her ability to differentiate at the beginning, s/he felt that this experience supported

competence and efficacy by learning the explicit steps of action research.

> Because when I was going into it, I was like, oh my gosh, I have this problem where I
>
> have kids reading at a third-grade level. I have kids that don't know their letters, and I
>
> don't know how to help them. I felt like hopeless that I didn't know if I was a competent
>
> enough teacher to help them. This action research process has given me a foundation for
>
> how to be specific in what I can do to differentiate for each student. It has given me a
>
> plan on where I should start and how to implement practices. I know that with action
>
> research that I can identify the problem and the purpose of the action research. I can
>
> research information and find what will benefit my students most. I can find ways to
>
> implement the differentiation and consistently take data to see how my students are
>
> growing. I feel that I have learned a lot in how to do the action research, and I feel that I
>
> now will be able to implement not only for one subject but plan for all subjects.

Hayden displays competence and efficacy by demonstrating the ability to transfer what is

learned with sight words to other parts of reading. In Hayden's journal, we learn that not only

was s/he able to differentiate with sight words, but with fluency. Efficacy is exhibited in the

interview statement, " I feel that because of this process, I will now be a more effective teacher

because I will be able to meet each student where they are and give students what each of them

needs to be successful." And now, I feel like because of this process, I can look at the problem

and figure out how to fix it or how to help my kids where they need it most.

Knowledge

Hayden utilized student work and informal observations to become knowledgeable of

students and determine the focus of the research study. Prior to this professional development

experience, Hayden lacked the pedagogical knowledge needed to differentiate. Hayden's

knowledge of differentiation and how to use it in the classroom is supported through researching differentiation during the literature review. Hayden states, "It helped me define what I was even researching because I can say 'differentiating' and kind of know what it means, but I learned why and how. It helped me think deeper about it." Hayden grew in pedagogical knowledge during structured, job-embedded collaboration. We learn through journal entries that Hayden received knowledge in the form of ideas about interventions after soliciting feedback. S/he mentions, "Everyone in the process was helpful and gave great ideas. One of the action research team members challenged me and pushed me on my thinking, providing me with how to teach sight words in different ways." Hayden continues by saying, "I feel like this process had helped me narrow down the focus on what I want my intervention to be. It showed me how specific I need to be in my intervention as well as consistent to maximize the intervention." Action research, a structured reflective process, gave Hayden knowledge of how to solve a problem of practice:

> This action research process has given me a foundation for how to be specific in what I can do to differentiate for each student. It has given me a plan or where I should start and how to implement practices. I know that with action research that I can identify the problem and the purpose of the action research. I can research information and find what will benefit my students most. I can find ways to implement differentiation and consistently take data to see how my students are growing. I feel that I have learned a lot in how to do action research, and I feel that I now will be able to implement not only for one subject but plan for all subjects.

When reflecting on how this action research design has contributed to knowledge, Hayden explained, "I feel like because of this process, I can look at the problem and figure out how to fix it or how to help my kids where they need it most." Personally, Hayden says,

"The whole process has helped me increase my growth mindset not only for myself but

my students. I have seen how they have grown, but I have seen probably more of how

much as a teacher it's helped me to improve in a lot of aspects."

Hayden gained knowledge through research, collaboration, and learning the steps of action

research.

Data-Based Decision Making

Data is used in the action research process to decide which research question to pursue.

Hayden noticed that the data represented a wide variation of reading levels of students who were

two grade levels above, to on grade-level, to those who were two grade levels below. Some

students were still learning the alphabet and sounds. During both research cycles, all researchers

were asked to track data to determine the effect of the intended intervention. During both cycles

of research, each week, Hayden tracked data using the SIPPS Mastery and Sight Words

Assessment, monitoring data points throughout the process allowed Hayden to determine when

to adjust the intervention. When Hayden noticed that there was "less success with student

growth" because students who were increasing by 3 - 4 words had decreased to 1- 2 words, s/he

decided that consistency was critical and that it may take more than three days for students to

retain information. A different week's data caused Hayden to decide to review sight words from

the previous week and "multiple ways to remember." During the last week of intervention, the

teacher-researcher noted that students increased their sight words from 1- 2 and 3 - 5 even

though they were only able to practice the words 3 of 5 days due to circumstances. During the

focus group, s/he reflected that s/he used data to "tweak the intervention to meet the needs of

students."

The data was used by the action research team to provide meaningful feedback and ideas

to the researcher. Hayden shared, "One of the action research team members challenged me and pushed me on my thinking, providing me with how to teach sight words in different ways." As Hayden tracked students' progress, s/he noticed that students were demonstrating improvement not only academically but socially and emotionally, in correspondence to the instructional decisions that s/he made. During the focus group reflection, Hayden remarked, "My kids have grown a ton in their sight words. They're very excited to do them, and they're more confident. Confidence is the biggest thing." According to Hayden, students had become "intrinsically motivated" to learn their sight words. The confidence that Hayden observed in his/her students motivated him/her to "push myself to do it in multiple content levels."

Hayden's journal entries and focus group responses help us to understand how data played a role in his/her experience. As a result of seeing consistent positive outcomes in student data, Hayden wrote s/he was "optimistic about the process and students' progress of increasing knowledge of sight words and letters." When data revealed that students were increasing letters by 1-2 a week and others are increasing sight words by 3-4 a week, s/he wrote, "I am feeling good about the progress, I am optimistic that the more I utilize this intervention, the more students that will increase their sight word retention by 4-5 students per week." The academic progress and growth in confidence motivated Hayden to "push myself to do it in multiple content levels." As a result of pushing him/herself to grow, Hayden "I have seen how they have grown, but I have seen probably more of how much I have grown as a teacher, and it's helped me." Finally,

> The whole process has helped me increase my growth mindset not only for myself but
> my students. I have seen how they have grown, but I have seen probably more of how
> much as a teacher it's helped me to improve in a lot of aspects.

CHAPTER 7:

CROSS-CASE ANALYSIS

Although studies about professional development have addressed the most effective characteristics of professional development models, few have addressed how these characteristics provide conditions that nurture teacher's basic psychological needs and provide concomitant growth in knowledge and efficacy as a result. The findings of this study suggest that while we need to know more about competence, characteristics such as structured, job-embedded collaboration, active, meaningful learning, and data-driven instruction appear to be critical conditions needed for relatedness and autonomy satisfaction, efficacy as well as knowledge in some cases. The findings appear to support prior research stating that these types of activities may be more effective because of their responsiveness to teachers' goals, needs, how teachers learn and their ability to encourage collective participation (Ball, 1996; Darling-Hammond, 1995; Darling-Hammond, 1997; Hargreaves & Fullan, 1992; Little, 1993; Sparks & Louckes-Horsley, 1989; Stiles, Loucks-Horsley, & Hewson, 1996).

In the cross-case analysis, within-case analysis themes were compared for similarities and explained using qualitative and quantitative data for validation purposes (LeCompte & Schensul, 2010). The surveys were used descriptively to support qualitative findings. Using deductive reasoning, data is used to arrive at an interpretation of the teachers' experiences, explained through the lens of basic psychological needs theory. The current case study demonstrates that reform models such as collaborative action research extended (CARE) may supply conditions necessary for increased levels of autonomy and relatedness fulfillment in some while maintaining moderate levels of competence in all. Based on self-determination theory (SDT) which addresses human motivation and behavior by identifying a spectrum of developmental

outcomes ranging from amotivation to intrinsic motivation, it is evident that the teacher-researchers experienced varying levels of motivation during the study.

All researchers experienced at least an average to high degree of autonomy fulfillment through this professional development model supportive of active meaningful learning, data-based decision making and job-embedded collaboration as potential leading conditions. Average competence levels are standard between researchers indicating the need for further research studies to determine the conditions that lead to competence fulfillment.

While data-driven instruction inarguably had a positive effect on the researcher's experience, it also created conditions whereby teachers' progress towards competence may have been thwarted. Although a win in Peyton's view, s/he also saw data as challenging at the beginning when trying to determine exactly what data points to monitor. S/he shared, "I was specifically targeting reading fluency, so it was difficult at the beginning, so I was like how do I even measure that?" Data was of interest to Erin from the very beginning of his/her research project. Erin wanted to use data to determine if what s/he was trying in the classroom worked. Erin noted that "This was a way for me to collect my data and see if this process, to see if a new thing I was trying in the classroom was actually worthwhile and beneficial for students and their learning," but found the data collecting process to be a challenge. This challenge was attributed to his/her lack of prior knowledge using data. Erin admitted,

> I struggled with how to collect data. I didn't even know what I was looking for, and then I had to kind of sit down with my group and figure out like what I needed to be looking at when I was collecting my data so that was a challenge in the beginning, too.

Erin described data as "time-consuming" and believed that s/he needed and lacked the accountability necessary to collect data on time. Erin's suggestion to improve the CARE model include additional support from the instructional coach with organizing data.

As Erin became overwhelmed by his/her focus on collecting and organizing data, it caused him/her to overlook essential steps of action research as noticed at the end of the first cycle by the main researcher. The main researcher noticed that Erin's project prioritized the collection of baseline data, neglecting the implementation of a specific intervention. Although Peyton, and Erin eventually collected the data needed for their study, they did not spend enough time with data to become competent with data or other areas of the research project. If Taylor could make recommendations to the CARE model, it would be "more time to collect data. I don't think I have enough data yet to see growth." Also, when asked if there was one change that they could make to this process, Peyton said, s/he would spend more time to collect data because it wasn't enough time to determine "what I need to do to help my class out." These teacher-researchers' experiences lacked the appropriate training of data-based decision making. This may have resulted in an imbalance in the time that they spent on other areas of the project, potentially lowering competence levels. The teacher-researchers' frustrations with data may also have been alleviated through the effective training of the instructional coach.

Taylor, Peyton, and Hayden started their research projects because they were presented with challenges reaching their most at-risk students. As they collected data and noted trends, it influenced their emotional states. Hayden's journal entries and focus group responses help us to understand how data played a role in his/her emotions. When data demonstrated student growth, Hayden wrote, that s/he was "optimistic about the process and students' progress of increasing knowledge of sight words and letters." When data revealed that students were increasing letters

by 1-2 a week and others are increasing sight words by 3-4 a week, s/he wrote, "I am feeling good about the progress, I am optimistic that the more I utilize this intervention, the more students that will increase their sight word retention by 4-5 students per week." When Taylor saw even a slight increase in student growth, s/he reported feelings of optimism. Taylor describes the process of progress monitoring data as powerful" and describes the students' growth as "pleasing."

"Students seem to be moving towards higher level DOK/Blooms. The growth is small, but it is there." The teacher-researcher was "optimistic."

"Students were grasping how to do it themselves." The researcher journaled that they remained "optimistic."

As Taylor's optimism grew due to positive trends in data, it disrupted his/her former beliefs about what students could do.

I've learned that the students will perform if they believe that you believe in them. I've learned that I was an enabler with my students because, in the past, I allowed them a pass when they felt they couldn't do the work. I now know that I was not the teacher they needed me to be.

In this instance, the data made Taylor optimistic that with the appropriate instruction, students were indeed able to perform the tasks that Taylor initially deemed too difficult for students.

When Peyton noted the data, s/he reported "seeing promising results" and "improvement" through the following recorded journal entries:

Students demonstrated growth in reading comprehension.

There was an increase from 4 to 7 students who passed the vocabulary portion on the

spelling test.

Pleased with seven students who answered correctly on the weekly exam. The students also improved in spoken vocabulary and in writing.

Peyton observed both academic and social-emotional growth, causing him/her to respond that "I'm seeing a deep level of education going on." Peyton provided further explanation of the role that data played in his/her perspective and emotions when s/he saw consistently positive academic growth in data trends. During the focus group s/he commented, "I was able to see like how they my students were improving not only in their reading but in their spelling." As a result of seeing consistent positive outcomes in student data, Peyton said that his/her outlook was "less frustrating" because the data helped to focus on the positive through the progress that students were making instead of students who "were not growing fast enough." S/he further explained,

If I'm not seeing any improvement, that would be very, very frustrating because I'm trying to get them up to that grade level by the end of the year. But now that I'm seeing the growth and they are improving like that is, uplifting seeing that.

Each teacher-researchers' level of basic psychological need fulfillment is summarized in Table 12.

Table 12

Teacher-researchers' levels of basic psychological need fulfillment (degree, intensity)

	Autonomy	Relatedness	Competence
Taylor	High 8	High 13	Medium 6
Peyton	High 8	Medium 4	Medium 4
Erin	High 8	High 8	Medium 4
Hayden	Medium 6	Medium 4	Medium 7

Finding 1: When teachers have control of decision-making supported by conditions of active meaningful learning, data-based decision making and job-embedded collaboration, it may satisfy their basic psychological needs for autonomy.

Some professional development designs lack the opportunity for teachers to exercise decision making over their professional learning. In this collaborative action research design, teachers were allowed to make autonomous decisions with the support of job-embedded collaboration. Similarities among Erin, Taylor and Peyton's cases suggest that when teachers have control of the decision making, which includes the research topic and question, collaborative team, resources, frequency of support, data set, and instructional strategies, it may enhance autonomy support. Autonomous decision-making was undergirded by active meaningful learning, data-based decision making and job embedded collaboration.

The action research framework requires researchers to begin with a research question, creating a need for autonomy through choice and decision-making. Both phases of the action research cycle allowed for teacher autonomy through choice. Researchers selected a problem of practice of interest to them, placing them in control of their behavior. The provision of choice also allowed each teacher to consider how the needs of their students would inform their study,

aligning them with personal interests and values. Data-based decision-making helped Peyton to decide what the students in her classroom needed. According to data, Peyton believed that students in his/her class needed a fluency intervention. Peyton considered the project to be a good "starting point" for solving "how to" differentiate in fluency. Based on informal observations of students' classwork, Taylor agreed that students wrote low-level Bloom's research questions. Erin was motivated by his/her growth and development, sharing that the research project was meaningful because "I do find it important and motivating to see how I can improve my practice as a teacher."

Active meaningful learning is predicated upon self-directed learning that focuses on a topic of meaning to the individual or the school. In this regard, action research served as a self-directed project where researchers are able to select a topic based on interest and value, placing them in control of their behavior, capitalizing on the conditions of active meaningful learning. Therefore, active meaningful learning may have served as a condition for autonomy fulfillment. Erin chose to use the UNRAVEL strategy with students to help them interact with and make more connections with the text. This particular strategy was meaningful to Erin because "I think it's great to see a specific strategy that can work for students to interact with harder text. They can use this skill in my classroom, and they can take it with them." Taylor shared that "this one (professional development) is personal and it's guided by us, and we decide we need to help this." Peyton commented that s/he liked the "autonomy to select what they would work on and that it pertains to your class and what you're trying to teach the students."

Action research uses a literature review to provide background information to researchers on their topic of interest. During the literature review, teachers were provided with resources on their research topic by the instructional coach. They also had the option of finding resources

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independently. Taylor sought additional resources and remarks, the autonomy to "research it on my own helped me to learn that there are other things besides just Bloom's, like Depth of Knowledge and know how to teach it to the students." Although Hayden did not demonstrate high qualitative autonomy results, his/her survey displays healthy levels of autonomy. S/he agrees that the literature review, "It helped me define what I was even researching because I can say 'differentiating' and kind of know what it means, but I learned why and how. It helped me think deeper about it." These statements help to understand that Taylor and Hayden may have displayed a need for autonomy by researching independently and may have experienced need fulfillment when provided with the option to do so.

All researchers were placed in control of who supported their learning by deciding on their action research team. With loose guidelines, study participants were asked to select three to four individuals on staff who would be willing to meet with them collaboratively over 18 weeks. The purpose of the team was to meet in response to the needs of the teacher researcher. Teacher-researchers made selections ranging from those on their grade level team to the instructional coach and assistant principal. Subconsciously aware of his/her strengths and weaknesses, providing this choice may have allowed the teacher researchers to place value on faculty members whom they trusted to make the best contribution to the project. Peyton likely selected members whom they could trust to provide feedback without pressure. On the survey, when asked, "I feel pressured during this professional development," Peyton disagreed. In these cases, the research team provided feedback, advice, and encouragement to the researcher during job-embedded collaboration so that the teacher could carry out actions independently in the classroom.

Researchers decided to meet with their team after reviewing data, which suggests that data-based decision making may have been one of the conditions for autonomous decision making. Job-embedded collaboration was made meaningful when data trends guided the discussions. When the data revealed that students were unresponsive to the intervention, the teacher-researchers reached out to their action research team for assistance. With the exception of embedded protocols, teachers were able to choose how often and for what purpose they met with their team. Data-based decision making served as a way for teachers to make informed autonomous decisions about when to meet with their teams. In Taylor and Erin's case, data served as feedback to determine when to solicit the advice of his/her action research team. Using trends in informal observational data, Erin noticed that "students are using underlining, but not other parts of the UNRAVEL strategy." This realization prompted Erin to meet with her action planning team. The researchers accepted recommendations from their action research team and implemented changes in the classroom. Deci & Ryan (2002) state that even though external factors play a part in decision making, autonomous individuals consider the outside influences as an expression of themselves and act with initiative.

Autonomy supportive conditions continued through the use of data-based decision making which helped to guide instructional decisions about the most appropriate intervention and instructional strategies. The research team used data to discuss the most appropriate adjustments to interventions. The researchers acted with autonomy as they collected, analyzed, and made instructional decisions. Through data-driven decision making, researchers were able to notice when an intervention was not going as expected and make decisions to change course. One of the journal entries reflects, "that keeping data on what students are accomplishing helps me to plan according to what they have mastered or what they still need to work on." Twice

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Taylor remarked how data-driven instruction helped him/her to know the needs of his/her students, "to see where they were," "pinpoint issues," and determine where to focus his/her attention. Peyton monitored data points allowing him/her to decide when to implement, adjust, or provide an additional intervention. In Peyton's case, we see frequent adjustments to the intervention when adding vocabulary, writing definitions, games, class competitions, and movement to vocabulary were used as a response to data. Peyton's survey results confirm that s/he strongly agreed that s/he was able to determine his/her needs during the professional development, express opinions, and decide how to go about the work. Peyton's reflection of the process included the ability to be self-directed by making decisions for his/her classroom.

In the survey results of the second survey, all participants "Strongly agreed that they can make a lot of inputs to determine my own needs in this professional development experience." Three of four participants also disagreed that "there is not much opportunity for me to decide for myself how to go about my work during this professional development experience." When teacher-researchers received the feedback from data, they made decisions to solicit feedback from their action research team and to make adjustments to the intervention. The provision of choice and the ability to collect, analyze, and make decisions based on data may have provided researchers with the skills to be an autonomous decision-makers. Data-driven decision making may provide for autonomy support because it enables researchers to have the information they need for independent planning and decision making.

Taylor shared the importance of being in control of the choices throughout the experience by saying,

I like this one because it's personal to what we need. Some other professional developments we go to may not necessarily be something that we need to practice; we're

just there because we need to be. But this one is personal, and it's guided by us, and we

decide we need to help this.

Peyton commented that s/he liked the "autonomy to select what they would work on and that it pertains to your class and what you're trying to teach the students." On the survey, when asked, "I feel like I can make a lot of inputs to determine my own needs in this professional development experience." Peyton answered, strongly agree on both surveys. Hayden's experience further supports autonomous conditions through the statement, this professional development "was personal and guided by us, effective and meaningful, helpful and interesting. Erin shared,

I feel like it allowed me to have some autonomy with like what I'm doing in school and it just made me feel good that I'm able to like choose my own path in learning and figuring out what I identify as a problem and like what are some solutions that I can collaborate with other teachers to figure out how to, how to solve something.

The researchers' experiences indicate those in which choice, active meaningful learning and data-based decision making played a role in autonomy fulfillment. The qualitative and quantitative summaries of the teacher-researchers' autonomy fulfillment are outlined in Table 13.

Table 13

Qualitative and Quantitative Summaries of Autonomy Fulfillment

Supporting condition	Qualitative	Quantitative Description
Interest, choice, and Value	All researchers: Research question for project All researchers: Chose members of the research team to assist with project Peyton: "We have the autonomy to select what they would work on and that it pertains to your class and what you're trying to teach the students." Taylor: "Researching it on my own helped me to learn that there are other things besides just Bloom's, like Depth of Knowledge and know how to teach it to the students."	All researchers scored at least 6/7 on survey Three of four participants also disagreed that "there is not much opportunity for me to decide for myself how to go about my work during this professional development experience." Erin: "I do find it important and motivating to see how I can improve my practice as a teacher." Erin: I feel like it allowed me to have some autonomy with like what I'm doing in school and it just made me feel good that I'm able to like choose my own path in learning and figuring out what I identify as a problem and like what are some solutions that I can collaborate with other teachers to figure out how to, how to solve something."
Active meaningful learning	Taylor: "It's guided by us, and we decide we need to help this." Peyton: Peyton considered the project to be a good "starting point" for solving "how to" differentiate in fluency.	Erin: "I think it's great to see a specific strategy that can work for students to interact with harder text. They can use this skill in my classroom, and they can take it with them."
Job-embedded collaboration/Data-based decision making	All researchers: Initiated the frequency of meetings with action research team All researchers: Respond to student outcomes with instructional changes Taylor: "Keeping data on what students are accomplishing helps me to plan." Taylor: Twice Taylor remarked how data-driven instruction helped him/her to know the needs of his/her students, "to see where they were," "pinpoint issues," and determine where to focus his/her attention.	On the survey, when asked, "I feel like I can make a lot of inputs to determine my own needs in this professional development experience." Peyton answered, strongly agree on both surveys. Peyton: "the instructional coach provided "guidelines" but was not overbearing, providing autonomy to "move about and do whatever we needed to". Peyton: On the survey, when asked, "I feel pressured during this professional development," Peyton disagreed. Taylor: Question #1: "I feel like I can make a lot of inputs to determine my own needs in this professional learning experience." Answer #1: 'somewhat agree' and on the final survey, answered, 'strongly agree.

Finding 2: Job-embedded collaboration, active meaningful learning and extended time may have contributed to feelings of relatedness when teachers received resources, feedback, advice, and emotional support to improve student-centered outcomes.

Taylor and Erin both experienced relatedness supportive environments. Deci and Ryan (2012), posit that autonomous supportive environments will in effect cause individuals to seek satisfaction of relatedness and competence. This is true of Taylor and Erin's cases. The need for relatedness makes one seek feelings of security in their relationships. When relatedness is fulfilled, there is a feeling of connection and a sense of belonging within a community in a way that makes the individual feel cared for by others (Baumeister & Leary, 1995; Bowlby, 1979; Harlow, 1958; Ryan, 1995). Through Taylor and Erin's experience, we learn that feelings of relatedness may have been supported through conditions of job-embedded collaboration when the discussions were student-centered and resources, feedback, advice, and emotional support were offered. As teacher-researchers worked with their team over time, there is supporting evidence that they feel cared for, connected to and secure within their relationships when professional and personal support are extended during job-embedded collaboration.

A sense of community seems to have started soon after the project began. Knowing that all of the researchers joined the study because they wanted to solve difficult problems in the classroom was a common ground for them all. Erin said, "knowing that we are all here for the same purpose was a really strong connection for all of us." Connections were also formed with the research team that would provide meaningful support during the research process. Erin and Taylor presented a problem of practice to the team uniting them with a common purpose and creating an environment of openness and honesty about the needs of his/her class. Erin presented the need to address reading comprehension, while Taylor needed students to write research-

based questions with higher-level Bloom's. The teacher-researchers relied on their teams to provide honest feedback to improve student outcomes. It is probable that the investment in the academic outcomes of students connected members by a common purpose, contributing to a sense of belonging. Working closely with the same group of individuals over 18 weeks to address a concern of held significance to the teachers and the school, may have made them feel connected promoting relatedness. Active meaningful learning, which focuses on a topic of meaning to the individual or the school was in operation when teams comprised of individuals who worked at the school, understood the importance of helping Erin and Taylor reach their goals because it supported school goals. As the teams worked together, they became invested in helping the teacher see measurable progress with their students. Erin likely found active meaningful learning and job-embedded collaboration as an essential condition for relatedness by stating, "it was nice to be with a group of driven individuals who shared a common goal of finding success for students by using effective classroom strategies." S/he further shared, "It's nice to have conversations that actually support the growth of students and support the practice that we're doing and can help move us forward in making adjustments."

Collaboration with the same group of individuals for 18 weeks to solve a student-centered problem potentially created a sense of community and belonging when researchers received feedback from the contribution of individuals using structured dialogue. Protocols were used throughout the study. Each teacher-researcher met with their team using the "Consultancy and Data-Driven protocol (See appendix D & E). Members of the action research team also provided feedback using the "Feedback Principles" (See appendix F). Discussion protocols are used for feedback and provide equity of voice through roles, specific questions or objectives and time limitations. These protocols allowed space for each person to make a contribution to the

project potentially creating conditions in which the teacher-researcher cared for by each individual. Through the use of protocols, Erin noticed individuals on the team contributing their individual strengths so that s/he was able to see each person's knowledge and "tap into everyone's full capacity." Taylor agrees in the statement, "I changed the way I see my peers by coming to know they have many strengths." Through protocols they realized that their team was competent enough to help them reach their goals with students, and likely experienced feelings of security within those relationships. As they became secure within the relationship, the researchers continued to share data results with their team to receive feedback. Taylor's team was described as having contributed "supportive and helpful" feedback resulting in the next steps, to use "I wonder statements" with the students during the second cycle. S/he journaled, "they have both given me great examples on what I can use to help them generate questions and resources I can consult to help guide me." Erin adds that the feedback validated his/her ideas, stating that "Collaborating with other teachers was the best part, cause then I had an idea, and it worked" and " This meeting was nice to hear from other teachers and feel validated in my attempt at trying something new." Peyton remarked that it was "helpful to collaborate with peers in other grades to see what I can do to help my students at various skill levels."

It is probable that the researchers perceived advice from the action research team as benevolence. In Taylor's words, advice came in the form of "bouncing ideas off of them." Taylor was also provided with advice about data collection, how to make the data visible, and how to make data interesting in order to get the students involved in their own learning. When Erin described him/herself as "stumped or stuck," s/he relied on the team for additional intervention strategies to consider. Erin was advised to use the close reading strategy with UNRAVEL.

Likewise, Erin received advice about different forms of data to include during the process. As a result, Erin describes the collaborative team as "good thought partners."

Trends reveal that when action research team members met teacher-researchers' emotional needs, it may have been perceived by researchers as benevolence. Encouragement during difficult times was viewed as emotional support by teachers. The team demonstrated care for Taylor when the emotional strain of breaking away from traditional practices, to implement a new practice became a challenge. The emotional support provided by the action research team caused Taylor to feel comfortable reaching out to collaborate and celebrate successes during the process when s/he might not have, otherwise. Taylor spoke of "feelings of encouragement" after meeting with her team and remarks,

> And just the emotional piece of being able to have someone to talk to when you get
> frustrated because you think something isn't going right or to celebrate. I was at a point
> where I was ready to say, okay I'm lost, I'm done (but a teammate kept him/her from
> quitting).

When Taylor became frustrated or celebrated success, the team was there to display benevolence. This type of emotional support supplied from the team may have caused the relationship between members to deepen. Taylor confirms this through the endearing statement, "The group was my family or little pocket group."

Many of the comments made by Erin concerning relatedness focus on the professional talents of colleagues, a common student-centered interest, and interest in one another's professional work. Descriptive survey results uphold the qualitative findings of the study. Relatedness survey results exhibit fourteen of fourteen favorably answered questions. These sentiments are echoed in survey results ratings where seven favorably answered questions

confirm that Erin "found her colleagues caring, friendly, cooperative, and likable." Even though Erin experienced relatedness support, it is believed that Erin saw her relationships with colleagues as strictly professional, as s/he rated "neither agree nor disagree" about "experiencing the action research team as friends, or close." It leads to the idea that teams can have professional working relationships that lead to relatedness that are not personal. Overall, Taylor strongly feels cared about, close to, able to be him/herself, and that his/her feelings are taken into consideration during the experience. Taylor also experienced cooperation from the people that s/he worked. In question nine, it is evident that Taylor considers the action research team, "friends." Taylor experienced a change over time in relatedness support as understood when s/he initially rated, "I pretty much keep to myself during the professional development experience." as 'strongly agree' but changed it to 'somewhat disagree' on the second survey.

Relationships within action research teams were described as "positive." Working together over time to provide professional and personal guidance could have made researchers view their team as reliable. These attributes of openness, competence, benevolence, and reliability created by active meaningful learning and job-embedded collaboration over time are conditions for trust in relationships. The trust between colleagues increased as noted by Taylor,

> We had a good relationship, but now afterward, I will say we have a greater relationship because now I know that they are willing to help me, and I feel more comfortable soliciting their help. I know that although it's time to wrap this PLF, I can still go to my peers if I need help along the way.

Hayden shared similar feelings of security within relationships by stating,

> Everyone in the process was helpful and gave great ideas that kept you on track in the

midst of a very demanding job. When I didn't necessarily feel comfortable asking for

help before, now I do. It's easier now to ask for help when I need it."

After the second cycle of research, Erin disclosed that s/he experienced relationships that developed beyond hallway courtesy to conversations and interest in one another's project and practices. By the end of the study, she exclaimed that "Now, I'm excited to hear about their projects what they're working on and they're also like reciprocating that feeling so, we're able to have more professional conversations about you know how our students are doing." Prior to being involved in the professional development, Peyton's involvement with others in the school was described as "isolated." "We grew in trying to be a problem solver for our kids and knowing how we can all together work together you know to solve all of these different problems they were having." Moving outside of the normal circle of teachers on his/her grade level team was said to serve as a reminder that "we are in this together." The qualitative and quantitative summaries of the teacher-researchers' relatedness fulfillment are outlined in Table 14. The action research team became a trusted group that was able to meet the instructional and emotional demands during the experience. It suggests that when teachers are provided with active meaningful learning, job-embedded collaboration and extended time with the same group of individuals, they will experience relatedness when resources, feedback, advice, and emotional support are offered.

Table 14

Qualitative and Quantitative Summaries of Relatedness Fulfillment

Supporting Condition	Qualitative	Quantitative Description
Active meaningful learning	Erin: "knowing that we are all here for the same purpose was a really strong connection for all of us." Erin: "it was nice to be with a group of driven individuals who shared a common goal of finding success for students by using effective classroom strategies." Erin: "It's nice to have conversations that actually support the growth of students and support the practice that we're doing and can help move us forward in making adjustments."	Erin: 7/7 favorably answered questions confirm that Erin "found her colleagues caring, friendly, cooperative, and likable." Taylor: Overall, Taylor strongly feels cared about, close to, able to be him/herself, and that his/her feelings are taken into consideration during the experience. Taylor also experienced cooperation from the people that s/he worked. In question nine, it is evident that Taylor considers the action research team, "friends." and experienced a change over time in relatedness support as understood when s/he initially rated, "I pretty much keep to myself during the professional development experience." as 'strongly agree' but changed it to 'somewhat disagree' on the second survey.
Structured job-embedded collaboration	Erin: "tap into everyone's full capacity. Taylor: "I changed the way I see my peers by coming to know they have many strengths." Taylor: "They have both given me great examples on what I can use to help them generate questions and resources I can consult to help guide me." Erin: "Collaborating with other teachers was the best part, cause then I had an idea, and it worked" and " This meeting was nice to hear from other teachers and feel validated in my attempt at trying something new." Taylor: "feelings of encouragement" Taylor: "And just the emotional piece of being able to have someone to talk to when you get frustrated because you think something isn't going right or to celebrate. I was at a point where I was ready to say, okay I'm lost, I'm done (but a teammate kept him/her from quitting)." Erin: "Good thought partners" Taylor: "The group was my family or little pocket group.	

Finding 3: The phases of the collaborative action research process and job-embedded collaboration may contribute to knowledge when resources, ideas, and feedback are shared.

Action researchers appear to have gained knowledge as they completed each phase of the collaborative action research cycle. Hayden describes his/her experience with the process by asserting, "I felt so interested and engaged by it as a teacher. Kind of sparks your mind as a teacher." The phases of action research used in the study are 1) assess 2) plan 3) act and reflect 4) share. These reflective steps seem to have contributed to types of knowledge that participants lacked prior to the study. During phase one, assess, student work, assessments and informal observations were used to help researchers become knowledgeable of students' skills to determine the focus of the research study. Each researcher was able to articulate their knowledge of students' skill gaps and how they might address them through the study. The variability in students' reading levels was Hayden's motivation for joining the study. Students' in his/her classroom represented reading levels that were two grade levels above, to slightly below grade level, while others were two full academic years below grade level standards, and still striving towards mastery of the alphabet and sounds. Hayden explains,

> When I was going into it, I was like oh my gosh, I have this problem where I have kids reading at a third grade level. I have kids that don't know their letters and I don't know how to help them. I felt like, hopeless that I didn't know if I was a competent enough teacher to help them. I didn't know how to help at all. I felt that action research would help me figure out what I needed to do for my next steps.

Erin reflects that s/he too had an existing problem in the classroom and did not know how to approach it until being introduced to action research.

All participants lacked knowledge in the research topic that they selected. During planning, the second phase, teacher-researchers gained knowledge of their topic through the literature review. Peyton described this phase as a "huge benefit" because s/he knew what the problem was with students, but did not know "how to go about gathering research or exactly where to start." The literature review also increased Hayden's knowledge of differentiation. Hayden confirms new learning through the statement, "It helped me define what I was even researching because I can say 'differentiating' and kind of know what it means, but I learned why and how. It helped me think deeper about it." Prior to this professional development experience, Taylor found him/herself utilizing lower level of Bloom's questions with students because s/he lacked the pedagogical knowledge needed to assist his/her students with writing higher-level research questions. S/he gained knowledge of Bloom's Questions during job-embedded collaboration with the instructional coach who provided Taylor with resources in the form of articles to build instructional knowledge. When asked on the survey, "How much are you able to get the instructional materials and equipment you need?" Taylor initially answered, "a moderate amount" but changed it to "a lot" on the second survey because Taylor now knows how to access research materials to gain the knowledge that s/he needs.

In the third and fourth phases, teacher-researchers potentially gained pedagogical knowledge through the sharing of ideas and feedback during job-embedded collaboration. When Taylor solicited feedback from the action research team, they readily provided feedback and ideas about data collection, and making data visible to students. Taylor states, "I feel like I have a better grip on assessment more now than I ever had." The team also provided knowledge in the form of new ideas, as seen in the last phase of the first research cycle. The research team suggested that Taylor begin the second cycle by using "I wonder" statements, an idea which

Taylor had not considered before. Taylor remarks, "They have given me great examples on what I can use to help them generate questions and resources I can consult to help guide me." As a result of this experience, Taylor stated the s/he has "made gains." Taylor is now able to identify the types of questions that students write and can use data to monitor their progress. Hayden also grew in pedagogical knowledge during structured, job-embedded collaboration. Through journal entries, we learn that when Hayden solicited feedback from the action research team, they provided knowledge in the form of ideas about interventions. "Everyone in the process was helpful and gave great ideas. One of the action research team members challenged me and pushed me on my thinking, providing me with how to teach sight words in different ways." Throughout the process, Peyton collaborated with other researchers, saying that they were "helpful in ideas on how to implement specifics, things that I am not good at, specifically how this was going to work" Peyton remarked that "After speaking with her (Hayden) about how she's kind of going about it through her route that help me figure out how I can go about with testing it since we were both on the same topic, about differentiation in the classroom. We were both looking at two different aspects of it, but just getting that feedback, like here's how I'm doing it, that helped me be like, kind of be a little more clear of how I can go about it, even though it's two different aspects of it". Peyton reports that, "The other teacher she always had really good resources to give me like if I was getting stumped on how to make it more efficient, she always had good resources to give me." Although Taylor does not feel that s/he has mastered getting students to write research questions using higher level Blooms, she does feel that s/he has "made gains" as a teacher. S/he is now able to identify the types of questions that students write and can use data to monitor their progress. "The progress I have made personally is rewarding. I feel like I have a better grip on data assessment more now than I ever had." The qualitative data

displaying an increase in the teacher-researchers' knowledge during each phase of action

research is summarized in Table 15.

Table 15

Steps of Action Research and Qualitative data for increase in knowledge

Phase of action research	Description of phase	Qualitative data
Phase 1: Assess	Gather various forms of contextual data representative of the complexity of their students' learning and perspectives	Student work, assessments and informal observations were used to help researchers become knowledgeable of students' skills to determine the focus of the research study. Each researcher was able to articulate their knowledge of students' skill gaps and how they might address them through the study.
Phase 2: Plan	Use research to identify an intervention and write a plan.	Hayden: "It helped me define what I was even researching because I can say 'differentiating' and kind of know what it means, but I learned why and how. It helped me think deeper about it." Taylor: Gained knowledge of Bloom's Questions during job-embedded collaboration with the instructional coach who provided Taylor with resources in the form of articles to build instructional knowledge. Taylor: When asked on the survey, "How much are you able to get the instructional materials and equipment you need?" Taylor initially answered, "a moderate amount" but changed it to "a lot" on the second survey because Taylor now knows how to access research materials to gain the knowledge that s/he needs.

| Phase 3: Act and Reflect | Implement the plan with students in their classroom. Collect various forms of data as the intervention takes place, recording the data systematically. | Taylor: "I feel like I have a better grip on assessment more now than I ever had."

Taylor: The research team suggested that Taylor begin the second cycle by using "I wonder" statements, an idea which Taylor had not considered before. Taylor remarks, "They have given me great examples on what I can use to help them generate questions and resources I can consult to help guide me."

Peyton: They were "helpful in ideas on how to implement specifics, things that I am not good at, specifically how this was going to work."

Peyton: "After speaking with her (Hayden) about how she's kind of going about it through her route that help me figure out how I can go about with testing it since we were both on the same topic, about differentiation in the classroom. We were both looking at two different aspects of it, but just getting that feedback, like here's how I'm doing it, that helped me be like, kind of be a little more clear of how I can go about it, even though it's two different aspects of it."

Peyton reports that, "The other teacher she always had really good resources to give me like if I was getting stumped on how to make it more efficient, she always had good resources to give me." |

Phase 4: Share	Organize the data collected during the implementation phase. The data is presented to their peers for feedback using a structured protocol.	Hayden: "Everyone in the process was helpful and gave great ideas. One of the action research team members challenged me and pushed me on my thinking, providing me with how to teach sight words in different ways."
		Taylor: The research team suggested that Taylor begin the second cycle by using "I wonder" statements, an idea which Taylor had not considered before.
		Taylor stated the s/he has "made gains." Taylor is now able to identify the types of questions that students write and can use data to monitor their progress.

By participating in a structured reflective process, Taylor became a reflective educator. Through knowledge of these reflective steps, Taylor became aware of his/her beliefs about students, a type of educational knowledge. S/he began to consider the consequence of his/her low expectations on students and the outcome of instructional decisions on learning. In the journal entry, Taylor wrote,

> I've learned that the students will perform if they believe that you believe in them. I've learned that I was an enabler with my students because, in the past, I allowed them a pass when they felt they couldn't do the work. I now know that I was not the teacher they needed me to be.

Erin contributes that "the process also allowed me to reflect on my own practices and it was helpful to see what changes and to make modifications, like my own practice". Hayden became reflective by paying closer attention to if s/he had a fixed or growth mindset. S/he voiced that,

> The whole process has helped me increase my growth mindset not only for myself, but my students. I have seen how they have grown, but I have seen probably more of how much I have grown as a teacher and it's helped me to improve in a lot of aspects.

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Action research, a structured reflective process, gave the teacher-researchers knowledge of how to solve a problem of practice. Taylor described the steps of the action research process as a "new tool" and "like a switch has been turned on in my way of thinking. I now have a new tool that will help me stay on top of my professional growth."

As Taylor completed the phases of action research, s/he began to see the work differently.

I kind of see my work a little bit different and how I can go about it like if I'm noticing that there is a problem that is arising, we're getting stuck in a rut somewhere, now I know that my mind is just quickly going to shift to okay, I need to start collecting data to find out what's going on, and then I need to find out how we're gonna fix it.

During the focus group interview, Hayden expressed similar views about how action research has contributed to new learning, by stating "I feel like because of this process I can look at the problem and figure out how to fix it or how to help my kids where they need it most." S/he adds,

This action research process has given me a foundation for how to be specific in what I can do to differentiate for each student. It has given me a plan or where I should start and how to implement practices. I know that with action research that I can identify the problem and the purpose of the action research. I can research information and find what will benefit my students most. I can find ways to implement differentiation and consistently take data to see how my students are growing. I feel that I have learned a lot in how to do action research, and I feel that I now will be able to implement not only for one subject but plan for all subjects.

As the teacher researchers shared feedback about how the steps of action research increased their knowledge, we learn from Erin that s/he acquired knowledge of their students' needs, how to

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research and address the problem. Erin shares, "It was really helpful, the whole process, knowing specifically what I needed in my classroom and how to identify specifically, how to research specifically, and then implementing it." Erin further commented,

> This process gave me a set of tools that I can now take with me and continue to do. We don't have to, you know do this with a group. This is a tool that we now have that we can do without it being facilitated. If we don't have this group next semester, that's not to say that I won't still be doing this work because I do find it important and I do find it motivating to see how I can improve my practice as a teacher.

Peyton had a similar experience and feels that the skills that s/he has gained prepare him/her to conduct research independently.

> I can actually carry on next year even though I'll be teaching another grade level. Next year we can you know as soon as we see that problem at the very beginning of the year we can start researching immediately and figure out how we can help our kids out. I know how to go about the problem. I'm really excited and I'm going to continue. Right off the bat. I can start from day one or two saying okay where are they at? Where are they struggling? What can I do to get them out of this rut?

Table 16 provides examples of each teacher-researchers' increase in knowledge.

Table 16

Teacher-Researchers' Increase in Knowledge

Researcher	Increase in knowledge
Taylor	"I've learned that the students will perform if they believe that you believe in them. I've learned that I was an enabler with my students because, in the past, I allowed them a pass when they felt they couldn't do the work. I now know that I was not the teacher they needed me to be."

	"new tool" and "like a switch has been turned on in my way of thinking. I now have a new tool that will help me stay on top of my professional growth."

"I kind of see my work a little bit different and how I can go about it like if I'm noticing that there is a problem that is arising, we're getting stuck in a rut somewhere, now I know that my mind is just quickly going to shift to okay, I need to start collecting data to find out what's going on, and then I need to find out how we're gonna fix it." |
| Peyton | "I can actually carry on next year even though I'll be teaching another grade level. Next year we can you know as soon as we see that problem at the very beginning of the year we can start researching immediately and figure out how we can help our kids out. I know how to go about the problem. I'm really excited and I'm going to continue. Right off the bat. I can start from day one or two saying okay where are they at? Where are they struggling? What can I do to get them out of this rut?" |
| Erin | "The process also allowed me to reflect on my own practices and it was helpful to see what changes and to make modifications, like my own practice."

"It was really helpful, the whole process, knowing specifically what I needed in my classroom and how to identify specifically, how to research specifically, and then implementing it."

"This process gave me a set of tools that I can now take with me and continue to do. We don't have to, you know do this with a group. This is a tool that we now have that we can do without it being facilitated. If we don't have this group next semester, that's not to say that I won't still be doing this work because I do find it important and I do find it motivating to see how I can improve my practice as a teacher." |
| Hayden | "The whole process has helped me increase my growth mindset not only for myself, but my students. I have seen how they have grown, but I have seen probably more of how much I have |

grown as a teacher and it's helped me to improve in a lot of aspects."

"I feel like because of this process I can look at the problem and figure out how to fix it or how to help my kids where they need it most." S/he adds, "This action research process has given me a foundation for how to be specific in what I can do to differentiate for each student. It has given me a plan or where I should start and how to implement practices. I know that with action research that I can identify the problem and the purpose of the action research. I can research information and find what will benefit my students most. I can find ways to implement differentiation and consistently take data to see how my students are growing. I feel that I have learned a lot in how to do action research, and I feel that I now will be able to implement not only for one subject but plan for all subjects."

CHAPTER 8:

DISCUSSION, IMPLICATIONS, AND SUGGESTIONS FOR FUTURE RESEARCH

The purpose of the study was to determine how the additions of structured collaboration, expert coaching, and extended learning time to the action research professional development model work both individually as well as collectively to support teachers' psychological needs? The second question under inquiry was how do the social and contextual conditions of structured collaboration, expert coaching and extended learning time during the action research professional development model shape teacher efficacy and knowledge? Using a multi-case design, I explored the connections that might support the basic psychological needs of teachers during action research. The present study used journal entries, interviews, observations and surveys to assess teachers' experience during professional learning that allowed for the identification of concrete examples of how need fulfillment may occur during collaborative action research.

In examining the characteristics of effective professional development models, structured embedded collaboration, active meaningful learning, extended time and teacher-led decisions were key factors identified to have been possible sources of need satisfaction during professional development. The study demonstrates potential links between teacher-led professional development, active meaningful learning, data-based decision making, job-embedded collaboration and autonomy; job-embedded collaboration, active meaningful learning and extended time and relatedness; and the collaborative action research process and job-embedded collaboration and knowledge. The addition of an expert coach to action research seems to have had a minimal effect on teachers' psychological needs in the context of action research. Conditions that provide for competence support and efficacy also require additional studies.

This study applied an understanding of basic psychological needs to redesign collaborative action research to support conditions needed for learning. Self-determination theory is used as a theoretical lens for this work because support for teachers' basic needs of competence, autonomy and relatedness is an important aspect of human development and growth. These basic needs must be nurtured through the social and contextual setting. Studies have determined that the satisfaction of basic psychological needs is a mediator between social contexts and performance outcomes (Deci & Ryan, 2012). Deci and Ryan (2002) pose that engagement, mastery, and synthesis are present to the degree that the social context supports need fulfillment. Therefore, it is necessary that professional development settings provide for basic psychological needs in order for teachers to have mastery experiences in the classroom.

The basic tenants of self-determination theory refer to environments either supporting or thwarting basic psychological needs of autonomy, relatedness and competence. Autonomy is an individual's need to be independent by experiencing control through choice and interest. When a context is supportive of relatedness, individuals make connections and develop meaningful relationships as they experience care and acceptance. When an environment supports competence, one feels capable and confident in their environment when presented with challenging situations. As predicted, action research is an autonomous supportive framework that places teachers in charge of their learning through interest and choice. Active meaningful learning and data-based decision making were contributors to sustaining an autonomous learning environment. Job-embedded collaboration, active meaningful learning and extended time and relatedness; and the collaborative action research process and job-embedded collaboration and knowledge may also be connected. Due to prior research finding that teachers learn best in collaborative models of professional development, it was hypothesized that structured

collaboration between the teachers and their colleagues during various phases of the action research process would support relatedness. This hypothesis was confirmed. Structured collaboration was predicted to allow equity of voice, and direct and immediate feedback, enabling the practitioner to remain engaged in the process, resulting in knowledge and competence. The model is revised to summarize the findings about support for basic psychological needs in professional development, specifically, collaborative action research.

| Components | Mediating Conditions | Short-term Outcomes |
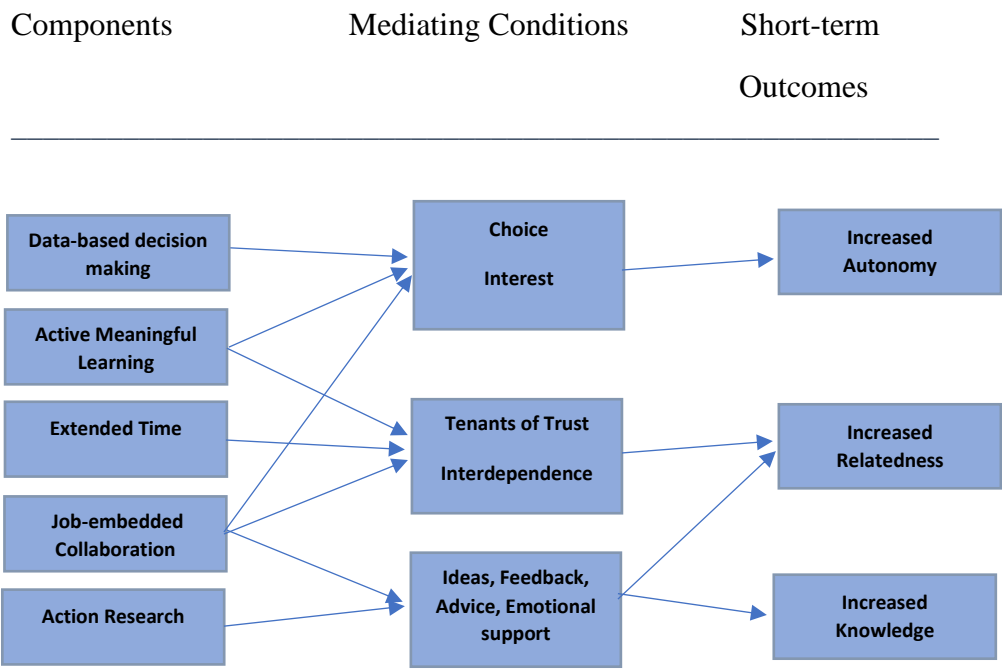
Figure 2. Revised Collaborative Action Research Model. This demonstrates a revised theoretical model.

The results of this study suggest that teacher-led professional development, supported by conditions of active meaningful learning, data-based decision making, job-embedded collaboration may enhance autonomy. As upheld by the original hypothesis, during phase one, the teacher researcher was provided with a sense of choice and ownership when allowed to select a problem of practice of significance, placing the teacher in charge of their learning from the beginning and developing a sense of autonomy. As the investigator, the teacher willingly acted to

resolve a matter of importance to them, providing them with autonomy. The teacher-researcher was also able to select various forms of contextual data representative of the complexity of their students' learning and perspectives. When teachers are provided with socio-contextual conditions which support interest and choice, their need for autonomy was satisfied (Patall et al., 2008). Teacher researchers from this study were perceived to be autonomous when evidence indicates that they were provided with choice and responded of their own volition out of personal interest (Deci & Ryan, 2002). Each of the teacher researchers were given a choice to join the professional development study and joined with a personal goal in mind that was directly related to themselves or their students. When teachers are provided with socio-contextual conditions which support interest and choice, their need for autonomy can be satisfied (Patall et al., 2008). Choice is also an autonomous supportive attribute because teachers perceive an internal locus of causality. The provision of choice to the teacher researcher will not only enhance intrinsic motivation, it will facilitate internalization because satisfaction of autonomy.

Carver and Baird (1998) found that individuals are acting autonomously when pursuing intrinsic goals. Research supports that intrinsic goals related to growth have a direct correlation with basic psychological need satisfaction (Deci & Ryan, 2002). In this study, teachers' intrinsic goals for growth may have led to autonomous support. When teachers act with interest, their motivation is internal; in other words, a manifestation of autonomous motivation. By allowing teachers the opportunity to make decisions about goals, interventions, data-based decision making, selecting a research team and the frequency with which they met with their team nurtured teachers' basic psychological need for autonomy. Prior research that supports this finding states that it is crucial that teachers are provided with the opportunity to plan their professional development, (Desimone, Porter, Birman, Garet, & Yoon, 2002b). By the end of the

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study, the results of all teacher researchers' survey revealed that they "agreed" that "I feel like I can make a lot of inputs to determine my own needs in this professional development experience." and "When I am with my action research team, I have a say in what happens, and I can voice my opinion."

Job-embedded collaboration, active meaningful learning and extended time and relatedness may also be linked. The collaborative action research team assisted with framing data collection and analysis; encouraged exploration by collaborating with the teacher as new data emerges during the process; and challenged when needed. The researcher's ability to select their action research team created a trusting environment, serving as a mediator for relatedness. When the problem of practice was presented to the research team, each of the participants had to have some level of trust in their action research team's level of competence to help him/her with the problem. The teacher researchers relied on their team to provide honest feedback through structured protocols. The consistent positive exchanges of feedback which yielded favorable outcomes in the classroom, developed a sense of trust leading to relatedness among teams. Zepeda (1999) identifies "four essential conditions of job-embedded professional development:

1) Learning needs to be consistent with the principles of adult learning

2) Trust in the process, in colleagues, and in the learner him-/herself

3) Time within the regular school day needs to be made available for learning

4) Sufficient resources must be available to support learning." (p. 144)

The collaborative action research model in this study fulfilled all four essential components, namely trust in colleagues.

The teacher-researchers trusted the individuals on their team to give, encouragement, advice, feedback and ideas over the course of the project. Zepeda (2008) states that teachers are

more willing to take risks and share strategies in cultures of collaboration. The sharing of data, ideas, advice and feedback during structured job-embedded collaboration cultivated the social context needed as an incubator for relatedness support (Deci and Ryan, 2012).

The use of protocols during job-embedded collaboration may led to feelings of interdependence, as a mediating factor for relatedness. In agreement with Guskey (2003), just as teachers work to enhance one another's progress, they can also impede one another's learning. Therefore, for teachers to receive the benefits of collaboration, it too must be structured. The most successful teams offer teachers structured consultation for problem-solving (Burns & Symington, 2002; Graden, Casey, & Christenson, 1985). In this study, protocols provided an opportunity for each member of the action research team to give advice or feedback to the researcher. Each member of the action research team assisted the teacher-researcher by using structured protocols to provide an outsider's view of their data, encouraging them to formulate theories and interventions based on their context. Through structured protocols, the collaborative research teams asked questions of the researcher that may have been missed because they are too close to their teaching to be skeptical or critical of their work (Adler et al., 2005). The work among teams in this model is likened unto Lankau and Scandura's (2002) study on job-embedded learning through mentorship. Collaboration using protocols may have led to feelings of interdependence when teacher researchers begin to learn of their team's individual strengths. Utilizing each person's individual strengths in a problem-solving setting, enhanced conditions needed for relatedness support. Teachers reported feeling that they were "all in this together".

The last finding in the study is that job-embedded collaboration may lead to knowledge. Taking place within the context of the teacher's classroom during the day, collaborative action research is itself, a form of job-embedded collaboration. The action research model facilitates

new knowledge as researchers move through each phase of the process. The teachers in this study used data to gain knowledge of their classroom, conducted a literature review to learn of appropriate interventions and obtained new ideas through collaboration. As confirmed in prior research, teacher researchers assessed their classroom, and explored what works through experimentation and conversation, leading the construction of new knowledge (Zepeda, 2008).

Although adults do learn independently, the most effective forms of professional development designs take place in collaborative environments where working towards a common goal brings about authentic change (Zepeda, 2008). An authentic change may have taken place in researchers' individual construction of meaning and knowledge (Kinnucan-Welsch & Jenlink, 1998) through a collaborative environment. During this process, teachers learned from the professional knowledge of their colleagues (Wei et al., 2009) by discussing dilemmas, sharing resources, instructional strategies and solutions (Garet, 2001). The finding of this research supports that structured job-embedded collaboration may help to develop new knowledge in teacher researchers when they had access to resources such as "advice, instructional materials, social support, knowledge, or information" (Moolenaar, Sleegers, & Daly, 2012, p.252).

Collaborative action research and protocols used for feedback meet the qualifications of a job-embedded context which includes: a) it is relevant to the individual teacher, (b) feedback is built into the process, and (c) it facilitates the transfer of new skills into practice." (Zepeda, 2008, p. 143). Through the combination of structured collaboration with the action research, individual teacher researchers received feedback through a professional development model that allowed them to transfer the skills into the context of their classroom. Collaborative action research also provided a context for problem solving, which Zepeda (2008) believes results in new strategies

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and knowledge. This may have led to transformational learning as teacher researcher becoming a reflective problems solver. "Baumgartner (2001) explains that transformational learning differs from informational learning in that it concerns "how" we learn, not "what" we learn (p. 16).

Implications for Policy and Practice and Suggestions for Future Research

Research about the conditions necessary to spur teacher learning can bring about a better understanding of the most conducive professional development designs (Cobb, McCain, de Silva Lamberg, & Dean, 2003). Further research is needed to study the extent to which more recent reform models provide the conditions that nurture teachers' basic psychological needs, and that provide concomitant growth in knowledge as a result. Interdependence and trust, which surfaced as mediating factors for relatedness support, are likely found in reform models such as peer coaching. Instructional coaches who are not always available to schools due to funding, might be supplemented with peer coaches who are in schools daily. Peer coaches, equivalent to the action research team in the study might serve as relatedness support when they provide teachers with encouragement, and guidance (Zepeda, 2008). Future studies might determine how peer coaching roles might provide conditions for teachers' psychological need development.

Even through researchers participated in the same professional development experience, there was variation in their levels of need satisfaction. Personal factors such as emotional regulation, prior beliefs, sense of efficacy and knowledge growth regulation may have played a role in these outcomes. Future studies may explore how and if data-driven decision making may be mediating condition for emotional regulation leading to an increase in one of the tenants of basic psychological needs.

Contextual factors such as the school's microculture and principal as manager of the school workload may also have indirectly influenced the study. Research identifies school

leaders as agents of change and worthy as a unit of analysis (Bredeson, 2002; Hallinger and Heck, 1996; Leithwood and Jantzi, 2008) because principals have control of the form and function of professional development. The work of preparing school leaders should not be left to the State alone. States could partner with universities to further studies on teacher experiences with professional development and need satisfaction. Undoubtedly, additional studies on teacher experiences during reform models of professional development are needed to inform the research that influences educational leadership preparation programs. School leaders should graduate with knowledge of how professional development designs work for the benefit of their teachers and students. Future studies may consider how personal and contextual factors effect teachers' psychological need fulfillment.

The teachers in this study experienced autonomy fulfillment by making decisions that were guided by interest and choice. Autonomous motivation is a predictor of engagement and performance (Deci & Ryan, 2012). Teachers also responded favorably to the addition of structured job-embedded collaboration indicating that it may have been a condition for relatedness and knowledge. Studies show that relatedness within immediate social contexts will affect a person's development and functioning (Deci & Ryan, 2012). To promote high quality experiences that lead to improved student outcomes, policies that shape professional development should identify learning models that include key operational characteristics of effective professional development and consider how teachers and administrators will be supported in creating the necessary conditions.

Promoting the professional growth and development of teachers is a critical role for school administrators. Even though states may mandate policies that guide professional development, it is school administrators who create the conditions needed for these designs to

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cultivate autonomy, competence, relatedness and knowledge. Principals need to become familiar

with the purposes of specific designs as well as the adjustments to designs that can promote

better teacher learning (Wayne, Yoon, Zhu, Cronen, & Garet, 2008). The National Staff

Development Council (2008) has classified reform models into fourteen purposes:

1. Gathering and using information

2. Likely to use outside resources

3. Creates a learning community

4. Focuses on standards, curriculum and assessment

5. Focuses on Practice and pedagogy

6. Useful for looking at classrooms

7. Focuses on whole school

8. Promotes reflection

9. Looks at student work or involves students

10. School improvement efforts

11. Addresses specific problems and solutions

12. Results in a concrete product

13. Are experiential

14. Involves modeling

School administrators should consider which designs connect well together to serve the

purpose yet create conditions for need satisfaction. The ability of the principal to understand and

apply conditional factors will determine, largely, the success of learning opportunities (Burden,

1982b), therefore states should also meet the professional development needs of school

administrators. This is a monumental undertaking that requires the support of districts and states.

Colorado, Missouri, New Jersey, and Vermont have developed effective policies that support high levels of professional development for teachers and administrators yielding student outcomes that are above the national average on the NAEP. These states have found leadership to be one of four factors that determine the effectiveness of professional development policies. Similar to the findings in this study, school-based collaborative teams are key. These teams create momentum for increasing teacher capacity. For a closer reaching effect, school and district teams should then be supported by regional partnerships providing collaboration, monitoring and accountability in a way that the state department cannot. "Regional organizational bodies of support often act as a sense-making filter that links state goals with those charged with carrying them out and offer expertise, coordination, coaching and other supports" (JaQuith et al., 2011, p. 37).

When this type of infrastructures is in place, teachers and school leaders might learn about variable designs that are versatile, and can be used singularly or collectively to support basic psychological need development. When teachers' basic psychological needs for competence, autonomy, and relatedness are nurtured during the learning process, they are more likely to learn more and feel better about their teaching (efficacy).

Limitations

Case studies use theoretical assumptions to provide detailed contextual information of an activity or experience (Stake, 2006). As with all case studies, it is difficult to determine a cause and effect relationship. The small sample size selected for this case study also makes it ungeneralizable, but the cases provide a vicarious experience for readers who might transfer these findings or evidence to other cases (Stake, 2006).

Furthermore, due to positionality of the researcher as the participants' supervisor, the researcher's stance was restricted to that of an outsider. Therefore, only a limited amount of direct observations were able to be made by the instructional coach who was a co-researcher in the study. Also, the anonymity of the teacher-researchers limited the ways in which knowing the participants might have provided additional insights into the experiences they reported having.

Coaches can provide many different types of coaching such as technical coaching, collegial coaching, and challenge coaching (Garmston, 1987). Coaches assist with setting goals, encouraging action, acting as a sounding board, and giving feedback (Poe, 2000). The initial hypothesis was that when timely and appropriate resources are provided to the teacher-researcher through expert coaching and follow up, it provides for competence. The instructional coach in this study assisted with action research training, individual and group guidance on research topics, providing resources for literature review and giving feedback during structured collaboration time. Neither instructional coach in the case study had prior experience or formal training for the instructional coach position. Studies confirm that it is common among instructional coaches to lack the training necessary to clearly define their role as they train and support adult learners (Lord, Cress, & Miller, 2008; Marsh et al., 2008; Marsh, McCombs, & Martorell, 2009). Research to determine how instructional coaches should be trained prior to leading professional learning is still needed (Marsh et al., 2008).

Given that competence need fulfillment ranged from low to medium for the sample, it is possible that the instructional coach did not have the skills necessary or did not focus on the type of coaching that led to teacher-researchers feeling competent. The instructional coach was often selected to be on the teacher's action research team making it difficult to determine the ways in which the instructional coach made a direct contribution to the teachers' competence. Although

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journal entries and focus group interviews provided some details on the researchers' experienced competence, it is unclear how the instructional coach might have influenced competence.

Some studies suggest that the duration of professional development is also related to the depth of teacher change (Shields, Marsh, & Adelman, 1998). Little (1988) found that when professional development is conducted regularly and for extended periods of time, it ensures that teachers can make progressive gains in knowledge. Further studies confirm that professional learning should be ongoing and continue over long periods of time (at least 30 hours) (Desimore, 2009; Wei, Darling-Hammond, & Adamson, 2010). Teachers' knowledge also develops over the course of years as they participate in professional development (Adler et al. 2005). A limitation in this study is that the action research project took place over the course of 18 weeks for one to two hours of job-embedded collaboration and training. The limited duration of the study may have affected the degree to which teachers were able to experience need fulfillment.

Conclusion

The challenge presented to schools, districts and states is the development of high-quality professional development which challenges teachers' current pedagogical principles, knowledge and skills so that those skills are translated into daily lessons that positively effect student outcomes. The importance of finding the keys to unlock teacher knowledge cannot be understated. This case study investigates an understudied aspect of teacher professional development which is the relationship of theories of learning and motivation so that more effective professional development models might be developed (Nasser & Sabti, 2010). Structured collaboration, expert coaching, and extended learning time were added to the collaborative action research model to determine how they worked to support teachers' basic

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psychological needs. The same factors were used to determine how these social and contextual factors shape efficacy and knowledge.

This study supplies potential solutions to passive, disjointed professional development models. This professional development uses the reform model, action research, to take an active stance to learning through adding structured embedded collaboration, expert coaching and extended time. The results of this multi-case study makes a contribution to future self-determination theory studies and professional development models. Based on qualitative and quantitative analysis, the findings of the study show potential links between teacher-led professional development, active meaningful learning, data-based decision making, job-embedded collaboration and autonomy; job-embedded collaboration, active meaningful learning and extended time and relatedness; and the collaborative action research process and job-embedded collaboration and knowledge.

References

Ainscow, M., Booth, T., & Dyson, A. (2003). Understanding and developing inclusive practices in schools: A collaborative action research network. *International Journal of Inclusive Education*. *8*(2), 125-139.

Aguilar, E. (2013). *The art of coaching: Effective strategies for school transformation*. San Francisco, CA: Jossey-Bass.

Akiba, M., LeTendre, G. K., & Scribner, J. P. (2007). Teacher quality, opportunity gap, and national achievement in 46 countries. *Educational Researcher*, *36*(7), 369-387.

Anderson, R. D. (2002). Reforming science teaching: What research says about inquiry. *Journal of Science Teacher Education*, 13(1), 1–12.

Anderson, Gary & Herr, Kathryn & Nihlen, Ann. (2007). Studying your own school: An educator's guide to practitioner action research, Second Edition. Corwin Press.

Antoniou, P., & Kyriakides, L. (2013). A dynamic integrated approach to teacher professional development: Impact and sustainability of the effects on improving teacher behavior and student outcomes. *Teaching* and Teacher Education, 29, 1–12.

Ashton, P. T., & Webb, R. B. (1986). *Making a difference: Teachers' sense of efficacy and student achievement*. New York, NY: Longman.

Avalos, B. (2011). Teacher professional development in teaching and teacher education over ten years. *Teaching and Teacher Education, 27*(2011), 10-20.

Ball, D. L. (1996). Teacher learning and the mathematics reforms: What do we think we know and what do we need to learn? *Phi Delta Kappan*, *77*, 500-508.

Bandura, A. (1977). Self-efficacy. Toward a unifying theory of behavioral change. *Psychological Review*, *84*, 191-215.

Bandura, A. (1997). *Self-efficacy. The exercise of control*. New York: W. H. Freeman & Company.

Banilower, E. R., Heck, D. J., & Weiss, I. R. (2007). Can professional development make the vision of the standards a reality? The impact of the National Science Foundation's Local Systemic Change Through Teacher Enhancement Initiative. *Journal of Research in Science Teaching*, 44(3), 375–395.

Billett, S. (2006). Relational interdependence between social and individual agency in work and working life. *Mind, Culture, and Activity*, *13*(1), 56-57.

Bryk, A. S., Gomez, L. M., & Grunow, A. (2010). Getting ideas into action: building networked improvement communities in education. *Carnegie Foundation for the Advancement of Teaching*.

Burns, M. K., & Symington, T. (2002). A meta-analysis of prereferral intervention teams: Student and systemic outcomes. *Journal of School Psychology*, *40*(5), 437-447.

Carpenter, T. P., Fennema, E., & Franke, M. L. (1996). Cognitively guided instruction: A knowledge base for reform in primary mathematics instruction. *The Elementary School Journal*, *97*(1), 3-20.

Carr, W., & Kemmis, S. (1986). *Becoming critical. Education, knowledge and action research.* London: Falmer.

Carver, C. S., & Baird, E. (1998). The American dream revisited: Is it What you want or why you want it that matters? *Psychological Science, 9*(4), 289–292.

Caprara, G. V., Barbaranelli, C., C. Steca, P. S. (2006). Teacher's self-efficacy beliefs as determinants of job satisfaction and students' academic achievement: a study at the school level. *Journal of School Psychology*, *44*, 473-490.

Carlisle, J.F. and Berebitsky, D., (2011). Literacy coaching as a component of professional Development. *Reading and writing*, 24 (7), 773–800.

Chirkov, V. I., Ryan, R. M., Kim, Y., & Kaplan, U. (2003). Differentiating autonomy from individualism and independence: A self-determination theory perspective on internalization of cultural orientations and well-being. *Journal of Personality and Social Psychology*, 84(1), 97-110.

Cobb, P., McCain, K., de Silva Lamberg, T., & Dean, C. (2003). Situating teachers' instructional practices in the institutional setting of the school and district. *Educational Researcher*, *32*(6), 13-24.

Cohen, D. K., & Hill, H. C. (2001). *Learning policy: When state education reform works*. New Haven, CT: Yale University Press.

Corcoran, T. B., (1995). Helping teachers teach well: Transforming professional development. CPRE policy beliefs. New Brunswick, NJ: *Consortium for Policy Research in Education*, Rutgers University.

Corcoran, T. B., Shields, P. M., & Zucker, A. A. (1998). *The SSIs and professional development for teachers.* Menlo Park, CA: SRI International.

Costa, A.L., & Kallick, B. (1993). Through the lens of a critical friend. *Educational Leadership*, 51(2), 49–51.

Cranton, P. (1996). *Understanding and promoting transformative learning*. San Francisco: Jossey-Bass.

Creswell, J. W. (2014). *A concise introduction to mixed methods research*. Sage Publications.

Creswell, J. (2015). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. New York: Pearson.

Crevola, C., Hill, P., & Fullan, M. (2006). Critical learning instructional path: Assessment for learning in action. *Orbit*, *36*(2), 10-14.

Croft, A., Coggshall, J. G., Dolan, M., & Powers, E. (2010). Job-Embedded professional development: What it is, who is responsible, and how to get it done well. Issue Brief. *National Comprehensive Center for Teacher Quality*.

Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives*, *8*(1), 9-16.

Darling-Hammond, L. (2000). How teacher education matters. *Journal of teacher education*, *51*(3), 166-173.

Darling-Hammond, L. (2006). *Powerful teacher education: Lessons from exemplary programs*. San Francisco, CA: Jossey-Bass Education, Wiley Publishing.

Darling-Hammond, L. (2010). *The flat world and education: How America's commitment to equity will determine our future*. New York: Teachers College Press.

Darling-Hammond, L., & McLaughlin, M. W. (1995). Policies that support professional development in an era of reform. *Phi Delta Kappan*, 76(8), 597; Fullan, M. (1991). The new meaning of educational change, 1st edition. New York City, NY: Teachers College Press.

Darling-Hammond, L. & Sykes, G. (Eds). (1999). *Teaching as the learning profession: Handbook of policy and practice*. Jossey-Bass Education Series.

Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2009). State of the profession: study measures status of professional development. *Journal of Staff Development*, *30*(2), 42.

Darling-Hammond, L., Hyler, M.E., & Gardner, M. (with Espinoza, D.). (2017). *Effective teacher professional development*. Palo Alto, CA: Learning Policy Institute.

Deci, E. L. and Ryan, R. M., (2002) 'The paradox of achievement: The harder you push, the worse it gets'. in J. Aronson (Ed), *Improving academic achievement: Contributions of Social Psychology*, (pp. 59-85). New York: Academic Press.

Deci, E. L., & Ryan, R. M. (2002). Overview of self-determination theory: An organismic dialectical perspective. *Handbook of self-determination research*, 3-33.

Deci, E. L., & Ryan, R. M. (2012). *Motivation, personality, and development within embedded social contexts: An overview of self-determination theory.* In R. M. Ryan (Ed.), *Oxford library of psychology. The Oxford handbook of human motivation* (p. 85–107). Oxford University Press.

Deci, E. L., Koestner, R., & Ryan, R. M. (2001). Extrinsic rewards and intrinsic motivation in education: Reconsidered once again. *Review of Educational Research*, 71, 1–27.

Dellinger, A. B., Bobbett, J. J., Olivier, D. F., & Ellett, C. D. (2008). Measuring teachers' self-efficacy beliefs: Development and use of the TEBS-Self. *Teaching and Teacher Education*, *24*(3), 751-766.

DeNisco, A. (2015). Instructional coaches ease common core transition. *District Administration*, *51*(4), 28.

Denton, C. A., & Hasbrouck, J. A. N. (2009). A description of instructional coaching and its relationship to consultation. *Journal of Educational and Psychological Consultation*, *19*(2), 150-175.

Denzin, N. K., & Lincoln, Y. S. (2005*). Introduction: The discipline and practice of qualitative research*. In N. K. Denzin & Y. S. Lincoln (Eds.), *The handbook of qualitative research* (3rd ed.).1-32. Thousand Oaks, CA.

Desimone, L. M. (2009) Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher, 38*(3), 181-199.

Desimone, L., & Stuckey, D. (2014). *Sustaining professional development*. In. L. Martin, S. Kragler, D. Quatroche, & K. Bauserman (Eds.), *Handbook of professional development in Education*: Successful Models and Practices, Prek-12 (pp. 467-482). New York, NY: Guilford Publications.

Diamond, J. B., Randolph, A., & Spillane, J. P. (2004). Teachers' expectations and sense of responsibility for student learning: the importance of race, class, and organizational habitus. *Anthropology & Education Quarterly*, *35*, 75-98.

Dweck, C. (2006). *Mindset: The new psychology of success*. New York: Random House.

Eccles, Jacquelynne & Wigfield, Allan. (2002). Motivational Beliefs, Values and Goals. *Annual Review of Psychology*. 53. 109-132.

Elliot, A. J. (2005). *A Conceptual History of the Achievement Goal Construct.* In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (p. 52–72). Guilford Publications.

Elliot, A. J., McGregor, H. A., & Thrash, T. M. (2002). *The need for competence.* In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (p. 361–387). University of Rochester Press.

Elmore, R. F. (2007). Let's Act Like Professionals. *Journal of Staff Development*, *28*(3), 31-32.

Elmore, R.F. and Burney, D., 1999. Investing in teacher learning. staff development and instructional improvement. In: L. Darling-Hammond and G. Sykes, eds. *Teaching as the learning profession. handbook of policy and practice*. San Francisco, CA: Jossey-Bass Publishers, 263–291.

Emerson, R. M, Fretz, R.I., & Shaw, L. L. (2011). Writing Ethnographic Fieldnotes (2nd ed.). University of Chicago Press.

Falk, B. (2001). Professional learning through assessment. In A. Lieberman, & L. Miller (Eds.), *Teachers caught in the action: Professional development that matters* (pp. 118-140). New York: Teachers College Press.

Flint, A. S., Zisook, K., & Fisher, T. R. (2011). Not a one-shot deal: Generative professional development among experienced teachers. *Teaching and Teacher Education*, 27(8), 1163–1169.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59–109.

Fullan, M. (1991). *New meaning of educational change*. New York: Teachers College Press.

Fullan, M. (1995). *The limits and the potential of professional development*. In T. R. Guskey & M. Huberman (Eds.), *Professional development in education: New paradigms and practices.* New York: Teachers College Press.

Fullan, M., Hill, P., & Crevola, C. (2006). *Breakthrough*. Thousand Oaks, CA: Corwin.

Gall, M. D., & Renchler, R. S. (1985). *Effective staff development for teachers: A research-based model*. Publication Sales, ERIC Clearinghouse on Educational Management, Center for Advanced Technology in Education, University of Oregon, 1787 Agate Street, Eugene, OR 9740.

Garet, M., Porter, A., Desimone, L., Birman., & Yoon, K., (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, *38*, 915-945.

Geijsel, F., Sleegers, P. J. C., Stoel, R., & Krüger, M. L. (2009). The effect of teacher psychological, school organizational and leadership factors on teachers' professional learning in Dutch schools. *Elementary school journal*, *109*(4), 406-427.

Goddard, R. D., LoGerfo, L., & Hoy, W. K. (2004). High school accountability: the role of perceived collective efficacy. *Educational Policy*, *18*, 403-425.

Gordon, S. P. (2004), *Professional development for school improvement: Empowering learning communities*. Boston: Pearson.

Graden, J. L., Casey, A., & Christenson, S. L. (1985). Implementing a Prereferral Intervention System: Part I. The Model. *Exceptional Children, 51*(5), 377-384.

Guskey, Thomas R. "Rethinking Mastery Learning Reconsidered." Review of Educational Research 57.2 (1987): 225-29. Web.

Guskey, T. R. (2002). Professional development and teacher change. *Teachers and Teaching: Theory and Practice*, *8*(3/4), 381-391.

Guskey, T. R, & Yoon, K. S. (2009). What works in professional development. *Phi Delta Kappan*, *90*(7), 495-500.

Hargreaves, A. (1995). *Development and desire: A postmodern perspective*. In T. R. Guskey, & M. Huberman (Eds.), *Professional development in education: New paradigms and practices* (pp. 9-34). New York: Teachers College Press.

Harter, S. (1978). Effectance motivation reconsidered. Toward a developmental model. *Human development*, *21*(1), 34-64.

Hawley, W. D., & Valli, L. (1999). The essentials of effective professional development: A new consensus. In Darling-Hammond, L. & G. Sykes (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 127–150). San Francisco: Jossey-Bass.

Henry, K. B., Arrow, H., & Carini, B. (1999). A tripartite model of group identification theory and measurement. *Small Research Group, 30*(5)*,* 558-81.

Herr, K., & Anderson, G. (2015). *The Action Research Dissertation: A Guide for Students and Faculty*. (2nd ed.). Thousand Oaks, CA: Sage.

Hiebert, J. (1999). Relationships between research and the NCTM standards. *Journal for research in mathematics education*, 3-19.

Jenlink, P. M. & Kinnuncan-Welsch, K. (2001). Stories of Supporting Constructivist Pedagogy through Community. *Alberta Journal of Educational Research, 47*(4), 294-308.

Johnson, C. C. (2011). The road to culturally relevant science: Exploring how teachers navigate change in pedagogy. *Journal of Research in Science Teaching*, 48(2),170–198.

Johnson, C. C., Bolshakova, V. L. J., & Waldron, T. (2014). When good intentions and reality meet: Large-scale reform of science teaching in urban schools with predominantly hispanic ELL students. *Urban Education*, 49, 1–38.

Johnson, C. C., & Fargo, J. D. (2010). Urban school reform through transformative professional development: Impact on teacher change and student learning of science. *Urban Education*, 45(1), 4–29.

Joyce, B., & Showers, B. (2002). Student achievement through staff development (3rd ed.). Alexandria, VA: *Association for Supervision and Curriculum Development*.

Jurasaite-Harbison, E., & Rex, L. A. (2010). School cultures as contexts for informal teacher learning. *Teaching and Teacher Education*, 26, 267 277.

Kasser, V. G., & Ryan, R. M. (1999). The relation of psychological needs for autonomy and relatedness to vitality, well-being, and mortality in a nursing home. *Journal of Applied Social Psychology, 29*(5), 935–954.

Klassen, R. M., Foster, R. Y., Rajani, S., & Bowman, C. (2009). Teaching in the Yukon: exploring teachers' efficacy beliefs, stress and job satisfaction in a remote setting. *International Journal of Educational Research*, *48*(6), 381-394.

Koellner, K., & Jacobs, J. (2015). Distinguishing models of professional development: The case of an adaptive model's impact on teachers' knowledge, instruction, and student achievement. *Journal of Teacher Education, 66*(1), 51-67.

Kowal, J., & Steiner, L. (2007). Principal as Instructional Leader: Designing a Coaching Program that Fits. *Center for Comprehensive School Reform and Improvement*. Washington, D.C.

Kyndt, E., Gijbels, D., Grosemans, I., & Donche, V. (2016). Teachers' everyday professional development: Mapping informal learning activities, antecedents, and learning outcomes. *Review of Educational Research*, 86.

Labone, E. (2004). Teacher efficacy: Maturing the construct through research in alternative paradigms. *Teaching and Teacher Education*, *20*, 341 – 359.

La Guardia, J. G., Ryan, R. M., Couchman, C. E., & Deci, E. L. (2000). Within-person variation in security of attachment: A self-determination theory perspective on attachment, need fulfillment, and well-being. *Journal of Personality and Social Psychology, 79,* 367-384.

Lankua, M.J. and Scandura, T.A. (2002), an investigation of personal learning in mentoring relationships: content, antecedents, and consequences. *Academy of Management Journal*, Vol. 45 No. 4, pp. 779-90.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* Cambridge, UK: Cambridge University Press.

LeCompte, M. D., & Schensul, J. J. (1999). *Designing and conducting ethnographic research*, Rowman Altamira.

Lee, O., & Luykx, A. (2006). *Science education and student diversity: Synthesis and research agenda*. New York: Cambridge University Press.

Lee, V. E., & Smith, J. B., (1996). Collective responsibility for learning and its effects on gains in achievement for early secondary school students. *American Journal of Education*, *104*, 103-147.

LePage, P., Boudreau, S., Maier, S., Robinson, J., & Cox, H. (2001). Exploring the complexities of the relationship between K-12 and college faculty in a non-traditional professional development program. *Teaching and Teacher Education, 17*(2), 195-211.

Lieberman, A. (1995). Practices that support teacher development: Transforming conceptions of professional learning. *Phi Delta Kappan, 76*, 591-596.

Lieberman, A., & Wood, D. (2001). When teachers write: Of networks and learning. In A. Lieberman & L. Miller (Eds.), *Teachers caught in the action: Professional development that matters* (pp. 174-187). New York: Teachers College Press

Lipowsky, F. (2014). *Theoretical perspectives and empirical evidence on the effectiveness of teachers' professional development and training*. In E. Terhart, H. Bennewitz, & M. Rothland (Eds.), *Handbuch der Forschung zum Lehrerberuf* (2nd ed) 511–541). Münster, Germany: Waxmann.

Little, J. W. (1993). Teachers' professional development in a climate of educational reform, *Educational Evaluation and Policy Analysis*, *15*(2), 129-151.

Little, J. W. (2001). Professional development in pursuit of school reform. Dans A. Lieberman et L. Miller (dir.), *Teachers caught in the action: Professional development that matters* (p. 23-44). New York: Teachers College Press.

Loucks-Horsley, S., Hewson, P. W., Love, N., & Stiles, K. E. (1998). *Designing professional development for teachers of science and mathematics*. Thousand Oaks, CA: Corwin Press.

Loughran, J. J., (2002). Effective reflective practice in search of meaning in learning about teaching. *Journal of Teacher Education, 53*(1), 33-43.

Louis, K. S. (1992). Restructuring and the problem of teachers' work. In A Lieberman (Ed.). *The changing contexts of teaching, 91st yearbook of the national society for the study of education,* 1.(1)138-156. Chicago, IL.

Luna, C., Botelho, J., Fontaine, D., French, K., Iverson, K., & Matos, N. (2004). Making the road by walking and talking: critical literacy and/as professional development in a teacher inquiry group. *Teacher Education Quarterly, 32*(1), 67-80.

Maddux, J. E. (1999). Self-Efficacy theory. An introduction. In J. E. Muddux (Ed.), *Self-efficacy, adaptation, and adjustment: Theory, research, and application*. New York: Plenum Press.

Mckinney, M., Sexton, T., & Meyerson, M. (1999). Validating the Efficacy-Based Change Model. Teaching and Teacher Education, 15(5), 471-485.

Moolenaar, N. M., Sleegers, P. J., & Daly, A. J. (2012). Teaming up: Linking collaboration networks, collective efficacy, and student achievement. *Teaching and Teacher Education*, *28*(2), 251-262.

Morrell, E. (2004). Legitimate peripheral participation as professional development: lessons from a summer research seminar. *Teacher Education Quarterly, 32*(1), 89-99.

Mostert, M. P. (1998). *Interprofessional collaboration in schools*. Boston, MA: Allyn and Bacon.

Mtwetwa, K. J. & Thompson, J. (2000) Towards decentralized and more school-focused teacher preparation and professional development in Zimbabwe: the role of mentoring. *Journal of In-Service Education, 26*(2), 311-328.

Murphy, L. (2005). Transformational leadership: a cascading chain reaction. *Journal of nursing management*, *13*(2), 128-136.

Nasser, F., & Shabti, A. (2010). Satisfaction with professional development: Relationship to teacher and professional development program characteristics. *Procedia-Social and Behavioral Sciences*, *2*(2), 2739-2743.

National Staff Development Council. (2010). NSDC's definition of professional development.

Neufeld, B. & Roper, D. (2003). *Coaching: A strategy for developing instructional capacity—Promises & practicalities* Washington, DC: Aspen Institute Program on Education and the Annenberg Institute for School Reform.

Nir, A.E. and R. Bogler (2008), "The antecedents of teacher satisfaction with professional development programs", *Teaching and Teacher Education*, Vol. 24(2), pp. 377-386.

Noffke, S. E. & Stevenson, R. B. (Eds.). (1995). *Educational action research: Becoming practically critical*. New York: Teachers College Press.

Oja, S. N., & Pine, G. J. (1987). Collaborative Action Research: Teachers' Stages of Development and School Contexts. *Peabody Journal of Education, 64*(2), 96-115.

Orland-Barak, I., & Becher, A. (2011). Cycles of action through systems of activity: examining an action research model through the lens of activity theory. *Mind, Culture, and Activity*, *18*, 115-128.

O'Sullivan, M. C. (2002). Action research and the transfer of reflective approaches to in-service education and training (INSET) for unqualified and underqualified primary teachers in Namibia. *Teaching and Teacher Education, 18*(5), 523-539.

Patall, E., Cooper, H., & Robinson, J. (2008). *The effects of choice on intrinsic motivation and related outcomes: A meta-analysis of research findings*. Psychological bulletin. 134. 270-300. 10.1037/0033-2909.134.2.270.

Penuel, W. R., Fishman, B. J., Yamaguchi, R., & Gallagher, L. P. (2007). What makes professional development effective? Strategies that foster curriculum implementation. *American educational research journal*, *44*(4), 921-958.

Peterson, P. L., McCartney, S. J., & Elmore, R. F. (1995). Learning from school restructuring. *American Educational Research Journal*, *33*(1), 119-153.

Phillips, V., & McCullough, L. (1990). Consultation-based programming: instituting the collaborative ethic. *Exceptional Children*, *56*, 291-304.

Porter, A. C., & Brophy, J. (1988). Synthesis of Research on Good Teaching: Insights from the Work of the Institute for Research on Teaching. *Educational leadership*, *45*(8), 74-85.

Putnam, R. T., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational Researcher, 29*(1), 4–15.

Raudenbush, S. W., Bhumirat, C., & Kamali, M. (1992). Predictors and consequences of primary teachers' sense of efficacy and students' perceptions of teaching quality in Thailand. *International Journal of Educational Research*, *17*(2), 165-177.

Richardson, V., & Placier, P. (2001). Teacher change. In V. Richardson (Ed.), Handbook of research on teaching (4th ed.). (pp. 905e947) Washington, D.C: American Educational Research Association.

Robertson, J. M. (2000). The three R's of action-research methodology: reciprocity, reflexivity and reflection-on-reality. *Educational Action Research, 8*(2), 307-326.

Robertson, J. M., Hill, M., & Earl, L. (2004). *Conceptual frameworks in school–university action research communities*. New Zealand Research in Education, Wellington.

Rock, M. L., Gregg, J., Gable, R. A., & Zigmond, N. P. (2009). Virtual coaching for novice teachers. *Phi Delta Kappan, 91*(2), 36–41.

Ross, J. A., & Bruce, C. D. (2007). Teacher assessment: a mechanism for facilitating professional growth. *Teaching and Teacher Education, 23*(2), 146-159

Ross, J. A. (1992). Teacher efficacy and the effects of coaching on student achievement. *Canadian Journal of Education*, *17*, 51 – 65.

Ross, J. A., Cousins, J. B., & Gadalla, T. (1996). Within-teacher predictors of teacher efficacy. *Teaching and Teacher Education*, *12*(4), 385-400.

Ryan R.M. & Deci E.L. (2002*). Overview of self-determination theory: An organismic dialectical perspective*. In R.M. Ryan & E.L. Deci (Eds.*), Handbook of self-determination research* (pp. 3–33). Rochester: The University of Rochester Press.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness.* New York: Guilford Press.

Ryan, R. M., & Weinstein, N. (2009). Undermining quality teaching and learning: A self-determination theory perspective on high-stakes testing. *Theory and Research in Education, 7*(2), 224–233.

Sailors, M. and Price, L., 2015. Support for the improvement of practices through intensive coaching (SIPIC): a model of coaching for improving reading instruction and reading achievement. *Teaching and Teacher Education*, 45, 115–127.

Schmoker, M. (2006). *Results now: How we can achieve unprecedented improvements in teaching and learning*. ASCD.

Schon, D.A. (1983). *The reflective practitioner: How professionals think in action*. New York, NY: Basic Books Inc.

Shields, P. M., Marsh, J. A., & Adelman, N. E. (1998). *Evaluation of NSF's Statewide Systemic Initiatives (SSI) Program: The SSIs' impacts on classroom practice*. Menlo Park, CA: SRI.

Stake. R. E., (1995). *The Art of Case Study Research*. Thousand Oaks, CA: Sage.

Supovitz, J. A., & Turner, H. M. (2000). The effects of professional development on science teaching practices and classroom culture. *Journal of Research in Science Teaching*, 37, 963-980.

Sweet, S. N., Fortier, M. S., Strachan, S. M., & Blanchard, C. M. (2012). Testing and integrating self-determination theory and self-efficacy theory in a physical activity context. *Canadian Psychology, 53*, 319–327.

Tallerico, M. (2005). *Supporting and sustaining teachers' professional development: A principal's guide. (pp. 1-146).* Thousand Oaks, CA, US: Corwin Press.

Tan, A.-L. (2014). In-service teacher education. In Gunstone, R. (Ed.), *Encyclopedia of science education* (pp. 223-226). Dordrecht: Springer.

Taylor, K. L., & Colet, N. R. (2010). Making the shift from faculty development to educational development. *Building Teaching Capacities in Higher Education, 139*.

Timperley, H. et al. (2007), *Teacher professional development*. Ministry of Education, Wellington, New Zealand.

Timperley, H.S., & Phillips, G. (2003). Changing and sustaining teachers' expectations through professional development in literacy. *Teaching and Teacher Education, 19*(6), 627-641.

Timperley H., Wilson A., Barrar H. & Fung I. (2007). *Teacher professional learning and development*. Wellington: Ministry of Education.

Trent, S.C. (1998). False starts and other dilemmas of a secondary general education collaborative teacher: a case study. *Journal of Learning Disabilities*, 31(5).

Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: capturing an elusive construct. *Teaching and Teacher Education*, *17*, 783-805.

Tschannen-Moran, M., & Mcmaster, P. (2009). Sources of Self-Efficacy: Four Professional Development Formats and Their Relationship to Self-Efficacy and Implementation of a New Teaching Strategy. *The Elementary School Journal*, 110(2), 228-245.

Vescio, V., Ross., & Adams, A. (2008). A review of research on the impact of professional learning communities on teaching practice and student learning. *Teaching and Teacher Education, 24*(1), 80-91.

Vogt, Franziska & Rogalla, Marion. (2009). Developing Adaptive Teaching Competency through coaching. *Teaching and Teacher Education*. 25. 1051-1060.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds. & Trans.). Cambridge, MA: Harvard University Press.

Wayne, A. J., Yoon, K. S., Zhu, P., Cronen, S., & Garet, M. S. (2008). Experimenting with teacher professional development: motives and methods. *Educational Researcher*, *37*(8), 469-479.

Webster-Wright, A. (2009). Reframing professional development through understanding authentic professional learning. *Review of Educational Research*, *79*(2), 702-739.

Wenger, E., McDermott, R., & Snyder, W. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Boston, MA: Harvard Business School Press.

White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review, 66*(5), 297-333.

Whitehead, J., & McNiff, J. (2006). *Action Research Living Theory*. London. Sage Publications

Williams, K.D., M.A. Ringer, C.A. Senior, M.J. Webb, B.J. McAvaney, N. Andronova, S. Bony, J.-L. Dufresne, S. Emori, R. Gudgel, T. Knutson, B. Li, K. Lo, I. Musat, J. Wegner, A. Slingo, and J.F.B. Mitchell, 2006: Evaluation of a component of the cloud response to climate change in an intercomparison of climate models. *Clim. Dyn.*, 26, 145-165.

Yin, R. K. (2003). *Case study research: Designs and methods* (3rd ed.). Thousand Oaks, CA: Sage.

Yin, R. K. (2009). *Case study research: Design and methods* (4th ed.). Thousand Oaks, CA: Sage.

Yoon, K. S., Duncan, T., Lee, S. W. Y., Scarloss, B., & Shapley, K. L. (2007). Reviewing the evidence on how teacher professional development affects student achievement. *Issues & Answers.* (Vol.33.). Regional Educational Laboratory.

Zehetmeier, S. (2010). *Action research in teacher training: What remains?* In F. H. Müller, A. Eichenberger, M. Lüders, & J. Mayr (Eds.), *Lehrerinnen und Lehrer lernen. Konzepte und Befunde zur Lehrerfortbildung* (pp. 197–211). Münster, Germany: Waxmann.

APPENDIX A: Institutional Review Board for the Protection of Human Subjects Approval Letter

The UNIVERSITY of OKLAHOMA

Institutional Review Board for the Protection of Human Subjects

Approval of Continuing Review – Expedited Review – AP0

Date: September 03, 2019   **IRB#:** 9585

Principal Investigator: Sherrie Shalise Jackson   **Approval Date:** 09/03/2019

Study Title: ACTION RESEARCH AS PROFESSIONAL DEVELOPMENT: A CASE STUDY

Based on the information submitted, your study is currently: Active, closed to enrollment. On behalf of the Institutional Review Board (IRB), I have reviewed and approved your continuing review application. To view the documents approved for this submission, open this study from the *My Studies* option, go to *Submission History*, go to *Completed Submissions* tab and then click the *Details* icon.

As part of IRB approval, this study has been transitioned to the new requirements under the revised Common Rule. It has been determined that this study now meets the criteria for Exempt Category 2. Please continue to submit Modification and Protocol Deviation forms as needed, and notify the IRB office when this project should be closed by submitting the Exempt Study Closure Report form within iRIS.

<u>**Even though future continuing reviews are no longer required for this study, you are reminded that, as principal investigator of this research, it is still your responsibility to:**</u>

- Conduct the research study in a manner consistent with the requirements of the IRB and federal regulations 45 CFR 46.
- Obtain informed consent and research privacy authorization using the currently approved, stamped forms and retain all original, signed forms, if applicable.
- Request approval from the IRB prior to implementing any/all modifications.
- Promptly report to the IRB any harm experienced by a participant that is both unanticipated and related, per HRPP SOP 407.
- Maintain accurate and complete study records for evaluation by the HRPP Quality Improvement Program and, if applicable, inspection by regulatory agencies and/or the study sponsor.
- **Submit a final closure report at the completion of the project.**

If you have questions about this notification or using iRIS, contact the IRB @ 405-325-8110 or irb@ou.edu.

Cordially,

Lara Mayeux

Lara Mayeux, Ph.D.

APPENDIX B: Overview of Action Research Activities

Overview of Action Research
Content is quoted directly from "Action Research: A Guide for the Teacher Researcher"
Geoffery E. Mills (2018) 6th Edition

What is action research?

Action research is any systematic inquiry conducted by teacher researchers, principals or other stakeholders in the teaching/learning environment to gather information about how their particular schools operate, how they teach, and how well their students learn (p.10). Action research is research done by teachers for themselves; it is not imposed on them by someone else. In doing action research, teacher researchers have developed solutions to their own problems. Teachers – not outside "experts" – are the authorities on what works in their classrooms (p. 19).

What is the purpose of action research?

(Kennedy (1997) argues that one of the aims of research is to increase certainty by creating predictability within the classroom because "routines increase predictability and decrease anxiety for both teachers and students" (p. 6). One of the outcomes of action research is that it satisfies the desire of all teachers to increase the predictability of what happens in their classrooms – in particular, to increase the likelihood that a given curriculum, instructional strategy, or use of technology will positively affect student outcomes. And although these desirable outcomes come at the initial expense of predictability – that is, they have emerged from the implementation of a new intervention or innovation – the findings of your action research inquiries will, over time, contribute to the predictability of your teaching environments. (p. 20). Action research helps teachers embrace action, progress and reform rather than stability and mediocrity. It is designed to provide teacher researchers with provocative and constructive ways" of thinking about their work (Wolcott, 1989, p. 137).

What it is not

Action research is decidedly not a fad for one simple reason: *Good teachers have always systematically looked at the effects of their teaching on student learning* (p.22).

Why do teachers choose action research?

Those committed to action research willingly undertake continued professional development because they believe that there is a gap between the real world of their daily teaching practices and their vision of an ideal one. Action research is an invitation to learn, a means to tackle tough questions that face us individually and collectively as teachers, and a method for questioning our daily assumption as a way to find solutions for the future. Action research gives teacher researchers the opportunity to embrace a problem-solving philosophy and as an integral part of the culture of their schools and their professional disposition.

What is the process?

Action research engages teachers in a four-step process:

1. Develop an action plan
2. Implement the action plan
3. Reflect on the action plan

4. Revise the action plan

Action Research Guide

Content is quoted directly from "Action Research: A Guide for the Teacher Researcher"

Geoffery E. Mills (2018) 6th Edition

This guide will provide steps for the teacher researcher during each step of the process and contains space for you to jot down your ideas during the process.

Step 1: Identify an area of focus – You will complete this portion individually.

As a teacher researcher, you will challenge some of the taken-for-granted assumptions in your selected area of focus. Undertake an action research project that is meaningful to you and addresses the needs of your students (p.23). What nags at you when you prepare for work every day (p.55)? Identifying a topic that you are passionate about is critical (p. 55).

Criteria for selecting a general idea/area of focus

- The area of focus should involve teaching and learning, be content specific and should focus on your own practice.
- The area of focus is something within your locus of control.
- The area of focus is something you feel passionate about.
- The area of focus is something you would like to change or improve. (p. 57)

Exercise 1: Gain insight into your area of focus through self-reflection

- What theories impact your practice?
- What educational values do you hold?
- The historical contexts of your school and schooling and how things got to be the way that they are
- The historical contexts of how you arrived at your beliefs about teaching and learning (Kemmis, 1988).

Example

If your action research question is "How can I improve the integration and transfer of problem-solving skills in mathematics? You might think about the following:

- Based on my experience teaching mathematics and my reading of the subject, I have been influenced by Van de Walle's (2003) theory about teaching and learning mathematics developmentally. In particular, the connection between the conceptual and procedural knowledge in math. This affects the ways that I think about teaching mathematics to my students.
- I hold the educational value that children ought to be able to transfer problem-solving skills to other areas of math as well as to life outside of school. That is, I am committed to relevancy of curriculum.
- The historical context of math teaching suggests a rote method of memorizing facts and algorithms. Although this approach to teaching math worked for me (as a child and young teacher), it no longer suffices as a teaching method today.
- The historical context of how I came to believe in the importance of changing how I teach math to children has grown out of my own frustration with knowing what to do to solve a problem but not knowing why I need to use a particular approach or algorithm.

My answers to Exercise 1:

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Related to the focus area, gather various forms of contextual data representative of the complexity of their students' learning and perspectives. Examples of relevant sources of data to gain insight into your area of focus are self- assessment tools, peer observation of teaching, videos of teaching, student work and student interviews. This data creates space for dialogue about values, preconceptions, relationships, and norms

***Exercise 2**: Gain Insight into Your area of focus through descriptive activities before writing a statement*.

Example:

Types of questions you might ask yourself as you are describing the area of focus:

- What evidence do you have that this issue is a problem?
- What students are not able to transfer problem solving-skills to other mathematics tasks?
- How is problem solving presently taught?
- How often is problem solving taught?
- What is the ratio of time spent teaching problem solving to time spent teaching other mathematical skills?

<u>My answers to Exercise 2</u>: What data did I collect to describe my area of focus? What questions did I ask myself about my area of focus? What did I learn? How does this change how I see the area of focus? Does the data confirm my initial thinking?

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Draft your statement and question. Your statement should be supported by data.

<u>Examples</u>:

- <u>Statement/Observation</u>: *Students take a lot of time to learn problem solving in mathematics, but this process doesn't appear to transfer to their acquisition of other mathematics skills and knowledge.*
- <u>Question</u>: *How can I improve the integration and transfer of problem solving skills in mathematics?*

My statement based on data:

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My question:

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Activity 3: **Researching Your Topic**

Today, you will refine the purpose of your study and research questions by familiarizing yourself with what has been written about your topic, and summarize your research.

The purpose in reading research articles, books or reports is to focus specifically on information that directly relates to your own investigation. The purpose of your study may become more focused or even shift. "Being informed about current research, theoretical positions, and potential methods for data collection helps action researchers clarify and refine their own studies (Corbin & Strauss, 2007)."

Reading about your topic will allow you to:

- Place your research project within an existing knowledge base
- Trace the conceptual threads, themes, debates, and questions related to your topic.
- Situate the study within a historical context or theoretical perspective
- Identify the need for your research
- Choose possible procedures and methods to use in your study
- Narrow and further refine your research question.

Locating Resources:

- An internet search is quick and easy, just remember to examine the credibility of the sources.
- Academic journal articles, professional books, and conference presentations are resources that can be used.
- Use articles that have been published within the last 10 years.

Steps to take during research:

- Identify the central them and concepts in your topic
- Develop a list of synonyms for your keywords
- Create a list of keywords important to your research
- Pay attention to themes that emerge.
- Note the perception of themes by different authors
- 5 resources

Example of problem statement with a clear purpose:

1. The study is designed to explore **the effects of problem-solving mathematics on second-grade students' motivation and success in mastering basic math functions**.
2. The purpose of the study is to **investigate how a democratic classroom influences students' behavior** in class.

The purpose of your study may consist of several research questions. These questions can be further divided into several subquestions. To make your study manageable we suggest that you limit yourself to no more than three subquestions.

	Evaluation Criteria
	Is the problem clearly stated? Is it concise?
	Is the problem researchable?
	Is the significance of the problem discussed?
	Are all the major terms defined?
	Is the proposed research feasible and doable within the constraints of your time, access and resources?

Activity 4: Data Collection

The data that you collect can be quantitative (rating scales, tally sheet, surveys and standardized test scores or reports involving numerical data), qualitative (interviews of individuals or groups, student work, documents produced, observations,video or audio of your lesson) or both (mixed). The data that you collect from your classroom, students, school, etc. should align with answering your research question.

- What data (information) sources will best enable me to collect the information that I need?
- Which data will you collect to yield the information needed to gain deeper insight about the issue you are exploring?
- How will you collect this data?
- How often will you collect this data?
- When will you collect this data?
- Do I have access to this data or will I need to ask for it?
- If I collect this set of data, will it help me to answer my research question?

Data Collection Notes:

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Next steps:

- After completing activity 3 & 4, meet with your team and use the "Consultancy" protocol before starting your research in the classroom.
- Start your research project by Tuesday, November 13, 2018.
- The instructional coach will provide a model for you prior to beginning the research in your classroom.
- Keep a journal of your thoughts, findings, etc.
- Remember that you will implement your research/intervention and collect data for 4 weeks.
- Check in with your personal research team and/or instructional coach as needed throughout the process either formally with a protocol or informally for any reason.
- Collect data through December 13, 2018.
- Share your findings with your research team Monday, December 17, 2018
- Focus group discussion with OU professor on December 18 or 19.

APPENDIX C: Save the Last Word Protocol

Save the Last Word for ME

Developed by Patricia Averette.

Purpose
To clarify and deepen our thinking about a text

Roles
Timekeeper/facilitator, who both participates and keeps the process moving

Time
Approximately 30 minutes

Process
- The process is designed to build on each other's thinking, not to enter into a dialogue.
- Participants may decide to have an open dialogue about the text at the end of the 30 minutes.
- Timing is important; each round should last approximately 7 minutes.

1. Create a group of 4 participants. Choose a timekeeper (who also participates) who has a watch.

2. Each participant silently identifies what she/he considers to be (for her/him) the most significant idea addressed in the article, and highlights that passage.

3. When the group is ready, a volunteer member identifies the part of the article that she/he found to be most significant and reads it out loud to the group. This person (the *presenter*) says nothing about why she/he chose that particular passage.

4. The group should pause for a moment to consider the passage before moving to the next step.

5. The other 3 participants each have 1 minute to respond to the passage — saying what it makes them think about, what questions it raises for them, etc.

6. The first participant then has 3 minutes to state why she/he chose that part of the article and to respond to — or build on — what she/he heard from her/his colleagues.

7. The same pattern is followed until all 4 members of the group have had a chance to be the presenter and to have the "last word."

8. Optional open dialogue about the text and the ideas and questions raised during the first part of the protocol.

9. Debrief the experience. How was this a useful way to explore the ideas in the text and to explore your own thinking?

Protocols are most powerful and effective when used within an ongoing professional learning community and facilitated by a skilled facilitator. To learn more about professional learning communities and seminars for facilitation, please visit the School Reform Initiative website at www.schoolreforminitiative.org.

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Consultancy Protocol
Framing Consultancy Dilemmas

Developed by Faith Dunne, Paula Evans, and Gene Thompson-Grove as part of their work at the Coalition of Essential Schools and the Annenberg Institute for School Reform.

Purpose
The structure of the Consultancy helps presenters think more expansively about a particular, concrete dilemma. The Consultancy protocol has 2 main purposes – to develop participants' capacity to see and describe the dilemmas that are the essential material of their work, and to help each other understand and deal with them.

Framing Consultancy Dilemmas and Consultancy Questions
A dilemma is a puzzle: an issue that raises questions, an idea that seems to have conceptual gaps, or something about process or product that you just can't figure out. All dilemmas have some sort of identifiable tension in them. Sometimes the dilemma will include samples of student or adult work that illustrate it, but often the dilemma crosses over many parts of the educational process.

1. **Think About Your Dilemma**
   Dilemmas deal with issues with which you are struggling or that you are unsure about. Some questions for helping you select a dilemma might include:
   - Is it something that is bothering you enough that your thoughts regularly return to it
   - Is it something that is not already on its way to being resolved?
   - Is it something that does not depend on getting other people to change - in other words, can you affect the dilemma by changing your practice?
   - Is it something that is important to you, and is it something you are willing to work on?

2. **Do Some Reflective Writing About Your Dilemma**
   Some questions that might help are:
   - Why is this a dilemma for you? Why is this dilemma important to you?
   - What (or where) is the tension in your dilemma?
   - If you could take a snapshot of this dilemma, what would you/we see?
   - What have you done already to try to remedy or manage the dilemma?
   - What have been the results of those attempts?
   - Who needs to change? Who needs to take action to resolve this dilemma? If your answer is not you, you need to change your focus. You will want to present a dilemma that is about your practice, actions, behaviors, beliefs, and assumptions, and not someone else's.
   - What do you assume to be true about this dilemma, and how have these assumptions influenced your thinking about the dilemma?
   - What is your focus question? A focus question summarizes your dilemma and helps focus the feedback.

APPENDIX E: Data Driven Dialogue Protocol

Data Driven Dialogue

Developed by the Teacher Development Group, 2002.
Based on work presented by Nancy Love, author of "Using Data/Getting Results," 2002.

"Dialogue comes from the Greek word dialogos. Logos means 'the word,' or in our case we would think of the 'meaning of the word.' And dia means 'through' – it doesn't mean two. A dialogue can be among any number of people, not just two. Even one person can have a sense of dialogue within himself, if the spirit of dialogue is present. The picture or image that this derivation suggests is of a stream of meaning flowing among and through us and between us. This will make possible a flow of meaning in the whole group, out of which will emerge some new understanding. It's something new, which may not have been in the starting point at all. It's something creative. And this *shared meaning* is the 'glue' or 'cement' that holds people and societies together," (Bohm, D., 1990).

This protocol builds awareness and understanding of the participant's viewpoints, beliefs, and assumptions about data while suspending judgments. All participants have equal voice. The 3 phases of data-driven dialogue assist groups in making shared meaning of data. We encourage you to use this tool with your entire school staff and/or with your school leadership team at a special meeting on data. The dialogue tool helps to replace hunches and feelings with data-based facts, examine patterns and trends of performance indicators, and generate "root-cause" discussions that move from identifying symptoms to possible causes of student performance. In order to effectively use this tool, participants will need to have grade level, school, or district data reports.

- **Phase I Predictions**
  Surfacing perspectives, beliefs, assumptions, predictions, possibilities, questions, and expectations.

- **Phase II Go Visual**
  Re-create the data visually.

- **Phase III Observations**
  Analyzing the data for patterns, trends, surprises, and new questions that "jump" out.

- **Phase IV Inferences**
  Generating hypotheses, inferring, explaining, and drawing conclusions. Defining new actions and interactions and the data needed to guide their implementation. Building ownership for decisions.

For protocol and facilitation, see *Data Driven Dialogue Protocol Facilitation Plan*.

Feedback Principles

Developed in the field by educators.

Giving Feedback

Constructive feedback is indispensable to productive collaboration. Positive feedback is easy to give and receive; when the response highlights a need to improve, it is harder to say and much harder to hear. When it is done properly, feedback is a very specific kind of communication: it focuses on sharing with another person the impact of their behavior, and its purpose is to help that person become more effective. Feedback is most useful when it is *audible, credible,* and *actionable.* Following the guidelines below will help you achieve that goal.

- **Give it with care.** To be useful, feedback requires the giver to want to help, not hurt, the other person.

- **Let the recipient invite it.** Feedback is most effective when the receiver has invited the comments. Doing so indicates that the receiver is ready to hear the feedback and gives that person an opportunity to specify areas of interest and concern.

- **Be specific.** Good feedback deals clearly with particular incidents and behavior. Making vague or woolly statements is of little value. The most helpful feedback is concrete and covers the area of interest specified by the receiver.

- **Include feelings.** Effective feedback requires more than a simple statement of observed behaviors. It is important to express how you felt so that the receiver can judge the full impact of the behavior being discussed.

- **Avoid evaluative judgments.** The most useful feedback describes behaviors without value labels such as "irresponsible", "unprofessional", or even "good" and "bad". If the recipient asks you to make a judgment, be sure to state clearly that this is *your* opinion.

- **Speak for yourself.** When giving feedback, be sure to discuss only things you have witnessed. Do not refer to absent or anonymous people (e.g. "A lot of people didn't like it").

- **Pick an appropriate time and place.** The most useful feedback is given at a time and in a place that make it easy for the receiver to hear it (e.g., away from other people and distractions). It should also be given sufficiently close to the particular event being discussed for the event to be fresh in the mind.

- **Make the feedback readily actionable.** To be most useful, feedback should concern behavior that can be changed by the receiver. Feedback concerning matters outside the control of the receiver is less useful and often causes resentment.

Protocols are most powerful and effective when used within an ongoing professional learning community and facilitated by a skilled facilitator. To learn more about professional learning communities and seminars for facilitation, please visit the School Reform Initiative website at www.schoolreforminitiative.org.

APPENDIX G: Focus Group Questions

Focus Group Questions

1. Describe your experience during the first cycle of action research.
2. How would you improve upon the first cycle of action research?
3. Which components of this professional development were most meaningful to you? Why?
4. When you consider the design of this professional development, is there any part that is not needed? Why?
5. What else would you change about the design of this professional development design?
6. Please describe the relationship – as you see it – between you and others in your action research group.
7. How integral is coaching in your growth during this process?
8. What role did others in the process play in your development?
9. How integral is extended time (devoting time to one topic) to your growth during this process?
10. Can you provide examples of how this action research process has helped you to develop?
11. Please describe some specific ways that this action research process has affected student learning in your classroom.
12. How does this experience compare with other types of professional development experiences you've had?

Additional Questions:

As it relates to your action research topic, how frequently did you meet with members of your action research team outside of the scheduled meeting times? What were some of the things that you and your team members discussed? What resulted from these interactions?

As it relates to your action research topic, how frequently did you meet with your instructional coach outside of the scheduled meeting times? What were some of the things that you and your instructional coach discussed? What resulted from these interactions?

APPENDIX H: Action Research Cycle Feedback to Participants

Teacher Researcher,

Congratulations on completing your first round of action research! You should be proud of the hard work and effort that you put into finding solutions for your classroom and developing yourself as a professional.

I also want to thank you for continuing with this study. Your feedback on this process is invaluable.

I was able to view the data from the first cycle that you completed. As we move into the 2nd cycle of your action research project, I would like to take your feedback into consideration by changing the approach to the study.

I would like to begin by providing you with feedback on your first cycle:

For many of you, this may have been the very first time that you have carried out an action research project in your classroom. The intent of the "Exercises" that you completed was to walk you through how to think like an action researcher in order to carry out an action research cycle in your classroom. You were asked to meet together on PLF days for two reasons: 1. So that you would be provided with guidance on how to complete the action research project in your classroom, and 2. To meet collaboratively with your team for feedback and support during the process.

From your projects, you have demonstrated that you are very passionate about specific topics in your classroom. You invested in researching your topic thoroughly and you collected data from your classroom about your topic. This is a really great start.

Based on the journal writing that you completed, I would like to offer a few changes for the second cycle:

During the second cycle, I would like to push you to identify ONE intervention that you will implement as a result of your literature review. There was very little evidence of that in the data. The intervention that you select is at the heart of your research project. The idea of action research is to test and see if the specific intervention that you selected will work to solve your problem.

ACTION STEP 1: During the second cycle, you will want to focus specifically on clearly articulating the problem that you want to solve in your classroom and the intervention that you will implement in your classroom for 4 weeks to solve that problem. The problem + the intervention make up the formula for your research question. EX. Will teaching students chess once a week help them to develop problem solving skills that transfer into higher reading comprehension? The problem that I am trying to solve is low reading comprehension. The intervention that I will try is chess once a week. The reason that I am trying this intervention is because I found it as a solution when reading about increasing student reading comprehension.

ACTION STEP 2: The data that many of you collected the first time was what we call "baseline" data. Baseline data is the picture that the data tells at the very beginning, before an intervention is implemented. It gives you a great picture of what needs to change in your classroom. The type of data that is needed during action research begins with a baseline because it tells you that there is a problem, where the problem is and how bad it is, but after baseline data you need to collect another set of data to determine if your intervention worked.

Teacher researchers learn so much about the process during the first cycle, so this type of feedback is expected. During the second cycle, you will feel more confident in your approach.

CYCLE 2

Your written and verbal responses from cycle 1 none of the participants were able to clearly state the steps of action research. That is not your fault. That means I should change the approach and make sure that you have a better understanding of the action research steps prior to engaging in the work

MY ACTION STEP 1: Provide you with training/resources that give you're a clearer understanding of the action research process. You should be able to clearly articulate these steps prior to engaging in the process.

OUTCOME: This should free up your time so that you won't have to use your PLF time to meet about exercises to walk you through the steps. Once you know the steps you are free to implement the process on your own.

MY ACTION STEP 2: Make the process and data collection process clearer to you by providing a workbook to help guide you.

OUTCOME: This should help you in ensuring that you complete all of the steps of the process correctly.

MY ACTION STEP 3: Provide an outline so that you will no longer be prompted by the coach to follow the steps of the process. You may initiate her help with guidance, resources and modeling, but not to keep you on track during the process.

OUTCOME: This should give you autonomy over the process and your schedule.

The things that worked well for you that you will continue:

- Meeting collaboratively with your research team
- Resources for literature review were provided by instructional coach on topic

Resources that were not utilized:

- Instructional coach to model the intervention that you selected.

Action Research Cycle 2 Journal Guidance & Timeline

PROCESS	RESEARCHER	RESOURCES	Recommended Timeline
Select action research team	Select 2 -3 people		Week 1 ***Begin by week of January 14***
Step 1: Plan	Write your plan	Write in notebook	Week 1
Collaboration:	Meet with your team to receive feedback on plan Share a copy of your plan with them for feedback	Use consultancy protocol	Week 2
Model	Do you need the coach to model the intervention before you use it with your students?	Schedule for coach to model if you need it (optional)	Week 2/3
Step 2: Implement your plan in the classroom (4 weeks)	Write about how your intervention is working. Collect a sample of data each week to determine how your intervention is working	Contact research team or coach for supports needed	Weeks 3-6
STEP 3: Analyze the data	Analyze the data that you have collected	Meet with one or multiple members of your team if you need help analyzing the data	Week 7
STEP 4: Share the data	Share findings with research team	Meet with action research team to share findings Use feedback protocol	Week 8 ***Begin by week of March 4***
Focus Group	Meet with Dr. Ford, OU	Look for email for meeting date and time	Week of March 11

For research purposes, each time you meet collaboratively with your action research team or instructional coach, write a summary here.

Date: _____   Met with: _____

The purpose of the meeting:

_____
_____

Summary of meeting:

_____
_____
_____
_____

My reflection of the meeting (What am I thinking now? How am I feeling? What steps will I take now? What did I learn?)

_____
_____
_____
_____

- -

Date: _____   Met with: _____

The purpose of the meeting:

_____
_____

Summary of meeting:

_____
_____
_____
_____

My reflection of the meeting (What am I thinking now? How am I feeling? What steps will I take now?)

_____
_____
_____
_____

Step 1: Plan

My Action Research Plan

Problem: _____

Baseline data demonstrating the problem:

_____

_____

_____

Summary of Literature Review:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Intervention: _____

Research Question: _____

Data that I will collect weekly to monitor progress of intervention:

_____

_____

Step 2: Implement the Plan

Week 1 of Intervention: Journal Reflections

How, when and with what student/class did I begin the intervention?

_____
_____
_____
_____
_____

Is the intervention going as expected? Why or why not?

_____
_____
_____
_____
_____

Did I collect my data? What do I know so far based on this data?

_____
_____
_____
_____

What have I learned so far this week?

_____
_____
_____
_____

How am I feeling about the process? How am I feeling about the progress?

_____
_____
_____
_____

Week 2 of Intervention: Journal Reflections

Updates on the intervention? Does it need to be tweaked?

_____
_____
_____
_____
_____

Is the intervention going as expected? Why or why not?

_____
_____
_____
_____
_____

Did I collect my data? What do I know so far based on this data?

_____
_____
_____
_____

What have I learned so far this week?

_____
_____
_____
_____

How am I feeling about the process? How am I feeling about the progress?

_____
_____
_____
_____

Week 3 of Intervention: Journal Reflections

Updates on the intervention? Does it need to be tweaked?

_____
_____
_____
_____
_____

Is the intervention going as expected? Why or why not?

_____
_____
_____
_____
_____

Did I collect my data? What do I know so far based on this data?

_____
_____
_____
_____

What have I learned so far this week?

_____
_____
_____
_____

How am I feeling about the process? How am I feeling about the progress?

_____
_____
_____
_____

Week 4 of Intervention: Journal Reflections

Updates on the intervention? Does it need to be tweaked?

_____
_____
_____
_____
_____

Is the intervention going as expected? Why or why not?

_____
_____
_____
_____
_____

Did I collect my data? What do I know so far based on this data?

_____
_____
_____
_____

What have I learned so far this week?

_____
_____
_____
_____

How am I feeling about the process? How am I feeling about the progress?

_____
_____
_____
_____

<u>Step 3</u>: Analyze the data

Consider using the Data Driven Dialogue process to help you understand your data.

<u>Step 4</u>: Share the plan

Use the Feedback protocol

APPENDIX J: CATEGORICAL DATA

Teacher-researcher, Taylor

Line	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job-embedded collaboration	Data	Barriers
1	X					X		X			
2								X			
3	X							X			
4											
5											
6								X			
7											
8								X			
9											
10								X			
11											
12											
13											
14											
15											
16											
17						X			X		
18											
19	X										
20											
21											
22						X					
23											
24											
25											
26											
27					X						
28											
29											
30											
31											
32											
33											
34											
35											
36	X								X		
37											
38											

	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job-embedded collaboration	Data	Barriers
39											
40									X	X	
41											
42											
43											
44		X							X		
45			X								
46		X									
47											
48											
49											
50		X									
51				X							
52											
53											
54											
55								X	X		
56											
57											
58											
59										X	
60			X						X		
61											
62											
63											
64											
65											
66				X							
67											
68										X	
69											
70											
71											
72											
73	X								X		
74										X	
75											
76									X		
77				X							
78											
79											
80										X	
81										X	

193

	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job-embedded collaboration	Data	Barriers
82										X	
83										X	
84											
85			X	X						X	
86											
87											
88					X						
89											
90											
91					X						
92											
93											
94					X						
95											
96											
97											
98								X			
99				X							
100											
101											
102											
103											
104											
105											
106											
107				X							
108											
109											
110											
111											
112		X							X		
113									X		
114									X		
115		X									
116		X									
117		XX	X								
118									X		
119		X									
120											
121		X									
122				X							
123		X									
124		X									
125		X									
126									X		
127		X									
128											
129							X				

194

	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job-embedded collaboration	Data	Barriers
130											
131							X				
132										X	X
133											
134											
135											
136					X						
137											
138											
139											
140											
141					XX						
142											
143											
144											
145											
146			XX		XX						
147				X							
148											
149											
150											
151											
152											
153											
154											
155											
156											
157								X			
158	X										
159								X			
160											
161											
162	XX										
163											
Total	8	14	6	7	9	3	2	10	13	10	1

CATEGORICAL DATA

Teacher-researcher, Peyton

Line	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job- embedded collaboration	Data	Barriers
1											
2	X							X			
3											
4											
5								X			
6											
7											
8											
9											
10											
11											
12									X		
13											
14									X		X
15											
16											
17									X		
18											
19											
20											
21											
22											
23											
24											X
25						X			X		
26											
27											
28											
29											
30											
31											
32											X
33											
34											
35									X		
36											
37											
38											

	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job-embedded collaboration	Data	Barriers
39											X
40											
41											
42											
43		X									
44											
45											
46											
47											
48										X	
49										X	
50											
51										X	
52											
53											
54											
55											
56											
57											
58	X										
59											
60										X	
61											
62											
63											
64											
65	X										
66										X	
67											
68											
69											
70											
71									X		
72											
73		X							X		
74									X		
75											
76											
77											
78	X										
79											X
80											
81											

	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job-embedded collaboration	Data	Barriers
82											
83	X										
84											
85										X	
86										X	
87											
88											
89											
90											
91											
92	X										
93											
94											
95											
96											
97											
98											
99											
100											
101											
102											
103	X				X						
104								X			
105											
106				X			X				
107	X										
108											
109											
110								X			
111											
112											
113		X	X	X							
114											
115											
116		X	X	X							
117											
118								X			
119											
120				X							
121											
122											
123								X			
124											
125											
126											
127											

	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job-embedded collaboration	Data	Barriers
128											
129											
130											
131										X	
132											
133											
134								X			
135										X	
136											
137										X	
138											
139											
140											
141											
142											
143											
144											
145											
146											
147								X			
148											
149										X	
150											
151											
152											
153											
154											
155											
156					X						
157											
158											
159			X	X							
160											
161											
162											
163											
164										X	
165											X
166											X
167											
168											
169											
170											
171					X						
172											
173											
174											

	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job-embedded collaboration	Data	Barriers
175											
176								X		X	
177											
178											
Total	8	4	3	5	3	1	1	9	8	13	7

Categorical Data

Teacher-researcher, Erin

Line	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job-embedded collaboration	Data	Barriers
1								X			
2										X	
3											
4											
5	X										
6											
7								X			
8											
9											
10											
11								X			
12											
13											
14											
15											
16						X			X		
17											
18											
19											
20											
21											
22										X	
23										X	
24											
25											
26											X
27											
28											
29										X	
30											
31										X	
32		X									
33											
34											
35											
36											X
37											
38											
39											

	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job-embedded collaboration	Data	Barriers
40											
41						X			X		
42											
43								X			
44											
45								X			
46											
47		X							X		
48	X										
49											
50					X						
51											
52											
53											
54											
55	X								X		
56		X									
57				X							
58											
59											
60		X									
61											
62		X									
63											
64		X		X							
65											
66									X		
67		X		X							
68											
69											
70											
71			X		X						
72											
73											
74			X	X						X	
75											
76											
77											
78											
79								X			
80											

	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job-embedded collaboration	Data	Barriers
81											
82					X						
83											
84											
85											
86											
87											
88						X	X				
89											
90											X
91									X		
92											
93											
94			X						X		
95		X									
96											
97											
98				X							
99				X							
100									X		
101									X		
102								XX			
103											
104											
105											
106											
107			X								
108											
109	X										
110	X										
111											
112											
113											
114										X	X
115											X
116											
117									X		
118											
119											X
120											
121								X		X	

203

	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job- embedded collaboration	Data	Barriers
122											
123					X						
124											
125											
126											
127											
128											
129					X						
130											
131											
132											
133								X			
134								X			
135					X						
136										X	
137					X						
138											
139											
140											
Total	5	8	4	6	7	3	1	11	10	9	6

Categorical Data

Teacher-researcher, Hayden

Line	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job-embedded collaboration	Data	Barriers
1											
2	X							X			
3											
4											
5											
6											
7											
8											
9											
10											
11						X					
12											
13											
14											
15											
16									X	X	
17										X	
18											
19											
20											
21											
22											
23											
24	X							X			
25											
26											
27				X							
28										X	
29											
30											
31											
32	X										
33										X	
34											
35											
36											X
37											
38	X								X		
39											X

	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job-embedded collaboration	Data	Barriers
40		X									
41											
42	X										
43											
44										X	
45											
46											
47								X			
48										X	
49											
50											
51											
52					X						
53					X						
54											
55											
56											
57										X	
58										X	
59											
60			X	X							
61											
62											
63											
64											
65					X						
66											
67					X						
68						X					
69											
70											
71						X			X	X	
72											
73		X									
74									X		
75											
76									X		
77		X			X						
78											
79		X									
80											

	Autonomy	Relatedness	Competence	Efficacy	Teacher Knowledge	Coaching/ Expert Support	Extended Time	Active Meaningful Learning	Job-embedded collaboration	Data	Barriers
81											
82	X							XX			
83											
84					X						
85											
86											
87			X	X							
88											
89											
90											
91											
92			X	X	X						
93											
94					X						
95											
96				X	X					X	
97			X	X							
98					X						
99			X	X							
100											
101											
102			X								
103			X	X							
104			X	X	X						
105											
106					X						
107											
Total	6	4	7	9	8	3	0	5	5	10	2

APPENDIX K: Basic Psychological Needs at Work Survey

Q1. I feel like I can make a lot of inputs to determine my own needs in this professional learning experience.

Q2. I really like the people I work with in this professional development experience.

Q3. I do not feel very competent during the professional development.

Q4. People tell me I am good at what I do.

Q5. I feel pressured during this professional development.

Q6. I get along with people during this professional development experience.

Q7. I pretty much keep to myself during the professional development experience.

Q8. I am free to express my ideas or opinions during the professional development.

Q9. I consider the people in this professional development process to be my friends.

Q10. I have been able to learn interesting new skills during this professional development.

Q11. When I participate in this professional development, I have to do what I am told.

Q12. Most days, I feel a sense of accomplishment from working.

Q13. My feelings are taken into consideration during the professional development.

Q14. During the professional development, I do not get much of a chance to show what I am capable of.

Q15. People in this professional development process care about me.

Q16. There are not many people during this professional development process that I am close to.

Q17. I feel like I can pretty much be myself during this professional development process.

Q18. The people that I work with during this professional development process do not seem to like me much.

Q19. When I am working I often do not feel very capable.

Q20. There is not much opportunity for me to decide for myself how to go about my work during this professional development process.

Q21. People during this professional development process are pretty friendly towards me.

Q22. When I am with my action research team, I feel free to be who I am.

Q23. When I am with action research team, I feel like a competent person.

Q24. When I am with action research team, I feel loved or cared about.

Q25. When I am with action research team, I often feel inadequate or incompetent.

Q26. When I am with action research team, I have a say in what happens, and I can voice my opinion.

Q27. When I am with action research team, I often feel a lot of distance in our relationship.

Q28. When I am with action research team, I feel very capable and effective.

Q29. When I am with action research team, I feel a lot of closeness and intimacy.

Q30. When I am with my action research team, I feel controlled or pressured to be certain ways.

Q31. How much can you do to control disruptive behavior in the classroom?

Q32. How much can you do to motivate students who show low interest in school work?

Q33. How much can you do to get students to believe they can do well in school work?

Q34. How much can you do to help your students value learning?

Q35. To what extent can you craft good questions for your students?

Q36. How much can you do to get children to follow classroom rules?

Q37. How much can you do to calm a student who is disruptive or noisy?

Q38. How well can you establish a classroom management system with each group of students?

Q39. How much can you use a variety of assessment strategies?

Q40. To what extent can you provide an alternative explanation or example when students are confused?
Q41. How much can you assist families in helping their children do well in school?
Q42. How well can you implement alternative strategies in your classroom?
Q43. How much can you influence the decisions that are made about your personal learning?
Q44. How much can you express your views freely on your professional learning?
Q45. How much are you able to do to get the instructional materials and equipment you need?
Q46. How much can you help other teachers with their teaching skills?
Q47. How much can you do to get students to work together?