BELIEVING BECOMES DOING: DEVELOPING TEACHER, PRINCIPAL, AND COLLECTIVE EFFICACY IN MIDDLE SCHOOL

by

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A DISSERTATION

Presented to the Department of Educational Methodology,
Policy, and Leadership
and the Graduate School of the University of Oregon
in partial fulfillment of the requirements
for the degree of
Doctor of Education

June 2013

DISSERTATION APPROVAL PAGE

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Title: Believing Becomes Doing: Developing Teacher, Principal, and Collective Efficacy in Middle School

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Degree awarded June 2013

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Doctor of Education

Department of Educational Methodology, Policy, and Leadership

June 2013

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Student achievement is influenced by efficacy, a construct linked to behaviors that promote learning. The researcher investigated the strength of the relationships between teacher, principal, and collective efficacy at middle schools within a metropolitan area that received *Outstanding* Oregon State Report Card ratings for 2010-2011. Teachers and principals completed questionnaires to assess their beliefs about executing specific academic and behavioral tasks. The survey instruments were previously validated. Responses to open-ended questions provided insights into practices that develop efficacy. It was hypothesized that teachers and principals would report strong senses of individual and collective efficacy. Findings showed a moderate relationship between teacher and collective efficacy and a moderate relationship between academic efficacy beliefs and behavioral efficacy beliefs at the teacher and collective levels. The middle schools with higher levels of teacher, collective, and principal efficacy were characterized by collaborative cultures focused on improving instruction and leadership that promoted collaboration and growth.

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Soisson, B. (2001). Conditions for learning. In R.S. Barth (Ed.), *Learning by heart* (pp. 221-231). San Francisco: Jossey-Bass.

ACKNOWLEDGMENTS

I thank Dr. Keith Hollenbeck, my advisor, for help with my study and with this manuscript. I also appreciate the time and efforts of my committee members: Dr. Ronald Beghetto, Dr. Akhito Kamata, Dr. Christopher Murray, and Dr. Gerald Tindal.

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CHAPTER I

INTRODUCTION

The last decade in American education policy was shaped by a focus on accountability for student achievement. This focus on accountability led to the 2001 reauthorization of the Elementary and Secondary Education Act (ESEA), known as No Child Left Behind (NCLB), and followed from the belief that past federal education policy did not insist on results or evidence of student learning (U.S. Department of Education, 2005). Although NCLB accountability mandates centered primarily around reporting on schools' progress by looking at students' scores on standards-based assessments, the requirement that all teachers in core academic subject areas meet state-determined criteria for being *highly qualified* signified recognition that the quality of instruction affected learning outcomes (U.S. Department of Education, 2001). Beginning in the 1970s, educational researchers noticed that effective teaching practices positively influenced student learning (Armor et al., 1976; Brophy & Good, 1986; Sanders & Rivers, 1996). Researchers found that the quality of instruction largely determined whether learning activities effectively engaged students and resulted in measurable achievement (Brophy & Good, 1986; Keith & Cool, 1992; Wright, Horn, & Sanders, 1997), especially during the middle school years, when students' rapid rate of growth and development presented both challenges and opportunities for educators (Brown, Anfara, & Roney, 2004; Jackson & Davis, 2000).

Efficacy and Student Achievement

Researchers identified specific teacher behaviors that fostered classroom learning conditions that produced measurable learning results (Shellard & Protheroe, 2000). They found that three elements that teachers brought to their practice influenced student achievement. These factors were teacher knowledge (Hill, Rowan, & Ball, 2005; Monk, 1994; Wenglinsky, 2000), skills (Hanushek, 1971; Rowan, Chiang, & Miller, 1997; Wenglinsky, 2000), and preparation (Darling-Hammond & Sykes, 2003; Wise & Leibbrand, 2000). Educational researchers approached improving the quality of instruction by examining factors that influenced teachers' commitment to teaching (Guskey, 1981a), their participation in pre-service and inservice learning (Monk, 1994), and their continual reflection on and improvement of practice (Covino & Iwanicki, 1996; Mitchell, 1998). Efficacy was identified as a variable that correlated positively with actions that determine teachers' effectiveness in classrooms and as participants in school organizations (Armor et al., 1976; Ashton, Webb, & Doda, 1982a; Berman, McLaughlin, Bass, Pauly, & Zellman, 1977; Brookover, et al., 1978, 1979). It was found that unless teachers believed that they were able to bring about desired results through their actions, they had minimal incentive to take actions that positively influenced learning (Armor et al., 1976; Ashton & Webb, 1986; Moore & Esselman, 1992; Ross, 1998). Bandura (1997) noted that belief in one's own capability to execute tasks effectively is a fundamental basis of action and that people's efficacy beliefs guide their lives. Based on Bandura's theory, only teachers with a stronger sense of efficacy undertake actions that supported student achievement.

Bandura (1977a) introduced self-efficacy theory in 1977 and described it as the foundation of human agency. *Agency* refers to intentional actions. A person's perception about their own efficacy defines their capabilities for bringing about actions (Bandura, 1977b). In contrast to earlier psychological theories that viewed actions as the outcomes of responses to reinforcement stimuli, efficacy is the result of cognitive processing. It influences individuals' choices of actions and their abilities to cope, persist, and commit to completing tasks. People form efficacy expectations that shaped their behavior, which then influenced outcomes.

According to Bandura (1977b, 1977b), efficacy expectations vary in three ways that affected outcomes. First, variations in *magnitude* exist because different individuals perceive tasks to be ordered by three levels of difficulty, namely, easy, moderate, or hard. Perceptions of task difficulty contribute to their efficacy belief. Second, differences in *generality* occur because some experiences may lead to a sense of efficacy that extended to other situations while others are limited to the task at hand. Finally, the *strength* of the efficacy belief determines how long individuals persist or if they are able to overcome obstacles. These three dimensions of efficacy influence how self-belief translates into action. Perceived self-efficacy differs from other conceptions of self, such as self-concept, self-worth, and self-esteem, in that it is specific to a particular task. Bandura (1977b, 1982, 1984, 1986, 1989a, 1991, 1993, 1995, 1997) consistently stated that individuals' beliefs about the capabilities that they brought to a task mediate other influencing factors and have been shown to predict their success with the task.

Some researchers based their understanding of teaching efficacy on social learning theory (Armor et al., 1976; Rotter, 1966) and saw it as the extent to which teachers could control the reinforcement and effects of their actions to support students' learning as opposed to the control imposed by the environment outside of the school. A second outlook emerged in 1977 from Bandura's work with social cognitive theory. According to this view, in addition to holding beliefs about being able to take actions to perform tasks, individuals also estimate the expected outcomes for tasks (Bandura, 1986).

More recent studies have been based on regarding efficacy as a product of social cognitive theory, a behaviorist theory that forwards the idea that human actions result from a combination of social experiences and the cognitive interpretation of those experiences (Adams & Forsyth, 2006; Tschannen-Moran & Woolfolk-Hoy, 2001). The key idea underlying the social cognitive perspective is that individuals could self-regulate their thoughts, motivations, and behaviors (Bandura, 1986, 1997; McCormick, 2001; Tschannen-Moran & Gareis, 2004). Social cognitive theory explains human functioning as a triad of reciprocal relationships between behavior, cognitive and personal factors, and the environment (Wood & Bandura, 1989). The parts of the triad do not necessarily have equal strength or occur simultaneously, and the relationships have been shown to be bi-directional so individuals can both act on, and be influenced by, their environment. Human agency implies that people produced experiences and shaped events (Bandura, 2000). In terms of social cognitive theory, people weighed whether individually or collectively they were able to bring about certain outcomes. Through this cognitive weighing process, individuals and groups assessed their efficacy

(Bandura, 1986). The assessment was contextual and led to outcome expectations. Those expectations guided actions, and in the context of a school, they could affect student achievement (Bandura, 2001a).

Bandura initially described efficacy as a construct that distinguishes response-outcome expectancies from expectations based on the strength of people's convictions that they can produce outcomes effectively in a given situation (Bandura, 1977b). In his early efficacy research, he explained fear and avoidance behavior. Bandura (1997) later defined perceived self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p.3). He described self-efficacy as a future-oriented belief construct indicating the level of success individuals perceive they would have with a specific task or in a given situation (Bandura, 1982). Beliefs about self-efficacy affect people's emotions and thinking, which in turn, guide the actions they take and the goals they set (Bandura, 1986). Effort, persistence, and the degree to which individuals attempt to exercise control over the events in their lives have been shown to align with self-efficacy beliefs (Bandura, 1986, 1993, 1997).

Armor et al. (1976) and Berman et al. (1977) first suggested that efficacy on the part of the teacher could be linked to learning outcomes for students. Subsequent studies confirmed the connections between student achievement and three kinds of efficacy beliefs: (a) teachers' judgments about their own efficacy as instructors (Ashton & Webb, 1982a; Ross, 1994;Tschannen-Moran, Woolfolk-Hoy, & Hoy, 1998); (b) teachers' judgments about the collective efficacy of their school (Goddard, Hoy, &

Woolfolk-Hoy, 2000; Goddard, LoGerfo, & Hoy, 2004); and (c) principals' sense of efficacy (Tschannen-Moran & Gareis, 2004).

Sources of Efficacy

Bandura (1977b, 1989a, 1995, 1997) identified four sources of individuals' self-efficacy beliefs: (a) mastery experiences, (b) vicarious experiences, (c) verbal or social persuasion, and (d) physiological or affective states. According to Bandura (1997), *mastery experiences*, individuals' judgments of competence about previous accomplishments in a similar or related area to the contemplated task, are the most powerful source of efficacy, because they confirm capability based on past successes. The predominant power of mastery experience prevailed in school settings (Bandura, 1997; Tschannen-Moran & McMaster, 2009; Usher & Pajares, 2006a). *Vicarious experiences*, seeing others model the successful performance of a given task, provided individuals with information that conveyed that they could also expect to complete the task successfully (Bandura, 1977b, 1997). *Verbal or social persuasion*, telling people in compelling and credible ways that they were capable of a task, supported individuals' perceptions of efficacy if the positive suggestions were also realistic (Bandura, 1997). Finally, individuals' *physiological and emotional conditions*, their affective states, provide information that contributed to their efficacy beliefs (Bandura, 1977b). In some studies, reducing stress and negative emotional tendencies, and adjusting interpretations of physical states so they were not viewed as indicators that the person was incapable of performing, strengthened self-efficacy beliefs (Bandura, 1977b, 1997). Researchers found evidence of increased efficacy in school settings at the teacher (Woolfolk-Hoy & Spero, 2005), collective (Goddard et al., 2000), and

principal levels (Tschannen-Moran & Gareis, 2007) as a result of individuals and groups getting information through the four sources.

Teacher Efficacy

Teachers' sense of efficacy had an impact on students' achievement (Armor et al., 1976; Ashton & Webb, 1982a) and on students' perceptions about their academic performance (Midgley, Feldlaufer, & Eccles, 1989). Furthermore, teacher efficacy (Armor et. al., 1976) and collective efficacy (Hoy, Sweetland, & Smith, 2002) had a greater impact on student achievement than students' socioeconomic status. Teachers' sense of efficacy was a predictor of productive teaching practices (Goddard, Hoy, & Hoy, 2004), including better organization and planning (Allinder, 1994), student centered orientation (Czerniak & Schriver, 1994), interest in innovation (Ross & Gray, 2006a), use of strategies that encouraged student autonomy, and attention to the needs of students who struggled academically (Ross, 1998). Teachers with higher levels of efficacy used practices that fostered achievement, such as modeling (Schunk & Zimmerman, 2007), which promoted self-efficacy (Bandura, 1986), and implementation of research-based instructional strategies (Cantrell & Callaway, 2008). Efficacious teachers were also more likely to engage students in activities that allowed learners to understand the effects of effort on progress (Schunk & Zimmerman, 1997).

Efficacious teachers believed they could work effectively with all students so they made academic progress (Anderson, Greene, & Loewen, 1988; Armor et al., 1976). They were more willing to further their own learning (Scribner, 1999b) and continually improved their instruction (Ghaith & Yaghi, 1997). This not only positively influenced student achievement, but also resulted in raising students' sense of efficacy, so those

students were in a better position to approach new learning situations (Ashton, Webb, & Doda, 1982b). Efficacious students were better equipped to contribute to student learning communities and to the overall learning culture in the school (Louis, Marks, & Kruse, 1994). Similarly, if individual teachers believed that they were capable of bringing about learning gains for all students, this strengthened the belief that they were part of a faculty that was collectively capable of improving learning for students (Goddard, Hoy, & Hoy, 2000; Tschannen-Moran & Barr, 2004).

A meta-analysis of 88 teacher efficacy studies (Ross, 1994a) and a synthesis of 89 empirical teacher efficacy studies (Shahid, 2001) confirmed the strong relationships among student engagement, student achievement, and teacher efficacy. However, the research also indicated that efficacy was difficult to develop in teachers (Goddard, Hoy & Hoy, 2000; Ross, 1994a) and that a primary focus for further research should be to understand how to implement practices and shape school cultures (Anderson & Betz, 2001; Ross, 1994a; Tschannen-Moran & McMaster, 2009) that promoted teacher efficacy.

Collective Efficacy

Researchers noted that teachers did not function completely autonomously despite the charge that there was too much isolation inherent in the traditional classroom-within -a-school structure (Morrison, Walker, Wakefield, & Solberg, 1994; Scribner, Hager, & Warne, 2002) and that the quality of interpersonal relationships within a school influenced student achievement (Tschannen-Moran, Parish, & DiPaola, 2006). Many of the outcomes that educators sought could only be achieved if

individual teachers worked interdependently, coordinated their efforts, and believed that they were jointly capable of attaining goals (Bandura, 2000).

Collective efficacy, the belief that a faculty had the ability to jointly and mutually teach and work with students so they made learning gains, positively influenced student achievement (Bandura, 1993; Goddard, 2001; Goddard et al., 2000) and teacher efficacy (Goddard & Goddard, 2001). In a school, collective efficacy was more than the sum of the efficacy beliefs of staff members (Goddard et al., 2000). It was characterized as an emergent group level property that expresses how each individual interpreted the collective skills of the group (Bandura, 1997). Although staff members' collective efficacy beliefs were distinct from those about individual teaching efficacy (Goddard, 2001), the actions that teachers took based on those beliefs could be both collective and directed towards their own teaching (Allinder, 1994; Guskey, 1988; Tschannen-Moran & Barr, 2004) which made collective efficacy a powerful influence. Because collective efficacy was linked with organizational learning, commitment and goal attainment, and persistence (Ashton & Webb, 1986; Goddard et al., 2000; Stein & Wang, 1988), it prompted teacher behavior that resulted in positive learning outcomes for students.

Collective efficacy beliefs exerted weight over group performance in schools through the ways in which they shaped norms and behavior for the group and for individuals (Bandura, 1997; Goddard, 2001). Collaboration among teachers promoted individual teaching efficacy (Ross, Hogaboam-Gray, & Gray, 2003). Society's growing interdependence, the increasing awareness of global perspectives, and an understanding of the power of working together towards a shared vision placed an

emphasis on collective efficacy (Bandura, 1995). As with other efficacy beliefs, collective efficacy was future oriented (Bandura, 1977b, 1986, 1997) and described perceptions of a group's capability to orchestrate the necessary thought and action to successfully accomplish a specific task.

Collective efficacy research emphasized that teachers not only used their own self-referent perceptions, resulting in teaching efficacy, but also their beliefs about the capabilities of the faculty as a whole to interpret how well they could positively influence students' learning and achievement (Bandura, 1997; Goddard, LoGerfo et al.2004; Hoy et al., 2002). When a teaching staff as a whole believed in their collective ability to work effectively with students, the efforts of individual teachers were affirmed and there was motivation to continue and improve upon success (Goddard, Hoy et al., 2004). Higher personal efficacy, in turn, allowed individuals to realize their abilities to contribute to collective work (Goddard & Goddard, 2001). This enhanced the overall learning culture of a school (Goddard et al., 2000).

Researchers recognized the value of examining collective efficacy in schools because it offered a way to extend the strong link between teachers' behavior and student achievement to the organizational level (Bandura, 1994,1997; Esselman & Moore, 1992; Goddard, Hoy, & Woolfolk-Hoy, 2004; Newmann, Rutter, & Smith, 1989; Ross, 1994). However, but there was relatively little research about collective efficacy until the late 1990s, especially about developing it (Klassen, Tze, Betts, & Gordon, 2011). This was possibly because the school became the unit of study for collective efficacy and, as Pajares (1997) suggested, it required massive and intensive data collection to conduct quantitative studies to establish correlations between school-

related variables and collective efficacy. Although teacher efficacy and collective efficacy research increased from 1998-2009, with a greater emphasis on collective efficacy, little information existed concerning how the implications related to practice (Klassen et al., 2011).

Principal Efficacy

A principal's sense of efficacy was similar to a teacher's in that it was a self-judgment of capabilities to bring about particular desired outcomes (Bandura, 1997). Whereas teachers' efficacy outcomes were the result of the cognitive and behavioral functions that directly influenced student achievement (Brookover, et al., 1978, 1979; Tschannen-Moran, 1998), principals' self-perceived capabilities affected the ways they regulated group processes to achieve goals in the schools they led (McCormick, 2001). Principals with stronger senses of efficacy exercised leadership that raised expectations for students and teachers (Tschannen-Moran & Gareis, 2004) and maintained professional rather than bureaucratic orientations to working with staff (Tschannen-Moran, 2009). They did this by facilitating group goal attainment, which was only successful if they established a school environment that prompted groups to perform well (McCormick, 2001; Tschannen-Moran & Gareis, 2007). Efficacious principals used "social influence processes" (McCormick, 2001, p.28) to organize, direct, and motivate the actions of others so that they maintained focus and effort (Wood & Bandura, 1989).

Principals influenced motivation (Maehr, 1992; Tschannen-Moran & Gareis, 2004) and indirectly brought about increases in learning and achievement by exerting leadership that fostered teacher collaboration centered on student outcomes

(Leithwood, Louis, Anderson, & Wahlstrom, 2004; Tschannen-Moran, 2009). Efficacious principals viewed themselves as personally responsible for student achievement and exercised leadership that made use of expert and referent influence rather than coercion and legitimate power (Lyons & Murphy, 1994). Principals with a strong sense of efficacy demonstrated persistent, goal-oriented leadership that was balanced by flexibility and an ability to work with obstacles to improvement (Osterman & Sullivan, 1994,1996). Because self-efficacy beliefs accurately predicted behavior, principal efficacy contributed to improving school wide practices that promoted achievement (Bandura, 1977b, 1997; Tschannen- Moran & Gareis, 2004).

There have been few empirical studies about principal efficacy (Tschannen-Moran & Gareis, 2004; McCormick, 2001). It has been argued that this is perhaps because the construct emerged from the study of teacher efficacy and adequate measures were yet to be developed (Imants & De Brabander, 1996). Also, the antecedents and outcomes of principal efficacy were still being examined (Osterman & Sullivan, 1994; Tschannen-Moran & Gareis, 2004). Little research has been conducted concerning developing efficacy in principals (Lucas, 2003; Osterman & Sullivan, 1994; Smith, Guarino, Strom, & Reed, 2003).

Efficacy at the Teacher, Principal, and Collective Levels within a School

Within schools, the self-efficacy beliefs of teachers and principals has led to practices that have collectively influenced achievement (Goddard et al., 2004; Leithwood & Jantzi, 2008; Mojavezi & Tamiz, 2012; Tschannen-Moran & Gareis, 2004). When students, teachers, and principals within schools held higher efficacy beliefs and expectations, achievement was also higher (Hillman, 1984; Leithwood &

Jantzi, 2008; Multon, Brown, & Lent, 1991). Efficacious teachers positively influenced students' motivation and their achievement (Mojavezi & Tamiz, 2012; Tschannen-Moran & Gareis, 2004). Students' self-efficacy beliefs related to their persistence and academic performance (Linnenbrink & Pintrich, 2003; Multon, Brown, & Lent, 1991; Peetsma, Hascher, van der Veen, & Roede, 2005; Schunk, 1985), and teachers' classroom practices helped shape those beliefs (Anderson, Greene, & Loewen, 1988; Gibson & Dembo, 1984; Usher, 2009). Principals with higher levels of efficacy facilitated the work of teachers and directed staff learning so that it remained focused on school goals that fostered achievement (Osterman & Sullivan, 1996; Wood & Bandura, 1989).

Transformational leadership practices developed teacher and collective efficacy both directly and indirectly ((Hipp, 1996; Leithwood, 1993; Ross & Gray, 2006b; Zimmerman, 2005). There was also evidence that schools' cultural factors could strengthen efficacy (Chase, 1991; Goddard & Skrla, 2006). Researchers suggested a reciprocal relationship because efficacy beliefs at all levels acted on a school's learning culture (Hoy, Gage, & Tarter, 2006; Somech & Drach-Zahavy, 1999). Although efficacy at the teacher, principal, and collective levels was linked to student achievement (Ciani, Summers, & Easter, 2008) and a capacity for setting and attaining goals at all levels (Bandura, 1997), this research did not look at the relationships between levels of efficacy within a school.

Relationships among Efficacy Levels within a School

The relationships among the student, teacher, principal, and collective efficacy levels and student achievement within a school were not direct but links existed

(Bandura, 1993; Goddard & Goddard, 2001; Lee, Dedrick, & Smith, 1991). Students' self-efficacy perceptions had a strong effect on achievement (Multon et al., 1991; Pajares, 1994,1997). Practices that developed student efficacy were more likely to be embedded in the instruction of efficacious teachers (Ashton & Webb, 1986; Guskey, 1988; Rose & Medway, 1981). Collective efficacy and teaching efficacy were reciprocally related (Goddard, 2002; Goddard & Goddard, 2001). Although there was limited empirical research about the relationship between teacher efficacy and collective efficacy, Goddard and Goddard (2001) found that collective efficacy, along with SES and prior achievement in mathematics, was a strong predictor of teacher efficacy in urban elementary schools. They concluded that collective efficacy could be an important factor in developing teacher efficacy, especially in new teachers who tended to experience a decline in efficacy as they moved from pre-service to inservice status.

Factors That Contributed to Efficacy within Schools

The factors that contribute to collective efficacy and make it a predictor of teacher efficacy in high schools are not necessarily the same as those in elementary or middle schools (Hoy et al., 2002). The organizational structures for collaboration are different. Middle and high school teachers typically worked with four to six classes of students throughout the school day, and there tended to be more collective work done by subject area or in interdisciplinary teams. Creating teams of teachers and students was identified as a vital aspect of ensuring that middle schools had effective learning environments (Jackson & Davis, 2000). Bandura (1997) explained agency as a key underlying assumption in social cognitive theory. Individuals and groups demonstrated

agency when they made choices. When social cognitive theory was applied to groups working together in an educational setting, as within a school, collective efficacy contributed to mediating the relationship between performance feedback and how effectively groups functioned, and in turn, working and receiving feedback as a group or team affected collective efficacy (Prussia & Kinicki, 1996). When individuals considered the efficacy of the group and contributed to a collective perception, that evaluation included their beliefs about their personal efficacy. Conversely, individuals took into account the performance of the group, and how they added to it, when they drew conclusions about personal efficacy (Bandura, 2000).

Efficacy at the teacher, principal, and collective levels was likely a predictor of the professional behavior choices made at each level within a school (Bandura, 1982, Goddard, 2001; Lucas, 2003; Tschannen-Moran & Woolfolk-Hoy, 2001). Principals' leadership styles and choices aligned with the strength of their efficacy and differences in leadership practices related to teacher efficacy (Imants & DeBrabander, 1996; Leithwood, 2005; Tschannen-Moran & Gareis, 2004). The effects of these choices and the interactions between individual teachers, teachers as a group, and principals were not studied (Goddard & Goddard, 2001; Imants & DeBrabander, 1996); however, researchers who were looking at how efficacy develops and can be increased expressed an interest in those choices (Goddard, Hoy & Hoy, 2000; Tschannen-Moran & Gareis, 2007).

Focus of Past Research

Most prior studies focused on the antecedents and outcomes of efficacy and emphasized the variables that could be associated with it (Ashton et al., 1983; Ross,

Cousins, & Gadalla, 1996; Shahid & Thompson, 2001; Tschannen-Moran & Woolfolk-Hoy, 2007). Researchers became interested in efficacy as a characteristic of students, teachers, and principals in so far as those characteristics related to student achievement (Armor et al., 1976; Leithwood & Jantzi, 2008; Tschannen-Moran et al., 1998). This was a reciprocal relationship; teachers in schools with a historical pattern of higher student achievement reported higher levels of efficacy (Moore & Esselman, 1994; Ross et al., 2003). Efficacious students demonstrated learning behaviors that were linked to strong academic achievement (Brown et al., 2004; Linnenbrink & Pintrich, 2003).

Researchers who addressed how efficacy developed primarily examined aspects of school culture (Ross, 1995) and some specific leadership orientations (Hipp & Bredeson, 1995), especially those associated with transformational leadership (Dussault, Payette, & Leroux, 2008; Hipp, 1997). Hoy and Sabo (1998) hypothesized that the more open and healthy the school climate, the greater the sense of collective school efficacy. There were few studies about practices that promoted efficacy at the teacher (Woolfolk-Hoy & Spero, 2005), collective (Goddard, 2001), and principal (Tschannen-Moran & Gareis, 2007) levels.

Efficacy was a factor in developing learning communities (Bandura, 1986) and professional learning, in turn, contributed to strengthening efficacy (Ross, 1998; Scribner, 1999). Although researchers established the relationship between school culture and efficacy at the teacher and collective levels (Fletcher, 1990; Moore & Esselman, 1992; Reames & Spencer, 1998), there was little information about how to use school culture elements to develop efficacy (Hoy et al., 2002). Because most of the research on efficacy was conducted through correlation studies, it did not necessarily

lead to an understanding of how efficacy influenced the functioning of a school or resulted in specific practices that affected achievement (Shahid & Thompson, 2001).

Many of the recommendations for developing efficacy at all levels focused on the four sources of efficacy (Bandura, 1997) and specified which ones provided the most potent influence on efficacy at the teacher level (Tschannen-Moran & McMaster, 2009), collective level (Goddard, et al., 2004) and principal level (Tschannen-Moran & Gareis, 2007). Mastery experience was the most powerful source for developing efficacy at the teacher and collective levels (Tschannen-Moran & McMaster, 2009; Goddard et al., 2004). Verbal persuasion, as an element of an effective principal preparation program, was a strong source of principal efficacy (Tschannen-Moran & Gareis, 2007).

Researchers who focused on efficacy agreed that it was a promising construct to understand in order to improve student achievement (Gibson & Dembo, 1984; Goddard, 2001; Goddard et al., 2000; Leithwood & Jantzi, 2008; Ross & Gray, 2006; Tschannen-Moran & Gareis, 2004; Tschannen-Moran & Woolfolk-Hoy, 2001; Usher & Pajares, 2008). Defining the construct so that it could be operationalized for educators proved to be complex (Bandura, 1993,1997; Goddard, 2001; Ross, 1994; Tschannen Moran & Woolfolk-Hoy, 2001). Further, operationalization was encumbered by disagreement concerning its dimensions (Bandura, 1989b, 1993; Guskey & Passaro, 1994; Tschannen-Moran et al., 1998).

The role of efficacy in shaping individuals' beliefs and therefore influencing their chosen actions was constant for student efficacy (Bandura, 1997; Schunk, 1996; Zimmerman, 2000), teacher efficacy (Ashton & Webb, 1986; Bandura, 1997;

Tschannen-Moran et al., 1998), collective efficacy (Goddard, 2001), and principal efficacy (Tschannen-Moran & Gareis, 2004). However, because efficacy was explained as being task specific (Bandura, 1982, 1993, 1997) and dependent on context (Dimmock & Hattie, 1996; Goddard & Skrla, 2006; Hoy & Spero, 2002), research that described the specific characteristics, functions, and measurements of teacher, collective, and principal efficacy was relevant to examining how it could affect achievement.

CHAPTER II

LITERATURE REVIEW

Efficacy and Learning

Learning theory was dominated by behaviorist psychological perspectives until the 1950s when theorists looked at how internal processes, cognitive functioning, and constructs related to the self shaped learning (Berliner & Calfee, 1996; Pajares, 2001). Behaviorist learning stipulated that individuals learned in response to the environment in contrast to cognitive learning theorists' belief that psychological factors within the individual influenced behavior and learning (Gall, Borg, & Gall, 1996). Rotter (1954) asserted that people engaged in behavior that they saw as likely to result in positive outcomes and once the behavior was reinforced by those outcomes they were likely to repeat it. Bandura (1977a) expanded on Rotter's ideas by incorporating his conclusions from experiments where children closely followed modeled behavior when they were playing with toys and his work with using modeling to teach people to respond to phobias (Bandura, 1961, 1969). He suggested that people learned socially through the environment, but that psychological factors also influenced learning behavior (Bandura, 1977a).

According to social learning theory, which Bandura began to refer to as social cognitive theory in 1986, people were required to pay attention to the characteristics of the modeled behavior, remember, and then organize those characteristics in order to reproduce the behavior, and be motivated to reproduce the behavior (Bandura, 1977a; 1986).

Bandura (1977b) described self-efficacy as a key part of social cognitive theory because he found that it accounted for the differences in individuals' perceptions of their abilities to use techniques for overcoming phobias that had been modeled and then practiced. Learning theorists recognized that learners' beliefs about their capabilities formed an essential element of their drive to learn (Bandura, 1986, 1997; Schunk, 1991; Zimmerman & Martinez-Pons, 1990). Self-efficacy beliefs had a large impact on motivation because they mediated the relationship between knowledge and action. These beliefs influenced cognitive processes, how the learner interpreted and used information from the environment, and physiological factors (Bandura, 1986; Pajares, 1995). Self-efficacy also contributed to indicators of academic motivation, including students' choice of activities, degree of effort, and persistence (Zimmerman, 2000). Dweck (1986) recognized motivation as an important component in a learner's acquisition, transfer, and use of knowledge and skills.

Efficacy was viewed as an integral part of learning because of its roots in human agency (1977b). Individuals' beliefs about their capabilities to exercise control over their functioning and responses to their environment determined their incentives to act (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996). People intentionally influenced their life circumstances and their own functioning, which included learning (Bandura, 1986, 2006). Students' academic efficacy beliefs could be created and developed by the messages about their capabilities, which they received and sent (Bandura, 1997; Pajares, 2001). In turn, self-efficacy contributed to academic development at the student, teacher, and school level (Bandura, 2006).

The interaction between efficacy and academic development was also attributed to the social nature of learning (Bandura 1986, 2001a). Wood and Bandura (1989) stated that human development would not unfold at the rate that it does if individuals learned only through direct experience or by themselves. The exchange between individuals' internal beliefs and predispositions, the influences of modeling and described or articulated experiences of others, and environmental factors meant that individuals learned directly and vicariously (Bandura, 1977b; Zimmerman, 2000). People learned not from the immediate effects of actions but from the cumulative information they gained from processing experience (Bandura, 1977b). The processes involved others and made learning a social activity (Bandura, 1986). School learning was social by design; students learned through modeling from teachers and other students (Bandura, 1986; Schunk, 1985). They also received information about ways they could approach tasks successfully (Zimmerman, 2000), along with encouragement and information about their performance (Dweck, 1986; Schunk, 1982). Students acquired accumulated information that they used to form beliefs about their own capabilities (Dweck, 1986).

Self-Efficacy Construct

Bandura (1977) introduced self-efficacy as a central tenet of social cognitive theory after observing that individuals with phobias had varying abilities to generalize and use what they had learned from modeling to prepare them to expect that the outcome would be acceptable when they encountered the object of their phobias (Bandura, 1969; 1986). The training that he used in the phobia experiments taught participants to anticipate how the actions they learned through modeling led to specific results (Bandura, 1969). This aspect of social cognitive theory was described as *outcome expectancies* (Bandura

1977a; 1986; Maddux, Sherer, & Rogers, 1982; Soodak & Podell, 1996) and it referred to people's beliefs about the probable outcomes of their actions and the relative value that different outcomes held for individuals (Bandura, 1989b).

However, in addition to replicating the actions of others, and selecting and executing behaviors that led to anticipated outcomes, Bandura stated that there was another factor, *self-efficacy*, that determined how individuals chose behaviors and shaped their actions (Bandura 1977a, 1977b, 1982). Self-efficacy was defined as a person's own judgment of capabilities to perform a task or activity in order to produce a certain outcome (Bandura, 1977a, 1977b, 1982; Ross, 1994; Zimmerman, 2000). Efficacy functioned along with outcome expectancies, actual skills, and the perceived value of outcomes to influence behavior (Bandura, 1982; Schunk, 1991).

Locus of Control

Rotter (1966) summarized psychologists' growing recognition that individuals demonstrated a capacity for holding outcome expectancies when they believed that their own behavior, rather than the environment or chance, determined their success in situations. His theories about individuals' internal and external locus of control primarily addressed causal beliefs about the relationships between actions and outcomes (Rotter, 1954, 1966). According to Rotter (1954), people perceived that outcomes stemmed from internal sources, their own behavior and attributes, or followed from external forces and factors outside of themselves. Individuals' interpretations of outcomes and events reflected either an internal or external locus of control (Rotter, 1966). It also mattered whether the individual interpreted the outcome as a reward and reinforcement or a deterrent. Rotter believed that learning processes

were significantly influenced by the degrees to which learners saw outcomes as positive or negative and whether they were internally or externally controlled (Rotter, 1954).

Locus of Control versus Self-Efficacy

Locus of control theory differed from self-efficacy theory, which was concerned with individuals' perceptions about their capabilities to produce actions that brought about specific outcomes (Bandura, 1997; Schunk, 1991). Bandura (1982, 1997) noted that human behavior was increasingly seen as being acquired and regulated by cognitive processes and affected by performance-based experiences. He viewed outcome expectancy as an individual's estimate that a particular behavior led to a specific outcome. However, there needed to be an impetus for the individual to execute the behavior, and that was the role of self-efficacy (Bandura, 1977a).

How Efficacy Beliefs Are Formed

Efficacy is the belief that one could successfully accomplish a behavior (Bandura, 1977a, 1977b). According to Bandura (1977a), it is the mechanism that motivates individuals to take particular actions. The distinguishing feature of efficacy is that people can believe that certain behaviors led to desired outcomes, but they also need to believe that they have the capacity to carry out those actions or their behavior would not be influenced so they would make the attempt (Bandura, 1997; Schunk, 1991; Zimmerman & Cleary, 2006). Efficacy also determines the levels of effort and persistence that individuals exerted once they attempted tasks (Bandura, 1997, p.73). It is important to note that the benefits of a strong sense of efficacy does not arise from people merely stating that they were capable of adopting a positive orientation (Pajares, 1995; Zimmerman, 1990). Efficacy beliefs are the product of complex processes

(Bandura, 1977a, 1997; Schunk, 1991; Zimmerman, 2000). The beliefs that emerge from those processes contribute greatly to the level and quality of human functioning, including learning and achievement (Bandura, 1993, 1997).

Four Underlying Processes

Bandura (1993, 1997) explained self-efficacy as a regulatory mechanism that uses four processes to influence behavior. In the first, cognitive processing, the appraisal of one's capabilities affects personal goal setting. Ability is viewed as a generative capability rather than a fixed attribute Bandura, 1993; Dweck & Leggett, 1988). Research suggests self-efficacy perceptions affects how that capability is used to orchestrate thinking, social, motivational, and behavioral skills to pursue goals (Bandura, 1993). Efficacy is considered part of cognitive processing because it contributes to determining individuals' perceptions of their ability and their use of analytic and goal setting (Bandura, 1993, 1997). The cognitive processing aspect of self-efficacy leads more efficacious teachers to set higher goals for themselves and for their students and to have the mindset to conceive of and enact the steps towards those goals, using flexibility and persistence (Ashton et al., 1982a; Ross, 1994).

The second process, motivational processing, is predicated on the assumption that motivation was cognitively generated, through forethought, and that people formed beliefs about what they do based on anticipating the outcomes of planned actions (Bandura, 1997). It allows teachers with a stronger sense of efficacy to ascribe both successes and failures to their own efforts (Bandura 1997; Pajares, 1995). Efficacious teachers associated specific teaching practices to student learning rather than believing that outcomes were because of factors outside of their control (Ross, 1994).

The third process, affective processing, mediated negative thinking that lowered performance (Bandura, 1997). It was a coping mechanism that developed the positive views that let teachers be more resilient to pressures and to exercise control over stress (Bandura, 1997; Jex & Bliese, 1999). This process contributed to teachers' job satisfaction and commitment to the profession (Caprara, Barbaranelli, Steca, & Malone, 2006).

Selection processes, the fourth process, influenced individuals' choices of activities and environments (Bandura, 1997). Efficacious people tended to take greater risks and look at more options when they made a decision because they believed they could handle various situations and conditions (Bandura 1993, 1997). Teachers with higher levels of efficacy exhibited more normative behavior and were more likely to teach grades and subjects considered to be more challenging (Bandura, 1997; Ross, 1994) They also made daily decisions that involved more risk-taking and trusted in their abilities to work with students and tackle the complexity of teaching (Allinder, 1994; Gibson & Dembo, 1984).

Intellectual and Academic Development

Individuals' self-efficacy perceptions regulated the four processes (Bandura, 1997). This shaped their intellectual development and determined how effectively they regularly used their cognitive skills (Bandura, 1993). Within a school, efficacy beliefs at different levels affected academic development in three ways. First, efficacy beliefs influenced students' beliefs about their abilities to regulate their own learning and successfully learn different subjects. Second, each teacher formed beliefs about his or her ability to promote learning in their students and motivate them to make progress.

Third, a school staff had an efficacy perception about how well the school could ensure that all students made academic progress (Bandura, 1993, 1997). The four processes described above were also found to influence teachers' behavior in ways that profoundly influenced their work with students (Berman, et al., 1977; Guskey, 1988; Rose & Medway, 1981) and hence, affected student achievement (Anderson et al, 1988; Armor et al., 1976; Ashton & Moore & Esselman, 1992; Webb, 1986).

Efficacy and Achievement

Students' sense of efficacy was positively related to motivation and school achievement (Bandura, 1993, 1997; Bandura & Schunk, 1981; Bong, 2001). When efficacy was examined in models that included additional self-beliefs and variables such as academic background, socioeconomic status, ethnicity, gender, and ability, it mediated the other factors and was a strong predictor of achievement (Pajares, 1995). In a meta-analysis of 36 studies, Multon et al. (1991) found that students' efficacy beliefs related positively to their academic performance. Motivated students showed interest in an academic task and considered it important or worthwhile (Linnenbrink & Pintrich, 2003). Motivation research indicated that students were more engaged (Eccles, Wigfield, Harold, & Blumenfeld, 1993), learned more (Grant & Dweck, 2003), and therefore achieved more if they believed that academic activities had value and were important to them (Pintrich & DeGroot, 1990; Schunk, 1996).

Self-efficacy influenced indicators of academic motivation such as persistence and level of effort (Zimmerman, 2000). Students with stronger self-efficacy beliefs participated more readily (Schunk 1989, 1991), worked harder (Bong, 2004), persisted longer (Bandura et al., 1996), and demonstrated fewer negative emotional reactions

when they confront difficulties than those who were less efficacious (Bandura, 1997). In the past 30 years researchers found that efficacy at three levels within schools—students' self-efficacy (Pajares, 1996), teacher efficacy (Ross, 1992, 1994a, 1998), and collective efficacy (Goddard et al., 2000)—predicted student achievement.

The strong link between students' self-efficacy beliefs and achievement was largely attributed to efficacy's profound effect on motivation (Pajares, 1995; Schunk, 1991; Zimmerman, 2000). Students developed academic self-efficacy based on their convictions that they could successfully execute specific academic tasks at given levels (Schunk, 1991). They considered past performance (Zimmerman, 1995), their prior experiences with tasks (Bandura, 1977), and included judgments of their capabilities based on goals and standards (Zimmerman, 1995). Students' estimations of their levels of self-efficacy increased or hindered motivation (Bandura, 1989a; Schunk, 1991).

Elsewhere, learners with higher levels of efficacy saw difficult tasks as challenges and looked for ways to approach them rather than avoiding them (Bandura, 1986, 1989a). They were more adept at adapting and using learning strategies (Linnenbrink & Pintrich, 2002). Bandura stated that, "People's self-efficacy beliefs determine their level of motivation, as reflected in how much effort they will exert in an endeavor and how long they will persevere in the face of obstacles," (Bandura, 1989a, p. 1176). Motivated students attempted to acquire knowledge and skills rather than merely complete or participate in activities (Brophy, 1983). When learners developed real skills, understanding, and background knowledge, they demonstrated higher levels of performance and achievement (Bandura, 1997; Pintrich & Schunk, 2002).

Efficacy as a Predictor of Achievement

Academic self-efficacy was identified as a key component of academic self-concept (Bong & Clark, 1999; Schunk, 1991). Both self-efficacy and self-concept referred to how students felt about themselves (Bong & Skaalvik, 2003). Individuals' self-concepts, however, tended to be molded by how others viewed them (Rosenberg, 1976; Bong & Skaalvik, 2003), whereas their self-efficacy was shaped by prior experiences with similar tasks (Bong, 1997; Bong & Clark, 1999; Zimmerman, 1995). Self-concept was formed by more global perceptions about performance in subject areas as opposed to the task specific nature of self-efficacy (Bong & Clark, 1999; Bong & Skaalvik, 2003). Another key difference was that self-efficacy was cognitive in nature (Bandura, 1997; Zimmerman, 2000), while the broader construct of self-concept included both cognitive and affective components (Bong & Clark, 1999; Bong & Skaalvik, 2003).

Peetsma, Hascher, van der Veen, and Roede (2005) examined both constructs in adolescents and found that this difference made self-efficacy the best predictor of academic achievement during adolescence. The study looked at specific ages and national backgrounds to further explore the phenomena of declining motivation and achievement during adolescence. Previous studies confirmed this decline (Eccles & Midgley, 1989; Peetsma, 1997). Specific ages during adolescence, nationality, and self-concept explained only a small amount of the variance in achievement. The researchers suggested that the robust influence of self-efficacy could be because efficacy beliefs were formed based on students' continual self-assessment of their capabilities, which then influenced their actual ability to use their skills to achieve

(Peetsma et al., 2005). Self-efficacy was also identified as a stronger predictor of academic performance in high school math students (Pietsch, Walker, & Chapman, 2003). Because academic work was found to be primarily cognitive (Brophy, 1983), the cognitive orientation of self-efficacy made it a stronger predictor of achievement (Bong & Skaalvik, 2003) than self-concept.

Of course self-efficacy alone did not predict achievement. Having the requisite skills to perform competently was necessary regardless of how efficaciously students approached tasks (Schunk, 1991). Students' self-efficacy beliefs influenced how, and to what degree, they engaged in drawing on, orchestrating, and implementing those skills (Linnenbrink & Pintrich, 2003; Schunk, 1985, 1989). Self-efficacy related directly to students' behavioral engagement, which was a composite of their effort, persistence, tendency to seek help (Pintrich & Schunk, 2002; Schunk, 1989), commitment to the behavior, and the direction and intensity of the behavior (Bandura, 1997). Students' cognitive engagement, conceptualized as their use of strategies and metacognition, was driven by self-efficacy (Linnenbrink & Pintrich, 2003; Pintrich & DeGroot, 1990). Motivational engagement, comprised of students' interest in tasks and the value they assigned to them, was also linked to self-efficacy (Bandura, 1997; Pintrich & Schunk, 1996). It was the combined interplay of behavioral, cognitive, and motivational engagement, along with actual skills, that influenced achievement (Linnenbrink & Pintrich, 2003; Pajares & Miller, 1994; Pintrich & Schunk, 1996).

Schunk (1989) theorized that self-efficacy was a factor during the course of academic learning. As students approached a task, they had different beliefs about their capabilities to acquire and use information, their skills, and their abilities to perform

(Schunk & Hanson, 1985; Schunk, Hanson, & Cox, 1987). Their actual skills and abilities, their perceptions, and past experience determined the sense of self-efficacy they had at the outset of learning (Bandura, 1977b). Factors including the ways they processed information (Zimmerman, Bandura, & Martinez-Pons, 1992), set goals (Young & Urdan, 1993), interacted with teachers and used feedback (Multon et al., 1991), and received rewards (Schunk, 1982) affected students while they were working on a task. These factors were the source of cues students received about how well they were learning (Schunk, 1996). If students saw that they were making progress, motivation increased, which in turn contributed to their sense of self-efficacy (Dweck & Leggett, 1988; Margolis & McCabe, 2004). Furthermore, self-efficacy was not merely an underlying predictor of future academic behavior (Bandura, 1997); it also served as an impetus for students to direct their behavior towards success (Bandura, 1989; Jinks & Morgan, 1999). Research supported the notion that students with stronger self-efficacy beliefs "make things happen" for themselves academically (Brookover et al., 1978; Chapman, Skinner, & Baltes, 1989; Pintrich & DeGroot, 1990; Pintrich, Roeser, & DeGroot, 1994; Schunk, 1994; Skinner, 1985; Skinner, Chapman, & Baltes, 1988).

How Efficacy Influences Learning

Learners took in information that they used to assess their self-efficacy (Bandura, 1977b; Zimmerman, 2000). The most potent reliable source of information was their previous performance on specific academic tasks (Bandura, 1977; Bong, 1997; Bong & Clark, 1999; Zimmerman, 1995). Although students based their assessments largely on how they have performed in the past, perceptions of self-efficacy were future oriented

because they conveyed levels of confidence about performing an upcoming task (Bong & Skaalvik, 2003; Pajares, 1996), and those who were more efficacious tended to look more to what they would be able to go on and achieve in the future (Bandura, 1997). Observations of others performing successfully (vicarious experience); positive responses and encouragement from superiors (forms of persuasion); and information from physiological reactions, such as anxiety, mood, heart rate, or sweating, also contributed to students' appraisal of their efficacy (Bandura, 1997; Usher & Pajares, 2006a). Students did not respond to each of these sources directly but cognitively evaluated them by weighing the credibility of those modeled or persuaded, assessed the challenge that the task presented, and then determined how much effort was required (Bandura, 1986, 1997; Schunk, 1989; Schunk, 1991). Comments from parents or teachers intended to increase efficacy by letting learners know that they could accomplish a task were mitigated by performances that were less than successful (Mangels, Butterfield, Lamb, Good, & Dweck, 2006). However, repeated mastery did increase students' sense of efficacy so that it remained strong even if an effort that did not turn out well (Bandura, 1986).

Self-regulated learning. During the past 30 years, educators have moved away from pedagogy based on seeing learners as passive recipients of information toward practices that recognize students' capabilities for making meaning and constructing understanding (Bandura, 1982). There was a shift from behaviorism to approaches that used the social aspects of learning and cognition as key sources for determining effective instructional strategies Bandura (1977a, 1982). This led learning theorists toward a social-cognitive view of motivation and performance (Bandura, 1986; Dweck,

1986; Schunk, 1991; Zimmerman, 1998) that emphasized the role of the learner as a pursuer, processor, evaluator, and user of information (Schunk, 1994; Zimmerman, 1989a) and recognized that the cognitive and motivational factors of performance were integrated (Linnenbrink & Pintrich, 2002). Learners constructed meaning for themselves (Bandura, 1989a; Zimmerman & Martinez-Pons, 1990). Sound instruction equipped students to be constructivists by engaging them in activities that promoted the use of the skills and knowledge they were taught (Bandura, 2006; Lodewyk & Winne, 2005).

Learning was viewed as a self-regulating process that included forethought, performance and volitional control, and self-reflection (Bandura & Schunk, 1981; Schunk, 2005; Zimmerman, 1998; Zimmerman et al., 1992). Self-regulated learning was a construct that corresponded to self-efficacy in terms of its emphasis on human agency (Zimmerman, 2000; Zimmerman & Bandura, 1994). Early research about self-regulation took place mostly in therapeutic settings (Schunk, 2005), similar to the behavior therapy settings of early efficacy research (Bandura, 1977a). Schunk (2005) attributed the interest in looking at self-regulation in academic settings to research findings that indicated that those students' skills and abilities did not completely explain their academic achievement. This paralleled the increased inclusion of efficacy as a factor in educational research about achievement (Brown et al., 2004; Multon et al., 1991).

Zimmerman (2002) defined self-regulated learning as "the self-directive process by which learners transform their mental abilities into academic skills" (p. 65) through a metacognitive process where students evaluated how they thought, took action, and

determined alternative ways to learn, when necessary. The term *self-regulated learning* refers to learning that is largely a result of the thoughts, feelings, strategies, and behaviors that students generated themselves (Schunk & Zimmerman, 1998). Students were successful learners when they approached work with their own sense of organization in place, set goals, found and used resources and strategies as needed, and managed their time (Zimmerman, 1998, 2002; Zimmerman & Bandura, 1994; Zimmerman & Martinez-Pons, 1988). When learners engaged in this process, they exercised human agency and demonstrated that they could be proactive about their own development (Bandura, 1982, 1989a).

Learners who employed self-regulatory strategies first needed to believe that they were capable of engaging in the process (Usher & Pajares, 2008). Being aware of the process and strategies was not sufficient; students also had to know that they could take action (Bandura, 1986). Self-efficacy for self-regulated learning was identified as an outgrowth of self-efficacy that predicted learners' effectiveness in using self-regulatory strategies for academic success (Bandura et al., 1996; Zimmerman & Bandura, 1994; Zimmerman & Martinez-Pons, 1990). Although students could be taught and coached to use self-regulating strategies, they would successfully implement them only if they believed they were capable of using them (Bandura et al., 1996). Self-efficacy was a predictor of self-regulated learning at all levels of schooling (Bandura, 1997).

Self-regulated learning, with self-efficacy as a key underlying determinant, was also related to motivation (Pajares, 2007). Although the research that linked self-regulated learning and self-efficacy in academic settings was focused on students (Schunk, 2005; Zimmerman, 1990), the principles could be applied to all learners. Individuals who had

a stronger sense of efficacy were better equipped to use strategies for evaluating a learning situation, setting goals, and monitoring their own learning and performance (Bandura, 1986; 1997), whether they were students in school or teachers learning ways to improve their practice, especially through modeling these behaviors (Schunk & Zimmerman, 2007). Beliefs about capabilities to use strategies had an impact on how effectively strategies were implemented (Bandura, et al.; Linnenbrink & Pintrich, 2002; Ross, 1994).

Goal setting was part of the forethought phase of self-regulated learning, and in this context described students' behaviors in deciding on the specific outcomes of their learning (Locke & Latham, 1990). Personal beliefs, including self-efficacy, affected goal setting (Zimmerman, 1998). The strength of students' self-efficacy beliefs corresponded to the level of goals they set for themselves, which in turn, related to their academic performance (Anderman & Midgley, 1992; Zimmerman, Bandura, & Martinez-Pons, 1992). Bandura & Schunk (1981) found that self-efficacious students chose more challenging academic tasks. Elementary school students who exhibited marked deficiencies in their arithmetic skills participated in a study where four groups received different treatments in terms of setting goals that were closely or distantly related to their current levels of performance with math tasks. Participants were given a set of 25 problems on separate pages and instructed to turn the pages over as they completed each problem or chose to stop working on it. Prior to this, they performed a practice task and then a mathematical task and rated themselves so they could assess their perceived capability. The study suggested that more efficacious students set more challenging goals. They also persisted longer with problems before turning the papers

over. Students' self-efficacy beliefs correlated positively with the amount of time it took them to solve arithmetic problems (Schunk & Hanson, 1985; Schunk et al., 1987). Zimmerman et al. (1992) used a path model and showed that high school students' beliefs in themselves as self-regulated learners affected their efficacy perceptions about academic achievement, which then influenced the academic goals that they set.

Four Sources of Efficacy Information

Bandura (1977a, 1997) postulated that people formed efficacy beliefs by interpreting information from four basic sources: (a) mastery experience, (b) vicarious experience, (c) social persuasion, and (d) affective or physiological states. Mastery experience, the interpretation of outcomes from what was attained in the past, had the largest impact on efficacy (Bandura, 1986; Goddard et al., 2004; Usher & Pajares, 2006a). Individuals perceived, interpreted, and evaluated results from tasks they completed and then judged their competence or revised previous views (Bandura, 1977a). Researchers found that mastery experience had the greatest impact on students' efficacy beliefs (Usher & Pajares 2006a, 2006b). When Usher (2009) studied middle school math students' perceptions of their capabilities and what prompted their mathematical successes, she validated that mastery experience was the primary source because students were able to directly correlate what they experienced with predictions about future performance. They used concrete information based on grades and scores to form their beliefs. Mastery experience provided students with specific examples from their own learning and allowed them to look at their progress (Bandura, 1997). Recognizing one's own growth was identified as an aspect of mastery experience that made it the most potent source of self-efficacy (Bandura, 1997; Pajares, 2002).

Mastery Experience

The interpretation of mastery experiences and how students filtered and drew conclusions about them were influenced by placement in classes (Usher, 2009), the language that parents and teachers used for attributing successes and failures to different factors (Dweck & Leggett, 1988; Usher, 2009), and the degree to which students used the information to generate self-statements about participation in the next academic task (Usher & Pajares, 2006b). There was a reciprocal relationship between mastery learning and self-efficacy (Schunk, 1990; Usher & Pajares, 2006). Mastery experiences were the strongest sources of self-efficacy. When students engaged in mastery learning, with an emphasis on making progress towards goals, they were more likely to attain some success and reinforce their self-efficacy beliefs (Bandura, 1977, 1997). Instructional approaches that encouraged students to adopt a growth mindset and that allowed them to become aware of and use mastery learning contributed to self-efficacy (Dweck, 1986; Dweck & Leggett, 1988; Pintrich, 2000).

In several studies, students (Usher, 2009; Usher & Pajares, 2006a, 2006b, teachers (Tschannen-Moran & McMaster, 2009), and principals (Tschannen-Moran, 2004) drew on mastery experience, along with the other three sources of efficacy information, to interpret their capabilities for taking action in future situations. Bandura (1997) emphasized that teachers' use of mastery experiences as a source of efficacy information underscores the importance of recognizing that efficacy beliefs were specific to particular teaching tasks and contexts. Teachers' self-efficacy beliefs arose from perceptions about their capabilities with certain tasks and those beliefs shaped the effort, persistence, and selection of actions that they put into play for the

next related task, which revealed the cyclical nature of self-efficacy behavior (Tschannen-Moran et al., 1998). Researchers tended to use prior student achievement as the example of teachers' mastery experience, most notably in studies involving demographically diverse populations, and found that it explained a significant amount of the variance in collective teacher efficacy (Goddard, 2001; Goddard, LoGerfo, et al., 2004; Ross et al., 2003).

Tschannen-Moran and McMaster (2009), for example, explored the relationships among four professional development formats that each included three of the four sources of efficacy information identified by Bandura (1977a). The elementary teachers who participated in the four different types of sessions reported the greatest gains in self-efficacy beliefs and use of the reading strategy that they learned when the format included an authentic mastery experience embedded in teachers' regular teaching context.

In a longitudinal study that looked at changes in teachers' efficacy from the time they entered a Master's of Education initial teacher certification program through their first year of employment, Woolfolk-Hoy and Spero (2005) found that mastery experience had the most powerful effect on efficacy during student teaching and the first year of teaching. When Goddard (2001) looked at the sources of teacher efficacy in 47 urban elementary schools, he found that mastery experience explained almost two-thirds of the variance in collective efficacy among schools and that it overshadowed SES as a predictor of teacher efficacy. Successful performance was likely to lead to increased teacher and collective efficacy and failure could lead to decreased efficacy. However, changes in efficacy resulted from the cognitive

processing of the information from the mastery experience, not from the actual performance (Labone, 2004).

Mastery experience was also the most potent source of efficacy information for principals (Lucas, 2003; Tschannen-Moran & Gareis, 2004). Lucas (2003) noted that principals' capacity for reflecting on their experiences was a key factor in determining how they integrated information as they formulated efficacy beliefs and future actions. The context and task-specific nature of principal efficacy was similar to teacher efficacy and mastery experience was the source of information about task performance that was carried forward during the process of reflection and the formation of efficacy beliefs (Tschannen-Moran & Gareis, 2007; Tschannen-Moran et al., 1998). Principals relied on mastery experience more as they gained job experience. Vicarious experience, social persuasion, and physiological or affective states were more influential in the earliest stages of their careers because they did not yet have a set of mastery experiences on which to draw for information (Tschannen-Moran & Gareis, 2007). Osterman and Sullivan (1994) suggested that efficacious principals developed problem-solving skills that could be deftly adapted to new situations as a result of building competence and confidence through mastery experience.

Behavior, Cognitive Processing, and Personal Factors

Three other sources of information, namely, vicarious experience, social persuasion, and affective information, did not necessarily fall below mastery experience as an important influence for all individuals in all situations (Bandura, 1997). It was unlikely that any of the four sources of efficacy ever influenced perceptions independently or that they did not interact with contextual factors (Bandura 1997; Tschannen-Moran et

al., 1998; Tschannen-Moran & Gareis, 2007.) Bandura (1986, 1993, 1997) described the relationship between behavior, cognitive processing, and personal factors, and the environment and its events to explain how individuals did not simply rely on a past success as a basis for increased efficacy. Individuals differed in their interpretations of information from the four sources and then used that information in their daily contexts (Bandura, 1997; Goddard et al., 2000). Ways in which individuals transferred information from one situation to the next also varied, and this led to differences in teachers' efficacy beliefs (Tschannen-Moran et al., 1998).

Efficacy and Context

Contextual variables and the overall learning environment also influenced perceptions of efficacy (Lucas, 2003; Osterman & Sullivan, 1994; Ross, 1994; Usher & Pajares, 2006). Raudenbush, Rowan, & Cheong (1992) identified variations in teaching efficacy across tasks and situations within one teacher's assignment. In their study of the nature of teacher efficacy, one which involved variations in 16 high schools, they found that the same teacher reported a higher degree of efficacy when teaching students in high-track classes, especially in math and science. Teachers who worked in highly collaborative settings were involved in making instructional decisions and had ownership of school directions (Moore & Esselman, 1994; Ross et al., 2003; Raudenbush et al., 1992). Teachers who were able to exert control over working conditions tended to be more efficacious because the context was more conducive to generating strongly positive mastery experiences for teachers (Moore & Esselman, 1994; Raudenbush et al., 1992). Additionally, the context for teaching, which included culture, climate, leadership, and organizational structures within the school,

also determined the strength and influence of each of the four sources of efficacy information (Goddard et al., 2000; Raudenbush et al., 1992). Positive aspects of culture and climate, along with structures that promoted satisfying and productive working relationships, had the potential to generate sources of efficacy information (Adams & Forsyth, 2006). Student characteristics, school size and condition, school structure, district structure and priorities, available resources, and school level were considered as contextual variables that had the potential to impact collective efficacy (Hoy et al., 2004; Goddard & Skyrla, 2006).

Variables that could be altered, such as school structure, resources, and priorities, did not have as much of an effect on collective efficacy as students' socioeconomic status, a variable which could not be manipulated (Bandura, 1993; Goddard, LoGerfo, et al., 2004; Hoy et al., 2002). Goddard (2001) noted the lack of consistent discussion about other specific contextual variables or attempts at operationalizing and measuring alterable variables, their interaction, and their effects on teacher efficacy. It may be that socioeconomic status continually emerged as a possible predictor of collective efficacy because it remained, along with academic achievement, an objective and easily measured variable. Some researchers suggested that examining the combined effects of the four sources of efficacy information and school context variables, beyond academic achievement and socioeconomic status, could yield a more comprehensive understanding of the sources of collective efficacy (Adams & Forsyth, 2006; Hoy et al., 2002; Ross et al., 2003).

The four sources of efficacy information operated at the individual levels for students and teachers (Tschannen-Moran et al., 1998; Usher, 2009) and at the collective

level for teachers (Goddard, 2001). Ross et al. (2003) concluded that teachers' individual interpretation and uses of efficacy information also influenced the level of collective efficacy. For example, perceptions of collective efficacy could be altered by a faculty's interpretations of prior academic achievement (Goddard et al., 2000). Past collective mastery experiences positively influenced future actions as well as the collective use of individuals' past mastery experiences through sharing and collaboration (Goddard, 2001).

Vicarious experience, social persuasion, and physiological or affective states had some effect on teacher efficacy. In addition to learning from each other individually through vicarious experiences (Tschannen-Moran & McMaster, 2009), a school could collectively benefit from the successes of other schools by implementing programs and ideas as a staff (Goddard et al., 2000). Collegiality and openness allowed social persuasion to become a source of information that increased collective efficacy (Goddard, Hoy et al., 2004). School collaboration and decision-making processes (Ross et al., 2003) and the degree to which the school was driven by the pursuit of academic excellence (Hoy et al., 2002) were also avenues for social persuasion. The interaction between contextual factors and sources of efficacy information was noticeable with the fourth source, that is, physiological or affective states (Goddard, Hoy et al., 2004). They found that positive emotions emerged when mastery experiences translated into group successes and reinforced teachers' beliefs in their capabilities. When mastery experiences were based on practices that related to achievement and the outcomes of instruction, they had a direct tie to a faculty's beliefs about teaching abilities (Adams & Forsyth, 2006).

A Social Cognitive View of Learning

Efficacy contributed significantly to learning, academic achievement, and cognitive development (Bandura, 1993; Linnenbrink & Pintrich, 2003; Tollefson, 2000; Tschannen-Moran & Woolfolk-Hoy, 2001). Beginning with individual learners, students' beliefs about their abilities to set goals, and regulate and monitor themselves determined their behavior (Schunk, 1990; Schunk, 2005; Schunk & Zimmerman, 2007). Middle school students who had higher efficacy beliefs about their abilities to use specific strategies to monitor their reading demonstrated that they would practice the strategies more, which resulted in better performance on standardized tests (Barkley, 2006).

Elsewhere, in a study involving a large number of high school students in Singapore, researchers concluded that more efficacious students selected goals for learning English that reflected an interest in deeper learning and used learning strategies that required more commitment to engaging with the content after correlating self-reported efficacy and goal setting data and achievement results (Liem, Lau, & Nie, 2008). The students' interest in deeper learning and use of strategies confirmed Dweck's findings that learners developed a mastery oriented disposition towards learning and became more efficacious as they risked engaging in goal setting based on growth rather than on performance (Dweck, 1986; Grant & Dweck, 2003). Teachers responded to the levels of performance by increasing the use of strategies and reporting higher levels of teaching efficacy (Barkley, 2006; Liem et al., 2008). When teachers believed they were more capable, they adopted practices and created learning environments that fostered the risk taking and engagement that encouraged students to

select growth and mastery learning goals, which in turn, contributed to improved achievement (Lie et al., 2008; Ross, 1994a; Schunk, 1996; Tschannen-Moran et al., 1998; Zimmerman, 2000).

The reciprocal interactions between learners' efficacy beliefs, their behavior and actions, and the overall learning environment are shown in Figure 1. Students formed their beliefs from the four sources of efficacy information. Their beliefs were also influenced by perceptions of their intelligence. Whether they viewed their intelligence and capability to learn as fixed and related only to performance or saw themselves as learners who could demonstrate growth and achieve mastery affected how they interpreted the efficacy information from the four sources. Students then determined and implemented actions based on their efficacy beliefs. Those beliefs formed the basis for selected learning behavior and how it was executed. Because students learned in a social setting, they also affected the learning environment as they demonstrated degrees of engagement, manner of participation, persistence, and interaction with teachers and other learners. Their responses to instruction, formed in part by their efficacy beliefs, influenced the actions of teachers, who formally and informally assessed the effectiveness of their teaching. This triadic relationship could be used to explain how teachers then used efficacy information, their mindset, and the results of students' classroom learning to form the efficacy beliefs that shaped their instructional practices and influenced the learning environment. Collectively, teachers would use the sources of efficacy information to form beliefs about the faculty's ability to promote academic progress, which then led to affects on the school environment, as well as teachers' individual and group practices.

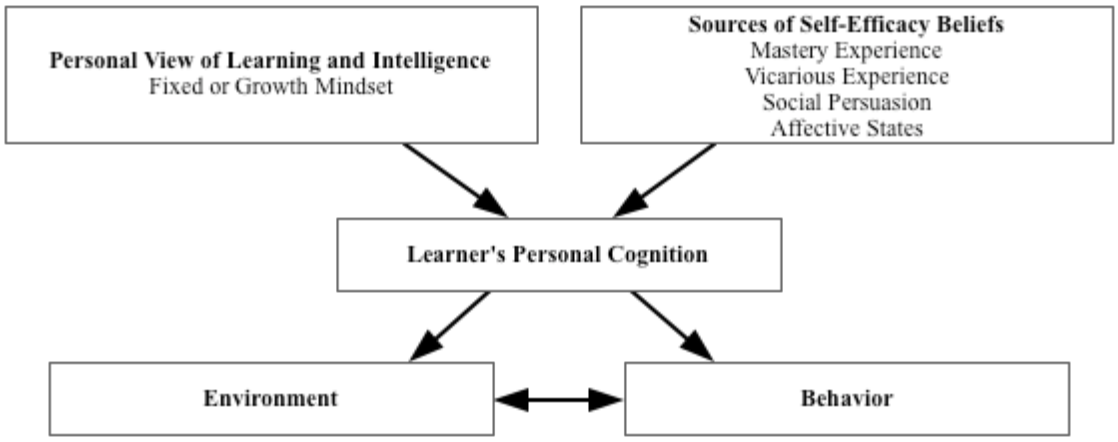

Figure 1. The relationship between learners' self-efficacy beliefs, the learning environment, and actions. Adapted from the triadic reciprocal causation model of human functioning (Bandura, 1986) and a social cognitive explanation of academic learning (Zimmerman, 1989b).

Teaching Efficacy

The teacher efficacy construct emerged from a number of sources, most notably Bandura's (1977) theory of self-efficacy and Rotter's (1966) description of internal vs. external control. According to Rotter's locus of control theory, if people perceived that outcomes occurred as a result of their own behavior, they were exhibiting a belief in internal control, whereas attributing results to chance or outside sources signaled a belief in external control (Rotter, 1954, 1966). Teachers who had an internal locus of control, which was considered a general personality characteristic, were more likely to also have a higher sense of total teacher efficacy (Ashton, Webb, & Doda, 1982a; Greenwood, Olejnik, & Parkay, 1990; Haury, 1989; Lucas, Ginns, Tulip, & Watters, 1993; Parkay, Olejnik, & Proller, 1988). When asked to specifically identify causes of student learning, teachers who named factors within their control as more important than factors beyond their control were teachers who also reported higher levels of

teacher efficacy (Gibson & Dembo, 1984; Rose & Medway, 1981; Woolfolk & Hoy, 1990). Ross (1998) speculated that this was because teachers who believed they had greater control were more likely to believe it was worthwhile to exert greater effort and then to actually do so. Assessments of teacher efficacy were an attempt to show the extent to which teachers believed that their actions and efforts would have a positive effect on student achievement (Ashton, 1984; Ross, 1994a; Tschannen-Moran et al., 1998).

The construct of teacher efficacy describes teachers' expectations that they can help students learn in a specific context (Ashton & Webb, 1986; Bandura, 1997), taking into account assumptions about the degree to which students in school could learn what is taught (Brown et al., 2004; Guskey, 1981; Schunk, 1985). Teachers' efficacy beliefs affected their feelings and attitudes about teaching and the activities they chose to use in the classroom but was particularly important as a force that could mitigate variables that interfered with students being able to learn in school (Allinder, 1994; Ashton et al., 1982a; Ross, 1994a). Bandura (1981) emphasized the relationship between high efficacy expectations and powerful persistence in teaching. Efficacious teachers recognized that they had a strong, positive influence on students' learning and performance (Armor et al., 1976; Berman et al., 1977; Ashton & Webb, 1986; Ross, 1994a). They could overcome obstacles because they were motivated to persist in the face of setbacks (Gibson & Dembo, 1984; Skaalvik & Skaalvik, 2007; Tschannen-Moran, et al., 1998). Their efforts centered on the actual teaching situation, and they maintained that focus rather than looking at the peripheral factors that continually confront educators (Anderson et al., 1988; Rose & Medway, 1981). Teachers with

strong efficacy expectations recognized students' progress and setbacks (Ashton, 1984; Ashton, Webb, & Doda, 1982b). Because they assumed primary responsibility for both, they experienced a sense of accomplishment and pride in their work when students were successful and looked at how they would make improvements when students did not perform well (Armor et al., Ashton et al., 1982a; 1976; Berman et al., 1977; Gibson & Dembo, 1984). If teachers had low efficacy expectations, they were more likely to doubt their abilities to influence students' learning (Armor et al., 1976; Brophy & Evertson, 1975). This led to avoiding instruction that teachers did not believe they could carry out successfully, which reduced effective actions in the classroom and raised their stress levels (Brissie, Hoover-Dempsey, & Bassler, 1988; Guskey & Passaro, 1994; Rose & Medway, 1981).

General Teaching Efficacy and Personal Teaching Efficacy

In the course of looking at the relationship between teacher characteristics and learning as part of evaluating school preferred reading programs and teachers' continued use of innovations, groups of researchers from the Rand Corporation saw the link between teachers' self-beliefs and actions (Armor et al., 1976; Berman et al., 1977). This led to the first conceptualization of teacher efficacy. The purposes of the studies were not to measure efficacy, but the rudiments of the construct emerged from the findings. The Rand researchers used locus of control theory as the basis for asking teachers to respond to two statements, one that addressed internal control and one that referred to external control (Rotter, 1966). The internal control statement: "If I try really hard I can get through to even the most difficult or unmotivated students," (Armor et al., 1976, p. 50) was intended to measure an individual teacher's sense of

control and effectiveness in positively affecting students' learning (Armor et al., 1976; Ashton et al., 1982a). Teachers indicated their general sense of control and effectiveness by responding to the statement: "When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his or her home environment" (Armor et al., 1976, p. 50). These two statements became the basis for the two dimensions of teacher efficacy, namely, personal teaching efficacy (PTE) and general teaching efficacy (GTE), that were used by most researchers to describe the construct (Ashton et al., 1982a; Ashton & Webb, 1986; Gibson & Dembo, 1984; Skaalvik & Skaalvik, 2007; Soodak & Podell, 1996). The first Rand study investigated reading achievement among minority students (Armor et al., 1976), and the second one looked at the continuation of practices initiated through grant funds after the funding stopped (Berman, et al., 1977). Rand studies found that teachers' attitudes were more important than students' background characteristics and that "the most effective teachers had a strong sense of personal efficacy in teaching minority children. They believed they could 'get through' even to children with shaky motivation or home background" (Armor et al., p.37). Discussing these studies, researchers suggested that teacher efficacy was a promising construct to understand as part of creating conditions in schools for all children to achieve (Ashton & Webb, 1982a; Gibson & Dembo, 1984).

The distinction between GTE and PTE was important because they had different impacts on teacher behavior (Gibson & Dembo, 1984) . Interventions to increase efficacy varied based on which dimension most needed improvement (Ashton & Webb, 1986). If teachers had low GTE, they did not believe that their students could learn or

that instruction would make a difference because they perceived that specific teaching actions had an effect. Low GTE could be the result of beliefs about the profession or about the specific context and task (Ashton & Webb, 1982). The fundamental outcome expectancies that individuals held about teaching determined their level of GTE (Guskey & Passaro, 1994). According to Rotter (1966), this reflected individuals' locus of control perceptions. Teachers who viewed students' gains and setbacks with learning as a result of their behavior would have a greater sense of teaching efficacy than those who saw it as independent of their actions (Ashton et al., 1982a; Gibson & Dembo, 1984; Guskey & Passaro, 1994).

Bandura's View of Teacher Efficacy

Bandura (1977b) distinguished self-efficacy from Rotter's internal/external locus of control theory. Locus of control theory stipulates a causal relationship between actions and outcomes. Rotter (1966) stated that individuals perceived that their behaviors leads to outcomes or rewards in varying degrees. In contrast, Bandura (1977b) explained self-efficacy levels as the degree to which individuals believe that they were capable of bringing about outcomes. Bandura (1977b, 1981, 1982) viewed it as a cognitive mechanism that regulated behavior. Teachers' perceptions about their capabilities of organizing and executing actions were assertions about their own competence (Bandura, 1977b). These beliefs were future-oriented and they influenced individuals' cognition but were not viewed as an isolated cause of behavior (Bandura, 1977a; 1997). Individuals developed a sense of conviction about their self-efficacy that matched their perceptions about their competence, and this formed their personal teaching efficacy (PTE) because the resulting beliefs were task- and context-specific

(Bandura, 1997; Gibson & Dembo, 1984; Tschannen-Moran & Woolfolk-Hoy, 2001). The strength of that conviction predicted whether they would undertake and persist with behaviors that further contributed to their sense of efficacy as they interpreted mastery experiences (Tschannen-Moran & Woolfolk-Hoy, 2001). Efficacy was a strong predictor of behavior; locus of control was a weak predictor (Bandura, 1997; Tschannen-Moran et al., 1998). Both Rotter and Bandura examined behavior through a psychological lens (Bandura, 1977a, 1977b, 1997; Rotter 1954, 1966). As part of his social cognitive perspective, Bandura (1986) viewed human functioning as a triad. Behavior, cognition and personal factors, and the environment interacted and determined outcomes in a reciprocal manner (Bandura, 1986, p.18). Teacher efficacy beliefs, the reflection and thinking that shaped them, along with the school context and teachers' actions, interacted in the triad that Bandura proposed as the process of reciprocal determinism (Bandura, 1986, 1997). The school context was the environment and it consisted of organizational structure, culture and climate, and principal leadership (Tschannen-Moran et al., 1998). The triad was dynamic; it affected teachers' PTE and GTE, which in turn influenced teaching behaviors and the school context (Tschannen-Moran & Woolfolk-Hoy, 2001; Tschannen-Moran et al., 1998).

The description of efficacy as an elusive and changing quality occurred early in the investigation of the construct (Tschannen-Moran & Woolfolk-Hoy, 2001). Bandura (1986, 1993, 1997) continued to define the task-specific nature of self-efficacy, which led most researchers to recognize two types of efficacy: (a) personal teaching efficacy (PTE), and (b) general teaching efficacy (GTE) (Gibson & Dembo, 1984; Soodak &

Podell, 1996; Woolfolk & Hoy, 1990). General teaching efficacy was similar to outcome expectancy. In terms of teaching, it represented the belief that learning occurred as a result of teachers' actions (Bandura, 1997).

Personal teaching efficacy aligned with Bandura's description of self-efficacy as an aspect of social cognitive theory (Bandura, 1977, 1986, 1997). Accordingly, the idea of human agency, in which individuals produced experiences and influenced events, with self-efficacy as the fundamental mechanism of agency, helped to move researchers away from viewing locus of control theory as a key concept in teaching efficacy (Tschannen-Moran & Woolfolk- Hoy, 2001).

Personal teaching efficacy (PTE) refers to individual teachers' beliefs that they were capable of carrying out actions that led to learning (Bandura, 1997; Tschannen-Moran et al., 1998). A teacher may believe that an outcome is internal and controllable in terms of being caused by individual actions but may also believe that he or she cannot carry out those actions (Bandura, 2000; Tschannen-Moran et al., 1998). PTE, perceived self-efficacy for organizing and executing specific teaching tasks, was a strong predictor of teacher behavior (Bandura, 1997; Tschannen-Moran & Woolfolk-Hoy, 2001; Tschannen-Moran et al., 1998).

Teacher Efficacy and Teacher Quality

Berman et al. (1977) examined factors affecting the implementation and continuation of 100 Title III (Innovative Programs) and Title VII (Bilingual Projects) Elementary and Secondary Education Act (ESEA) projects after the federal funding stopped. One key focus of this Rand Corporation study was to identify what influenced the nature and continuation of reforms at the classroom level. They found

that teachers' sense of control and effectiveness, which was then described as teacher efficacy, strongly predicted the degree of follow-through with project goals, positive changes in teachers' practices, and improved student performance. The relationship between teachers' beliefs that they could reach and work with all children to positively affect students' learning and teachers' actual practices was confirmed by the study (Berman et al., 1977). Researchers continued the process of identifying teacher efficacy as an important factor in student achievement that was identified in the first Rand Corporation study (Armor et al., 1976). The Rand Corporation conducted the study from 1973 to 1978 and its nationwide scope and size added weight to the findings about the role of efficacy in teaching and learning (Berman et al., 1977). The two Rand studies served as entry points into looking at the internal factors and characteristics of teachers and students that contributed to school performance.

The Rand findings offset the contention that factors within schools did not have that much of an impact on student achievement (Coleman et al., 1966). The *Equality of Educational Opportunity Report* commissioned as part of the Civil Rights Act of 1964 to document public school opportunities for minority students in comparison to white students, included reports about personal, social, and academic characteristics of teachers (Coleman, et al., 1966). Coleman (1966) noted that although school factors may not exert the strongest influence on achievement, some key variations were found, and one of them was that, in terms of differences in school characteristics: "The quality of teachers shows a stronger relationship to pupil achievement" (P. 22). As one of the factors that influenced teachers' daily practices and their persistence and commitment to the learning of and working with students that developed effective approaches,

efficacy emerged as an important aspect of teacher quality.

Impact of Efficacy on Teaching

Rosenholtz (1989) suggested that teacher efficacy was related to teachers' attitudes towards teaching, their commitment to the profession and the workplace, their approaches to new ideas, and their actual behaviors in the classroom in her analysis of critical elements of high quality teaching. Efficacious teachers tended to seek out new opportunities for learning and to work with challenges in order to become more skilled because they recognized that they were capable of improvement (Edwards, Green, & Lyons, 1996). They used improving skills and new knowledge to develop mastery experiences that led to increased efficacy about instructional practices and about their students' learning capabilities (Gibson & Dembo, 1984; Rosenholtz, 1989). When teachers experienced success in implementing innovations in adaptive mainstreaming with kindergarten students, as measured through interviews, observations, and surveys, their efficacy increased. There was a positive relationship between the observed teaching quality and teachers' reports about their efficacy beliefs (Stein & Wang, 1988). Smylie (1988) found that teachers' instructional practice changes were a direct function of their personal teaching efficacy in a study involving elementary and secondary teachers who voluntarily participated in a professional learning program aimed at increasing the amount of time teachers and students engaged in academic work in the classroom. The proposition that efficacy had a positive effect on teacher quality was confirmed in a meta- analysis of 88 studies of the antecedents and impact of teacher efficacy (Ross, 1994a.) Ross (1994a) stated that "Research in teacher efficacy has provided a consistent set of findings that demonstrate the importance of the

construct as a predictor of student and teacher outcomes" (p.28).

Teacher efficacy was a self-perception and not an objective assessment of teacher effectiveness (Bandura, 1977a, 1977b). Consequently, attributed outcomes were almost always correlations between assessments of efficacy perceptions and reports of other beliefs, as well as observable behaviors (Ross, 1998). Efficacy was a variable that related positively to actions that increased teachers' effectiveness (Gibson & Dembo, 1984; Ross, 1994a; Tschannen-Moran & Woolfolk-Hoy, 2001; Tschannen-Moran et al., 1998). Teachers' commitment to working with all students (Meijer & Foster, 1988; Soodak & Podell, 1993), their belief that all students could learn (Bandura, 1997; Dweck & Leggett, 1988), their ability to create conditions for learning (Anderson et al., 1988; Gibson & Dembo, 1984), their affinity for innovation and school improvement (Guskey, 1988; Smylie, 1988), and their interest and involvement in professional learning (Ashton & Webb, 1982b) were all influenced by their sense of efficacy. Because efficacy was a future oriented judgment and individuals with a high sense of efficacy structured their lives and actions through forethought that drew on self-appraisal of capabilities , efficacious teachers were not necessarily more competent, but they set higher goals for themselves based on perceptions of their competence ((Bandura, 1997; Ross, 1998). This resulted in teaching behaviors that supported student achievement (Anderson, Greene, & Loewen, 1988; Ashton & Webb, 1986; Ross, 1992).

Efficacy and Student Learning

Teaching efficacy was related to teachers' motivation (Midgley et al., 1989) and the development of students' own self-efficacy (Anderson et al., 1988). Efficacious

teachers did more planning, were more organized in their teaching, and showed more enthusiasm for their work (Allinder, 1994). They were more open to innovation (Ghaith & Yaghi, 1997; Guskey, 1988) and to working with new strategies to meet students' needs (Cousins & Walker, 2000; Ross, 1994a, 1998; Stein & Wang, 1988). Teachers with higher levels of efficacy took a more student-centered approach to instruction (Czerniak & Schriver, 1994), were more persistent and resilient (Gibson & Dembo, 1984), and remained more committed to teaching (Coladarci, 1992). Efficacy beliefs related positively to teachers' engagement in and implementation of new learning (Cantrell & Callaway, 2008; Ghaith & Yaghi, 1997; Kronberg, 1999; Scribner, 1998). Fullan (1982) described teacher efficacy as one of three school-level factors that affected the level of implementation of educational change, along with the role of the principal and quality and frequency of the collegial interactions among staff members.

Teachers with a stronger sense of efficacy had a positive impact on student achievement because they worked more effectively with all students, especially those who had academic difficulties (Allinder, 1994; Ashton et al., 1982a). They tended to be less critical of students who made errors (Ashton & Webb, 1986), did not give up on struggling students (Gibson & Dembo, 1984; Ross 1994a; 1998), and were less likely to attribute students' difficulties to disabilities or to make special education referrals (Meijer & Foster, 1988; Ross 1994a, 1998; Soodak & Podell, 1993). Teachers with a higher sense of efficacy took a more humanistic approach to classroom management (Woolfolk & Hoy, 1990). There was a strong and significant relationship between teacher efficacy and teachers' views of recommended practices as being both important to try and possible to implement (Guskey, 1987). Guskey (1988) attributed this to

efficacious teachers' more natural inclination towards mastery learning and innovation. Midgley et al. (1989) found that math students' perceptions of themselves as students decreased the most as they transitioned to junior high if they moved from working with an efficacious teacher to one with a lower sense of efficacy. Elementary and middle school science teachers with higher levels of efficacy implemented more inquiry-based instructional practices (Lakshmanan, Heath, Perlmutter, & Elder, 2011). More efficacious teachers attributed students' successes and difficulties to factors within their control (Ashton et al., 1982a; Berman et al., 1977) and saw school leadership as responsive to teacher needs (Hipp & Bredeson, 1995). They perceived their students as being capable (Smylie, 1988) and their working environments as orderly with low levels of stress (Ross, 1994a).

Antecedents of Teacher Efficacy

Ashton et al. (1982b) used the results of the two Rand Corporation evaluation studies (Armor et al., 1976; Berman et al., 1977) as the basis for a two-phase study that developed a conceptual framework for understanding the origins and outcomes of teacher efficacy in middle schools (phase one) and compared three approaches for developing teacher efficacy in high schools (phase two). They described efficacy as an elusive and changing attitude that was subject to numerous interactive influences including school environment factors (Ashton et al., 1982a, 1982b). These influences included: (a) middle school settings where norms that reinforced affective goal setting and socialization promoted higher expectations for progress and achievement with less concern about perceived ability differences in students, (b) settings that fostered collegial relationships that offset the isolation that could be inherent in teaching, (c)

structures that involved teachers in decision making at the classroom and school level, and (d) positive working relationships with principals (Ashton et al., 1982b). These factors were also key aspects of effective school research (Brookover, Beady, Flood, Schweitzer, & Wisenbaker, 1979; Cohen, 1981; Rutter & Maughan, 2002). The timing of the study that Ashton conducted in Florida schools could have contributed to the heavy influence of this research on its findings because they were summarized and reported to the National Institute of Education (Ashton et al., 1982a, 1982b).

Other researchers found that contextual factors, such as a positive school atmosphere, focus on instruction and classroom-based decision making (Fletcher, 1990; Moore & Esselman, 1994), schools with structures in place that encouraged orderly student behavior, innovation (Newmann et al., 1989; Reames & Spencer, 1998), and teachers' knowledge of each other's courses (Newmann et al., 1989) were associated with higher teacher efficacy. Teachers in schools where students historically scored lower on achievement measures reported a lower sense of teaching efficacy (Moore & Esselman, 1994). Leadership behaviors that were responsive to teachers' concerns (Hoy & Woolfolk, 1993; Newmann et al., 1989) and that emphasized appreciation for accomplishments (Lee, Buck, & Midgley, 1992; Rosenholtz, 1989) supported teachers' efficacy. Strong principals tended to develop teacher efficacy (Lee, Dedrick, & Smith, 1991).

Higher efficacy was associated with teaching elementary grades (Cowley & Meehan, 2001; Guskey, 1981) rather than middle school (Fuller & Izu, 1986; Lee, Buck, & Midgley, 1992; Midgley, Feldlaufer, & Eccles, 1988) or high school (Greenwood et al., 1990; Guskey, 1982; Parkay et al., 1988). Although the statistical

significance was small (Ross, 1994), female teachers in elementary schools (Anderson et al., 1988; Lee et al., 1992), special education classrooms (Coledarci & Breton, 1991), and high schools (Raudenbush et al., 1992) reported a higher sense of efficacy than males. Preservice and inservice male science teachers rated themselves as more efficacious than females (Riggs, 1991). Teachers' educational level (Hoy & Woolfolk, 1993) and coursework preparation (Rubeck & Enochs, 1991) contributed to personal teaching efficacy. In their relatively early model of the teacher efficacy construct, Denham and Michael (1981) proposed that teacher training, teaching experiences, system variables, and personal variables are antecedents of teacher efficacy because they paralleled Bandura's (1977) description of the four sources of efficacy.

Changes in Teachers' Efficacy Beliefs

Fuller's comprehensive analysis of the concerns of teachers in 1974 described preservice teachers as having more concerns about their adequacy; the concerns were centered on their own performance. Inservice teachers developed more concerns about what actually benefited students and how effectively they influenced their learning and success. Although this research was prior to reported findings about teacher efficacy, it suggested that teachers shift their attention from perceptions about their own performance to an awareness of students' needs and how they responded to instructional practices. Personal teaching efficacy increased as teachers' confidence grew during their preservice experience (Ghaith & Shaaban, 1998; Housego, 1990; Hoy & Woolfolk, 1990), especially with regard to classroom management (de la Torre Cruz & Arias, 2007) and through the first years of teaching (Dembo & Gibson, 1985). The research suggested that teachers become more adept at working with students and

affecting learning outcomes during their early years of teaching and this contributes to a greater sense of personal teaching efficacy (Ross, 1994a). Teachers' efficacy did not maintain the steady pattern of growth as their careers progressed because it was not as malleable as teachers continued to gain experience (Woolfolk-Hoy & Spero, 2005). In some studies, teaching efficacy remained more stable for inservice teachers but also showed some decline with increased years of experience (Anderson, et al., 1988; Moore & Esselman, 1992; Guskey & Passaro, 1993).

Teachers did become more efficacious with experience, but this related primarily to their personal teaching efficacy. There was an inverse relationship between personal teaching efficacy and general teaching efficacy (Ross, 1994a). General teaching efficacy tended to decline with experience (Bandura, 1993; de la Torre Cruz & Arias, 2007; Hoy & Woolfolk, 1990, 1993; Saklofske, Michayluk, & Randhwa, 1988) while personal teaching efficacy increased (Dembo & Gibson, 1985; Hoy & Woolfolk, 1993; Rubeck & Enochs, 1991). This was probably because teachers had the opportunity to increase their mastery as they learned from early experiences in the classroom (Housego, 1990; Hoy & Woolkolk, 1990) and this continued through the first years of teaching (Dembo & Gibson, 1985). Ross (1994a, 1998) proposed that teachers become more aware of the challenges in teaching and question the scope of their influence as they work in the profession. Hoy and Woolfolk (1990) noted a decline in general teaching efficacy as pre-service teachers face the reality of dealing with managing students' behavior.

The decline in general teaching efficacy may also be related to the finding that efficacy was norm-referenced rather than self-referenced (Ashton, Buhr, & Crocker,

1984). Using two forms of an instrument, one that asked teachers to select self-referenced responses, and another form that required norm-referenced responses, a significantly higher number of teachers evaluated their effectiveness by looking at their performance in comparison to the observed performance of their peers. Examining one's own capabilities relative to those of others suggested that teachers might also be forming perceptions about their overall effectiveness in the profession, which corresponded to general teaching efficacy (Ross, 1994a). Perceived success with classroom management (Lee et al., 1991; Skaalvik & Skaalvik, 2007), and collegial work on common school goals (Lee, et al.; Ross, 1994b; Shahid & Thompson, 2001) related positively to teachers' sense of efficacy. Ross (1994a) asserted that teachers' optimism was likely to diminish slightly as they become more aware of the varying needs of students, which correspond to realizing the realities of teaching and to the tendency for personal teaching efficacy to increase as teachers become more experienced and skilled.

Human Agency at the Organizational Level

Bandura (1986, 1997) used social cognitive theory, which typically describes individual behavior, and extended the human agency assumption to the organizational level. The idea that humans actively shape their lives and are products of and producers of their environment was the foundation of personal efficacy, which was then aggregated to the collective level (Bandura, 2000). At the group or school level, Bandura (2000) argued that activities and behavior that supports school goals and vision represents organizational agency or collective efficacy. The four efficacy sources were the same as those that supported self-efficacy, with mastery experience

being the most potent (Bandura, 1986, 1997; Maddux, 1995). This meant that past successes raise collective efficacy (Goddard, Hoy et al., 2004). Similar to individual efficacy, cognition was a key factor. Individuals and groups interpreted efficacy information gained from the four sources differently (Bandura, 2000). At the organizational level, the processes used to interpret and use information were critical. Perceived collective efficacy promoted group commitment, resilience, and focus on performance (Bandura, 2000) because it shaped the behavior and norms within a school (Goddard, 2001). Although differences in levels of teacher efficacy and commitment would most likely always exist, group pressure co-existed and exerted greater influence on the working environment and on individual teachers' behavior when there was a strong sense of collective efficacy (Goddard, Hoy et al., 2004).

Collective Efficacy and Goal Attainment

Collective efficacy corresponded significantly and positively to the differences among schools in student achievement (Goddard, 2001; Goddard et al., 2000) and had a more potent effect on achievement than socioeconomic status (Bandura, 1993). It positively influenced student achievement, indirectly, as an outcome of the behaviors of efficacious teachers (Bandura, 1993; Goddard, 2001; Goddard, Hoy et al., 2004; Goddard & Skrla, 2006). Collective efficacy was more than a sum of the individual attributes of teachers (Bandura, 2000). Goddard et al. (2000) explained it as an emergent group-level characteristic, a product of the dynamic that was created through the interactions of the members of a school staff. As with teacher efficacy, collective efficacy was an evaluation of capabilities to take future actions in specific areas, except that the belief is about the capability of the organization (Bandura, 2000; Goddard et al,

2000). Although collective efficacy was a newer efficacy construct and there was not as much research about its dimensions, antecedents, and outcomes (Chan, 2008; Goddard, 2001; Goddard, Hoy, et al., 2004), there was evidence that it was an important aspect of a school context that fostered achievement (Ahuja, 2007; Goddard, 2001; Goddard, Hoy et al., 2004; Goddard, LoGerfo et al., 2004; Ware & Kitsantas, 2007).

A group's sense of collective efficacy reflected a shared belief in combined and mutual capabilities to implement necessary actions to reach a goal (Bandura 1997, 2000). Goddard (2004) concluded that the potential of collective efficacy beliefs for an organization resides in their potential to explain how groups tapped into capacity to produce results. There could be strong working relationships and effective social networking within a group but this would not influence outcomes unless the collective sense of efficacy was also strong enough to propel the group to take action on shared goals (Bandura 1997; Goddard et al., 2001; Goddard, Hoy et al., 2004). Because collective efficacy beliefs affected a group's persistence and commitment to goals, the beliefs explained how organizational culture set norms and influenced the behavior of all members (Goddard & Goddard, 2001; Goddard, LoGerfo et al., 2004). Bandura (1997) argued that an efficacious group approaches goals with more tenacity and is also moved towards action because the belief that those goals may be accomplished and is not just a result positive thinking, but conviction about actions that would bring success.

Additionally, empowerment, it has been suggested, is backed by belief through taking concrete steps, which distinguished collective efficacy from collegiality and

congenial working relationships (Goddard et al., 2000; Tschannen-Moran & Barr, 2004). When assessed about perceptions of capability, individuals offered observations and perspectives about obstacles and possibilities within an organization more readily than they did when questioned about their own capability (Goddard, 2004). Goddard and Goddard (2001) found that collective efficacy predicted individual teacher efficacy to a greater degree than school context factors, including student achievement and socioeconomic status. Understanding a school's collective efficacy beliefs is therefore a critical step in knowing how school culture is linked to student achievement (Goddard, 2001; Goddard et al., 2000; Tschannen-Moran & Barr, 2004).

Collective Efficacy's Effect on Student Achievement

There was a relationship between individual teacher efficacy and collective efficacy (Ahuja, 2007; Goddard et al., 2000). However, there was disagreement about the description of the nature of that relationship and whether collective efficacy can be measured as an extension of teacher efficacy or should be assessed as a separate concept (Bandura, 2000; Goddard, 2001; Goddard, Hoy et al., 2004; Tschannen-Moran et al., 1998). Teachers' collective efficacy beliefs predicted as much about a school's performance as teachers' beliefs in their own efficacy (Bandura, 1997). This was because efficacy beliefs at the collective level become social perceptions that contributed to social norms (Goddard, 2004; Goddard, Hoy et al., 2004). Norms influenced group and individual behavior (Bandura, 1997; Goddard, 2001). If there was a strong sense of collective efficacy around improving student learning and achievement, a teacher with a lower sense of teaching efficacy was likely to either see others modeling behavior that exemplified the belief that teachers could and should

employ specific practices or get the sense that less productive practices were not sanctioned (Goddard, 2001; Goddard, LoGerfo et al., 2004).

Using the theoretical model of teacher efficacy antecedents and outcomes that Tschannen-Moran et al. (1998) developed, Goddard et al. (2000) adapted it to the construct of collective efficacy. After developing and testing an instrument based on this model in 46 urban elementary schools, they found that collective efficacy derives from the same four sources of information as teacher efficacy and that the analysis and interpretation of that information and the teaching tasks forms the estimation of collective efficacy. The group's collective efficacy perception then contributes to shaping actions that influenced student achievement (Goddard et al., 2000). Collective efficacy in itself was a source of social persuasion that influenced practices of the group and individuals (Goddard, 2004). As with teacher efficacy, mastery experience was identified as the efficacy source that accounted for differences in collective efficacy among schools (Goddard, 2001; Goddard, LoGerfo et al., 2004; Ross et al., 2003).

Leadership and School Cultures That Promote Learning

Bandura (1997; 2000) emphasized that the interpretation of mastery experiences determines its potency for increasing collective efficacy and hence influencing future actions. In a study conducted by Lee et al. (1991), schools with collaborative structures and a sense of shared mission centered on learning and achievement had the capacity to invite, reflect on, and use mastery experiences. Leadership (Angelle, 2006; Hipp, 1996; Ross, 1994a), school structures (Leithwood & Jantzi, 2005), and school culture (Edwards, 1996; Hoy & Sabo, 1998; Moore & Esselman, 1994; Raudenbush et al., 1992; Selove, 1984) contributed to student, teacher, and collective efficacy. There was

a reciprocal relationship; efficacy at all levels enhanced school culture and a collaborative and purposeful culture contributed to individual and collective efficacy (Brady, 2005; Edwards, 1996; Ross, 1994b). Robust levels of teacher efficacy bolstered morale and created a positive school climate (Gibson & Dembo, 1984). Whether a school staff exercised individual and collective human agency to improve achievement depended on how individuals and groups interpreted the experiences that shaped their efficacy beliefs (Goddard & Skrla, 2006) and then translated that interpretation into decisions and actions (Bandura, 1997). A school culture that fostered a strong collective focus on improving student achievement was more likely to have the collaborative structures (Cousins, Ross, & Maynes, 1992; Goddard, 2001) that allowed teachers to individually and collectively develop usable interpretations of mastery experiences (Bandura, 1997) that promoted goal setting and the shared accountability for students' progress that led to more mastery experiences (Leithwood, Steinbach, & Jantzi, 2002; Louis & Smith, 1991; Moore & Esselman, 1992; Reames & Spencer, 1998;Tschannen-Moran, Parish, & DiPaola, 2006). Furthermore, in schools where principals provided teachers with ongoing support in their daily work with students, involved teachers in policy decisions, and allowed teachers to make decisions about their instruction, the teaching staff was more likely to demonstrate commitment to achieving district and state standards (Ware & Kitsantas, 2007).

Leadership and Student Achievement

Leadership was second only to teaching among school-related factors that had an impact on student learning (Leithwood et al., 2004). Students' sense of efficacy influenced their learning (Multon et al., 1991; Pajares & Miller; 1994; Schunk, 1981;

Zimmerman, 2000) and mastery experiences with learning strengthening individuals' efficacy (Usher & Pajares, 2006; Zimmerman, 2000). Because teacher efficacy had a significant impact on student learning and achievement, school level factors that increased teacher efficacy were important to understand and implement (Anderson et al., 1988; Armor et al., 1976; Ashton & Webb, 1986; Gibson & Dembo, 1984; Goddard, 2001; Midgley et al., 1988; Reames & Spencer, 1998; Ross, 1995). Principals who facilitated the development of focused goals and established collaborative norms contributed to the necessary ongoing nurturing of a culture that promoted teacher efficacy (Goddard, LoGerfo, et al., 2004; Leithwood et al., 2004; Reames & Spencer, 1998; Ross & Gray, 2006; Tschannen-Moran et al., 2006). Hipp and Bredeson (1995) identified modeling behavior and inspiring group purpose as the principal behaviors that related strongly to general teaching efficacy in middle schools.

When Lucas & Valentine (2002) looked at the relationship between leadership and school culture in middle schools, they found that the principal exerted the greatest influence upon collaboration and unity of purpose. Principals were instructional leaders who looked continually and creatively at improving teaching practices in schools with high levels of collective efficacy (Tschannen-Moran & Barr, 2004). When teachers participated in school improvement decision-making processes and worked with strong principals who focused on academic leadership and innovative teaching, collective efficacy increased (Coladarci, 1992; Newman et al., 1989; Goddard, 2002a). Principals who supported and listened to teachers created a positive school climate that contributed to teacher and collective efficacy (Coladerci, 1992; Hipp & Bredeson, 1995; Hoy & Woolfolk, 1993). Also, Tschannen-Moran and Barr

(2004) noted that it was principals' responsibility to enhance collective efficacy within a school and thus increase individual teacher efficacy perceptions in order to improve student achievement.

Academic Press

In their study of the relationship between math achievement and collective efficacy in high schools, Hoy et al. (2002) created a theoretical model that showed that *academic press* was positively correlated with math performance and with increases in collective efficacy, and that collective efficacy, in turn, had a positive effect on math achievement. As an organizational property and school culture characteristic, *academic press* refers to the extent to which a school is driven by a quest for academic excellence (Hoy & Sabo, 1998; Hoy et al., 2002). It is viewed as a collective characteristic of a school (Hoy et al., 2004). It is also considered a property that Bandura (1997) viewed in terms of reciprocal causality, meaning that academic press improved collective performance. The resulting achievement gains were interpreted as mastery experiences that further strengthened academic press. Academic press is specific example of an emergent school property that a principal could facilitate in order to develop collective efficacy (Hoy et al., 2004; Tschannen-Moran & Barr, 2004).

Leadership and Goal Setting

Bandura (1997) stated that in order to develop collective efficacy in a school, "goals should be explicit ones that bear on people's daily lives…[and] they should be structured proximally to provide tangible evidence of progress" (p.501). Principals held positions within schools that made it possible for them to bring a faculty together to set achievable short term goals related to student achievement and then facilitate the

interpretation of results based on those goals as mastery experiences in order to build collective efficacy (Goddard, LoGerfo et al., 2004). Bandura (1993) asserted that self-efficacy is a *capacity belief*, a perception about capability that influenced students' learning through the type of classroom environment that teachers created. According to Goddard (2000), beliefs about capacity increased the value teachers attributed to their efforts and that contributed to collective efficacy. School leadership practices, initiated by the principal and which included school goal-setting and visioning processes, contributed to stronger teacher efficacy beliefs when the school culture was characterized by community and collegial feedback from colleagues and supervisors (Hallinger & Heck, 1996; Lee et al., 1991; Ross 1994a, 1998). The quality of leadership mattered. Bandura (1993) observed that strong principals excelled at getting teachers to work together purposefully and with a belief in their capabilities to overcome obstacles to meeting their goals.

Principal Efficacy and Achievement

School leadership practices, embodied by the principal, influenced teacher and collective efficacy (Hipp, 1996,1997; Hipp & Bredeson, 1995), and strong principals advanced teacher efficacy (Bandura, 1993; Lee et al., 1991). Principals' efficacy beliefs were important because in their role as key agents for initiating change and holding high expectations for students and teachers (Tschannen-Moran & Gareis, 2004), those who perceived that they had the capabilities to effectively advance a learning culture that developed teacher efficacy (Lee et al., 1991), which in turn promoted student achievement (Goddard & Goddard, 2001; Goddard et al., 2000), functioned as the cornerstones of high quality schools (Leithwood et al., 2004).

Principals who provided the instructional leadership and orchestrated staff learning that focused on student mastery and growth increased the likelihood that students would approach learning from a growth and mastery perspective (Bandura 1993,1997). Because self-efficacy beliefs had generative power, teachers who held stronger beliefs about their effectiveness set higher goals for themselves (Allinder, 1994; Ross, 1998), employed teaching strategies that were more challenging and difficult (Ross, 1994a), and were more persistent in the face of setbacks (Ashton & Webb, 1986). Efficacious teachers positively influenced students' efficacy beliefs about themselves (Anderson et al., 1988), and were more likely to have a strong academic focus in their classrooms (Gibson & Dembo, 1984).

Usher and Pajares (2006) suggested that students' interpretation of mastery experiences affected their self-efficacy and more efficacious students were better able to set goals for themselves and use learning strategies, which improved their performance (Pajares, 1995; Zimmerman, 2000). In their study of the sources of self-efficacy beliefs for middle school students, Usher and Pajares (2006) emphasized that students' interpretations of past performances and their development of a view about their capabilities based on mastery experiences carry great weight as they approach subsequent academic tasks. They also noted that the messages that teachers send as students interpret those performances, filtered their own perceptions, and influenced the resulting self-efficacy beliefs. Efficacious teachers believed that all students could learn (Ashton & Webb, 1986) and were more flexible and supportive of students during learning (Gibson & Dembo, 1984). These results suggested that they would be more likely to provide the messages and learning environment that prompted students to

develop stronger efficacy beliefs as they interpreted mastery experiences (Tschannen-Moran & Woolfolk-Hoy, 2001; Usher & Pajares, 2006). Principals with higher levels of efficacy worked more flexibly and adaptively with teachers because they accepted that change was a slow process but also remained focused on important goals (Osterman & Sullivan, 1996).

McCormick (2001) described principal efficacy as principals' self-perceived capability to perform the cognitive and behavioral functions necessary to regulate group processes in relation to their goals for the school. Leadership efficacy influenced the analytic strategies, quality of direction setting, and organizational performance of followers (Wood & Bandura, 1989). There was some evidence that the efficacy beliefs of leaders influenced the attitudes and performance of those they supervised (Chemers, Watson, & May, 2000; Paglis & Green, 2002). For school principals, this suggested that their self-efficacy related to teachers' performance abilities (Tschannen-Moran & Gareis, 2007). Wood and Bandura (1989) noted that leaders need a robust sense of efficacy to persevere and sustain a productive focus on the organization's goals. In a study by McCormick, principals had to use social influence processes and facilitate goal setting by establishing a school culture that fostered strong group performance (Tschannen-Moran & Gareis, 2007). This meant that principals' messages and means of interpreting performance results with staff contributed to how teachers interpreted mastery experiences and used that information (Gist & Mitchell, 1992; Tschannen-Moran & Gareis, 2007).

Although there was little research about the specific antecedents of principal efficacy (Lucas, 2003; Tschannen-Moran & Gareis, 2004, 2007), Bandura's (1997)

theory of triadic reciprocal causation explained the relationship between principals' performance and their sense of efficacy. Principals formed outcome expectancies and functioned in their role based on behavior, cognitive and personal factors, and the environment (Bandura, 1997). There was interaction between internal and external factors. They drew on sources of information, most likely the same four sources of mastery experience, vicarious experience, social persuasion, and affective states that provided the basis for teacher and collective efficacy judgments (Tschannen-Moran & Gareis, 2007). Contextual factors combined with the four sources of efficacy information and influenced principals' perceptions about their capabilities (Bandura, 1997). For principal efficacy, those factors included district culture and expectations, and personal and organizational support (Osterman & Sullivan, 1996).

Transformational Leadership

Research that analyzed leadership styles and behavior has suggested that practices associated with transformational leadership are related to increased teacher and collective efficacy (Leithwood & Jantzi, 2005, 2006; Madsen & Hipp, 1999; Osterman & Sullivan, 1994). Principals' transformational leadership could be a predictor of collective efficacy (Dussault et al, 2008; Leithwood & Jantzi, 2006). Inspiring others and demonstrating charisma, characteristics of transformational leadership described by Bass (1985), were conducive to collective efficacy because they implied that leaders behaved and communicated in ways that invited others to identify with them and view the future positively (Bandura, 1997). Leadership that explained what constituted success and guided interpretations of school performance so teachers could direct their actions towards tangible goals developed their future

oriented efficacy perceptions (Bandura, 1997; Leithwood & Jantzi, 2006). Leithwood and Jantzi (2000) pointed out that transformational leadership centers on the engagement of leaders with co-workers (Leithwood & Jantzi, 2000). In schools, transformational leaders are considered to be principals who articulate the vision and provide appropriate models (Leithwood, 2005; Lucas & Valentine, 2002). These behaviors contribute to developing a sense of collective efficacy because teachers see ways to be successful and have a greater tendency to align themselves with the vision (Dussault et al., 2008).

Burns (1978) defined transformational leadership as a process where "leaders and followers raise one another to higher levels of morality and motivation" (p.20). Leaders engage others in developing and raising consciousness by appealing to ideals and values and placing the mission and vision of the organization ahead of immediate self-interest (Bass, 1985). From the six factors that depict the construct of transformational leadership, the related practices that contributed most to teacher efficacy included modeling professionalism and inspiring others (Hipp, 1996; Hipp & Bredeson, 1995), emphasizing accomplishment (Lee et al., 1992; Rosenholtz, 1992) and being responsive to teacher concerns (Brissie et al., 1988; Hoy & Woolfolk, 1993; Newmann et al., 1989). Although principal leadership has been found to influence both general teaching efficacy (GTE) and personal teaching efficacy (PTE), transformational leadership enhanced PTE because it was more likely to contribute to conditions that provided job satisfaction and a sense that individuals could be successful (Nir & Kranot, 2006). Higher levels of transformational leadership in elementary schools related to stronger teacher and collective efficacy, a greater commitment to school

community and mission, and to small increases in student achievement (Ross & Gray, 2006b).

Instructional Leadership

Principals who facilitated teacher learning by providing the structures for collaboration and reflection (Blase & Blase, 1999; Wahlstrom & Louis, 2008) and targeted content instruction, contributed to growth in teacher and collective efficacy (Lakshamanan, et al. 2011; Ross, 1994a). Effective instructional leadership remained focused on articulating expectations for guiding teachers in developing learning experiences that engaged, inspired, and actively involved students (Hoy, Gage, & Tarter, 2006; O'Donnell & White, 2005). According to Tschannen-Moran and Hoy (2003), leadership must foster trust in teachers in order for them to be effective and productive Additionally, leadership practices assist in organizing learning activities for teachers that support their knowledge and skill acquisition (Goddard, Hoy, & Hoy, 2000; Leithwood, 2005). Bandura (1997) suggested that principals are able to provide teacher learning that results in effective classroom practices that represent a sense of mastery. Tschannen-Moran and McMaster (2009) found that elementary teachers who rated the effects of different professional development formats affirmed Bandura's (1986) assertion that mastery experiences offered the most potent source of efficacy.

Developing School Culture and Efficacy

There was evidence that strong collective efficacy beliefs within a school are associated with higher levels of student and school achievement (Goddard, 2001; Goddard et al., 2000; Goddard, Logerfo, et al., 2004; Ross et al., 2003), but that contextual factors affect those beliefs (Adams & Forsyth, 2006; Goddard, Hoy et al.,

2004; Tschannen-Moran et al., 1998). Three factors were identified through empirical studies that significantly affected collective efficacy beliefs (Goddard, Hoy et al., 2004; Hoy et al., 2002; Ross et al., 2003). First, prior academic achievement, an example of mastery experience, contributed greatly to a school staff's efficacy perceptions (Goddard, Hoy et al., 2004). Second, Ross et al. (2003) found that school processes that promoted teachers' ownership of school direction, such as school-wide decision making, shared school goals, mechanisms for fitting plans with needs, and principal leadership that empowered teachers, positively influenced collective efficacy. Finally, academic press was a key factor in explaining collective efficacy beliefs (Hoy et al., 2002). These factors emerged from the values, beliefs, norms, and assumptions that shaped practices and behavior (Goddard, Hoy et al., 2004). They defined the culture in a school. Because collective efficacy perceptions were judgments of a teaching staff's ability to instruct effectively, and were future oriented, they illustrated the fundamental difference between outcome expectancies and efficacy beliefs (Bandura, 1986, 1997) and existed as factors that both interacted with and influenced the school culture (Goddard & Goddard, 2001; Goddard, Hoy et al., 2004). This meant that developing robust efficacy was part of shaping a school culture that fosters achievement (Goddard, 2001; Hoy et al., 2002).

Collaboration

Collaboration, participatory decision-making, administrative support, encouragement of innovation and risk-taking, control over curriculum and instruction, school goals and planning, and staff learning were cultural factors that potentially influenced teacher efficacy (Chase, 1991; Moore & Esselman, 1994; Selove, 1984) and

collective efficacy (Copland, 2003; Jacob & Kritsonis, 2006). School culture had a significant effect on teachers' individual and collective senses of efficacy (Leithwood & Jantzi, 2006), and it positively influenced teachers' motivation to improve student learning when it promoted collaboration that coordinated instruction within a school (Chester & Beaudin, 1996; Raudenbush et al., 1992; Rosenholtz, 1989). Collaboration not only led to the sharing of strategies that produced successful results as they were experienced and observed by teachers—an example of mastery, the most potent source of efficacy—but it also provided an opportunity for vicarious experience (Bandura, 1986; Ross & Gray, 2006b).

Even though vicarious participation was not as powerful as mastery experience, it contributed to self-efficacy, especially if the information came from respected colleagues (Goddard, LoGerfo et al., 2004; Louis & Smith, 1991). Collaboration nurtured trust and respect (Newmann, 1994). Additionally, it encouraged problem solving, getting help, exploration, and a joint search for evidence of progress (Moore & Esselman, 1992; Taylor & Tashakkori, 1994). Teachers tended to share positive outcomes that became a form of social persuasion, another source of efficacy (Ross, 1998). Finally, collaboration prompted efficacy (Rosenholtz, 1989) that then elicited effective actions because the exercise of individual and collective efficacy depended on how individuals and groups interpreted the experiences that developed efficacy beliefs (Goddard & Skrla, 2006). The positive nature of collaboration increased the likelihood that the group would interpret experiences so they contributed to efficacious beliefs (Shachar & Shmuelevitz, 2002).

Middle School Structure

School culture is a factor that affects learning at all levels of schooling, but the specific needs of middle school students and the potential for using an understanding of how to develop efficacy to address them, makes this level especially interesting to this researcher. At the middle level, students move from self-contained classroom cultures to the departmentalized and specialized structures found in most high schools. While these changes in school structure occur, students' growth and development proceed more rapidly than at any other stage in life except for infancy (Jackson & Davis, 2000). Middle school students' innate vulnerability, their tendencies to use trial and error and behave more impulsively, and their capacity for more complex thinking combined to create variations in behavior, achievement, and emotions that were greater than in elementary and high school (Brown et al., 2004; Jackson & Davis, 2000).

The influence of efficacy and an understanding of how to foster its development in adolescents were especially helpful to middle school students as learners and as maturing individuals (Usher, 2008; Usher & Pajares, 2006). Many middle schools were found to have structures that address the needs of adolescents identified in *Turning Points*, a milestone report by the Carnegie Council on Adolescent Development (CCAD, 1989, 2000). These structures included interdisciplinary teams, smaller communities within the school, a common core curriculum, and practices that encouraged cooperation and guided interaction (Jackson & Davis, 2000). Middle school structures have the potential to strengthen the effects of Bandura's (1997) four sources of efficacy—mastery experience, vicarious experience, social persuasion, and affective states—because they encouraged the communication, collaboration, and

interactive learning for students and staff that facilitate the use of those sources of information (Brown et al., 2004; Jackson & Davis, 2000).

Some of the common features of a middle school structure, including teachers working on interdisciplinary teams with groups of students, prompted staff interaction that offset what Weick (1976) characterized as the loose coupling of systems in schools, that is, the separateness of parts that interacted and affected each other infrequently. In terms of teacher efficacy, loose coupling in traditional hierarchical school systems where teachers work largely in isolation, may have nurtured a sense of self-determination because individuals operated based on their own discretion (Weick, 1976). However, a later look at the effects of loose coupling on organizations led Orton & Weick (1990) to conceptualize a model that described developing shared values, working towards focused attention, and adding enhanced leadership so that this description of a structure did not limit its capabilities as a system or as a means of advancing the skills of individuals. Middle schools inherently have more of the structures in place that fostered shared focus on students' academic and social needs.

Leadership Practices

Principals cultivated practices and norms, such as collaboration, that improved school culture (Deal & Peterson, 1990), which in turn increased efficacy (Lucas, 2003). Giving teachers opportunities to use their skills (Louis & Smith, 1991), providing feedback and supervision that they perceived as useful (Brissie et al., 1988; Chester & Beaudin, 1996; Coladarci & Breton, 1991), and establishing a culture where they participated in school wide decision making (Berman, et al., 1977; Fletcher, 1990; Lee et al., 1991; Moore & Esselman, 1992; Raudenbush et al., 1992) contributed to stronger

efficacy beliefs. When teachers had the opportunity to influence school decisions that affected instruction, the school was more likely to develop a robust sense of collective efficacy (Goddard, Hoy, et al., 2004). Receiving respect from relevant peers had a strong positive impact on teacher efficacy (Louis & Smith, 1991) and this occurred when teachers and principals worked in schools with cultures that promoted means of expressing respect (Hoy et al., 2006). School culture was linked to school improvement through teacher efficacy (Berman et al., 1977; Ellett et al., 1997), collaboration (Reames & Spencer, 1998), transformational leadership (Ross & Gray, 2006), and an emphasis on learning (Brown et al., 2004; Multon et al., 1991; Tschannen-Moran et al., 2006).

Leadership that was responsive and supportive of teachers' needs (Hipp, 1996), that involved teachers in decision making that affected their work with students (Moore & Esselman, 1992), and that cultivated a shared mission that prompted future oriented thinking (Bandura, 1986; 1997) led to increased efficacy. Ross (1994b, 1998) noted that while teacher efficacy was a relatively stable characteristic of teachers that crystallized during the first years of teaching, it could be altered, especially through factors that predicted efficacy. The principal leadership behaviors that were most likely to positively influence teacher efficacy were those that integrated improved instructional skills with the explicit development of teachers' beliefs that they were instrumental in guiding students' success as learners and contributors to school cultures that promoted learning (Hipp, 1996; Tschannen-Moran & McMaster, 2009).

The collaboration and collective learning inherent in professional learning communities contributed to the type of school culture that fostered efficacy (Hipp &

Huffman, 2003; Scribner 1999b). In a qualitative study, Scribner (1999b) examined the relationship between teachers' sense of efficacy and how they experienced professional learning. He suggested that professional learning be planned and structured so teachers experience an intellectual challenge within a framework of peer support, such as professional learning communities, because this allows for mastery experiences to be interpreted, while also encouraging vicarious learning experiences and social persuasion.

Learning Communities

The belief that a school was a learning community outweighed the effects that demographic factors had on teacher efficacy (Louis, Marks, & Kruse, 1994). Learning communities developed from purposeful collaboration that was grounded in a commitment to instruction that engaged all students in learning and making progress (Hipp & Huffman, 2003; Hord, 1997; Huffman & Hipp, 2000). Because self-efficacy beliefs had generative power, they thrived when teachers were committed to the ongoing learning that led to mastery experiences that were supported and followed by further goal setting and expectations that continued to develop efficacy and increased learning for students (Scribner, 1999b).

There was a reciprocal relationship between professional learning and teachers' sense of personal efficacy (Scribner, 1999a). Professional learning communities had the potential to make ongoing learning an integral part of school culture (Hipp & Huffman, 2003). Hord's 1997 literature review identified five dimensions of professional learning communities: (a) supportive and shared leadership, (b) shared values and vision, (c) collective learning and application of learning, (d) supportive

conditions, and (e) shared personal practice. These dimensions were aligned with the leadership practices that develop teacher and collective efficacy (Ashton & Webb, 1986; Hipp & Bredeson, 1995; Leithwood et al., 2002). The relationships between efficacy at different levels —teacher, principal, and collective—had the potential to influence school culture (Ellett et al., 1997; Reames & Spencer, 1998) because they strengthened individual and collective capacity for learning (Bandura, 1997; Huffman, Hipp, Pankake, & Moller, 2001). Scribner (1999b) suggested that when learning communities are structured and guided by principals that further mastery experiences, provide vicarious experiences, and offer meaningful social persuasion, they set a feedback loop in motion that increase teachers' sense of efficacy and improve professional practice. Teachers would then view their work and its challenges from a more empowered perspective and become change agents that nurtured their intellectual spirit (Bandura, 1989a; Scribner, 1999b).

The Efficacy Variable

Almost all of the data researchers collected about efficacy at the teacher, principal, and collective level were from surveys (Tschannen-Moran & Gareis, 2004; Tschannen-Moran & Woolfolk-Hoy, 2001; Tschannen-Moran et al., 1998). Self-reported data captured individuals' assessments of perceived capabilities and was therefore an appropriate means for measuring efficacy when it was being evaluated as a variable because the construct was based on self-beliefs (Bandura, 1977a, 1997). While developing an instrument to assess preservice elementary science teachers' self-efficacy, Enochs and Riggs (1990) noted that teachers' behavior change and improve in terms of outcomes related to student achievement only after teachers examine the belief

systems behind their behaviors. Completing a survey that asked respondents to assess their beliefs initiated a self-examination process but did not ensure that the teaching behaviors and outcomes that formed those beliefs were accurately interpreted. In their extensive review of the limited research about teachers' accuracy in reporting their classroom behavior, Hook and Rosenshine (1979) cautioned that those reports were not accurate indicators of performance. Self-reported data also presented inherent problems with validity and reliability (Hill, 1988). However, Bandura (1997) described the appraisal of personal efficacy as an inferential process that involves weighing actual performance and abilities against an understanding of present tasks and acknowledged that individuals varied in both their orientation to self-assessment and in their self-knowledge. He noted that efficacy judgments are expected to be subjective and to be susceptible to variations brought about by differences in how the sources of efficacy information are interpreted (Bandura, 1986, 1997).

Most instruments that measured the efficacy construct required respondents to use Likert scales to assess themselves using sentences that described what they were able to do (Deemer & Minke, 1999; Pontius, 1998; Riggs & Enochs, 1990; Smolleck, Zambal-Saul, & Yoder, 2006). Bandura (1993, 1997) acknowledged that individuals could easily under or over report their capabilities. It was important to view these self-reports as perceptions and recognize that the power of self-efficacy for individuals and groups was in the assertion of perceived abilities (Bandura, 1993). Efficacy is a future-oriented belief construct and it is this property that gives it predictive strength that correlates with positive outcomes (Bandura, 1977b, 1997).

Defining Efficacy and Its Dimensions

Much of the difficulty with measuring efficacy stems from confusion and disagreement about its operational definition (Guskey, 1998; Guskey & Passaro, 1994; Hillman, 1986; Roberts & Henson, 2001; Tschannen-Moran et al., 1998; Tschannen-Moran & Woolfolk-Hoy, 2001). Although most researchers agree that there are two dimensions of teacher efficacy (Bandura, 1977, 1993, 1997; Ross, 1994a; Tschannen-Moran & Woolfolk-Hoy, 2001), one that represented a personal sense of capability and another that described a more general belief that executing certain actions effectively leads to accomplishing particular goals, there has been debate about the actual meaning of the second dimension (Guskey, 1998; Skaalvik & Skaalvik, 2007; Soodak & Podell, 1996;Tschannen-Moran et al., 1998), especially when captured in survey items. Emmer and Hickman (1990) viewed general teaching efficacy as external influences, similar to locus of control (Rotter, 1966), but other researchers saw it as outcome expectancy, meaning that general teaching efficacy described what teachers in general could be expected to accomplish (Ashton et al., 1982; Gibson & Dembo, 1984; Riggs & Enochs, 1990; Soodak & Podell, 1996). Bandura (1986) contended that general teaching efficacy could not be considered an outcome expectancy because this assumes that there is a contingency relationship between means and ends. This meant that teachers being surveyed looked at measurement items that referred to outcomes individuals could expect as a result of certain actions they believed they were capable of delivering. In actuality, teachers were able to assess whether they believed that teaching practices could bring about certain outcomes, and they could also judge their

capabilities about effectively implementing those practices, but those were two distinct assessments (Bandura, 1982, 1986, 1997).

Guskey and Passaro (1994) interpreted the second efficacy dimension as teachers' conviction that they could influence how well students learned. They also suggested that the wording of the items used in instruments up to that point blurred understanding of the difference between personal and general efficacy. They claimed that personal efficacy items written in the first person, using "I can" statements, reflect a positive perspective, and general efficacy items written in the third person, using "Teachers can" statements, have a negative connotation. Guskey (1998) argued that the verb tense used in writing items distinguished whether they were actually asking about personal efficacy or teaching efficacy in general. Items containing verbs that indicated a future orientation asked teachers to predict. This aligned with Bandura's (1997) description of efficacy as future oriented but because some instruments used to measure teacher efficacy did not use the future verb tense, Guskey (1998) stated that there was not a clear distinction between personal efficacy and general efficacy.

Construct Validity

Researchers consistently found validity in the construct of teacher efficacy (Bandura, 1993; Gibson & Dembo, 1984; Tschannen-Moran & Woolfolk-Hoy, 2001; Tschannen-Moran et al., 1998; Williams & Coombs, 1996) but continually defined the dimensions (Guskey & Passaro, 1993; Tsahannen-Moran et al., 1998) and revised how the construct was measured (Dellinger, Bobbett, Olivier, & Ellett, 2008; Guskey, 1987; Hillman, 1986; Tsahannen-Moran et al., 1998). Measurements of teacher efficacy revealed that it was a valid construct across levels of schooling (Hillman, 1986; Ross,

1994a; Williams & Coombs, 1996) and culturally diverse settings (Klassen et al., 2009). Teacher efficacy was context specific (Deemer & Minke, 1999; Goddard et al., 2000; Pajares, 1992; Ross, 1994b), but there was also evidence that it stabilized and could be generalized to some degree (Bandura, 1997). The Rand Corporation studies defined and named the construct of teacher efficacy and combined the two statements they used to assess it to get a single score that presumably assessed teacher efficacy (Armor et al., 1976; Berman et al., 1977). However, even though the studies did not include references to Bandura's definition of the construct, the instruments developed for the next twenty-five years were based on the two dimensions of efficacy that were illustrated by those two questions (Ross, 1994a; Tschannen-Moran & Woolfolk-Hoy, 2001; Tschannen-Moran et al., 1998). Gibson and Dembo (1984) used an analysis of the literature to develop the *Teacher Efficacy Scale* (TES) by adding items that further described characteristics of efficacious teachers, as defined by previous researchers.

Teacher Efficacy Scales

Although the TES became the most frequently used and adapted instrument (Henson, Kogan, & Vacha-Haase, 2000; Ross, 1994a; Tschannen-Moran & Woolfolk-Hoy, 2001; Tschannen-Moran et al., 1998), issues with defining the two dimensions of teacher efficacy and the construct validity of the scores from the instruments continued to be brought forward (Henson, 2001; Hillman, 1986). The two Rand items related to locus of control theory (Tschannen-Moran et al., 1998), but Gibson and Dembo (1984) concluded that they referred to self-efficacy theory (Henson, 2001). Tschannen-Moran et al. (1998) revised the definitions of the two dimensions of teacher efficacy. They replaced general teaching efficacy with beliefs about performance on teaching tasks in

their context and revised personal teaching efficacy to describe self-perceptions of teaching competence. They also presented a model that described teacher efficacy as a cyclical process that included the four sources of efficacy (Bandura, 1993), analysis of teaching tasks (Bandura, 1997; Gibson & Dembo, 1984; Guskey & Passaro, 1994), and assessment of personal competence, performance, and new sources of efficacy (Tschannen-Moran et al., 1998). There was a feedback loop that illustrated how beliefs led to actions that generated revised efficacy perceptions. Researchers found some limited support for the model, primarily because it was more comprehensive than the model that Gibson and Dembo (1984) used to develop the TES (Denzine, Cooney, & McKenzie, 2005; Goddard, 2002; Henson, Bennett, Sienty, & Chambers, 2000; Pajares, 1997). The model created by Tschannen-Moran et al. (1998) attempted to look at efficacy more broadly and it included more factors related to teaching tasks (Heneman, Kimball, & Milanowski, 2006; Henson, 2001).

The Teacher Sense of Efficacy Scale (TSES), a measure developed by Tschannen-Moran and Woolfolk-Hoy (2001), was based on this model. The instrument was also referred to as the Ohio State Teacher Efficacy Scale (OSTES). The items included references to teachers' assessment of specific teaching tasks and their perceptions of their skills and competence. When Tschannen-Moran (2000) administered the initial OSTES to 62 inservice teachers and 59 preservice teachers, the factor analysis showed that 36 of the 52 items yielded pattern coefficients of .60 or higher. Roberts & Henson (2001) suggested that the OSTES could be improved by either adding more items to strengthen the relatively weak factor loadings for the three classroom management items. Tschannen-Moran and Woolfolk-Hoy (2001) field tested the measure with both

preservice and inservice teachers and saw classroom management emerge as an important element of teaching so they added items that described this dimension of efficacy. Their final version of the measure included items that assessed efficacy in the areas of instructional strategies, classroom management, and student engagement (Tschannen-Moran & Woolfolk-Hoy, 2001).

The TSES was considered to be superior to previous measures of teacher efficacy because it captured a broader range of tasks related to good teaching (Klassen et al., 2009; Shore, 2004; Smolleck et al., 2006). Tschannen-Moran and Woolfolk-Hoy (2001) developed it through a process of item development, item scrutiny and selection, and revision cycles based on factor analysis. The instrument reflected Bandura's unpublished measure of teacher self-efficacy (Tschannen-Moran & Hoy, 2001), and included contextual factors in some items, but was not used as frequently as the TES (Dellinger et al., 2008), possibly because it was relatively new (Smolleck et al., 2006). The TSES appeared to address most researchers' concerns about the need to assess efficacy in context and to recognize the complexity of teaching tasks (Dellinger et al., 2008; Klassen et al., 2009; Roberts & Henson, 2001; Smolleck et al., 2006). It also showed evidence of reliability across five countries and confirmed the validity of the teacher efficacy construct (Klassen et al., 2009). Although the TSES looked promising, Tschannen-Moran and Woolfolk-Hoy (2001) called for additional testing of the instrument to ensure its validity and reliability.

Measurement Issues

There was not a measure of teacher efficacy that addressed all researchers' concerns (Dellinger et al; 2008; Goddard & LoGerfo, 2007; Klassen et al., 2009;

Roberts & Henson, 2001; Smolleck et al., 2006). Bandura (1997, 2001) found that most measures were too general and did not consider the task-specific nature of efficacy. Tschannen-Moran and Hoy (2001) said that Bandura's scales were true to the construct of efficacy but did not accurately reflect the typical work life or tasks of teachers. Other attempts to create valid measures also presented issues.

Elsewhere, Henson (1999) developed the Sources of Self-Efficacy Inventory (SOSI) instrument in an attempt to measure teacher efficacy within the four areas of efficacy information identified by Bandura. The 35 items on the inventory addressed mastery experience, vicarious experience, social persuasion, and affective states. Factor analysis showed that too many of the items were associated with non-intended factors (Kieffer & Henson, 2000) and that substantial item and subscale revision was necessary.

Although Tschannen-Moran and Woolfolk-Hoy (2001) addressed concerns about including the context of tasks and clarified that their instrument, the TSES, actually measured teacher efficacy beliefs rather than a more global notion of teacher efficacy, the items were not explicitly linked to research about effective practices (Dellinger et al., 2008).

A subsequent study found that the TSES was a sound measure of teacher efficacy beliefs and their relationship to teachers' actual task performance. Results suggested that the measure itself did not accurately assess the relationship between teacher efficacy and student achievement, but the longitudinal analysis showed that teachers' TSES scores had a significant direct effect on their classroom performance and the quality of that performance influenced student achievement (Henemen et al., 2006).

This study included 180 elementary teachers whose TSES responses were correlated with teacher evaluation scores and student achievement data for one school year. Henemen et al. (2006) concluded that the TSES was the preferred measure of teachers' efficacy beliefs for future research because the psychometric properties could be replicated and it addressed the breadth of behaviors that comprised a teacher's role.

The small amount of research on the collective efficacy construct (Goddard, 2001; Henson, 2001; Ross, 1994a) limited the development of measurement instruments. The fundamental measurement issue was whether collective efficacy should be measured as an aggregate of individual teacher efficacy perceptions or assessed by asking individuals within the school to evaluate the efficacy of the staff as a whole (Bandura, 1997, 2000, 2006b; Goddard, 2001, 2002b; Goddard & Goddard, 2001). There was discussion about whether to assess perceived collective efficacy by aggregating individual responses within the group or by arriving at consensus (Bandura, 1997; Goddard, 2001; Tschannen-Moran & Barr, 2004). Collective efficacy perceptions varied greatly among groups (Bandura, 1997; Goddard, 2003). Specifically, when Goddard (2003) examined efficacy beliefs, he found that individual teachers' perceptions about their own efficacy varied less than 5% between groups but individual assessments of group capabilities varied at least 40% among groups.

Bandura (1993) noted that, for schools, the level of organization was a deciding factor in this issue. This meant that measurements would be most accurate if tightly coupled schools used an approach where individuals assessed the collective efficacy of the staff and more loosely coupled schools used an aggregate of individuals' perceptions of their efficacy (Bandura, 1993; Henson, 2001). Determining the level of

organization was subjective and inaccurate if assertions were mostly based on generalizations (Henson, 2001). For example, Goddard (2002a) viewed elementary schools as tightly coupled organizations, but this did not account for any organizational differences or structures within schools. Goddard and LoGerfo (2007) proposed that collective efficacy be measured in schools by conducting direct discussions that led to staff members reaching consensus but acknowledged that the few attempts at doing this resulted in mixed findings. In addition to making it impossible to recognize variability in efficacy beliefs within the group, this approach was also discouraged because the social dynamics of reaching consensus affected the validity of the efficacy assessment (Bandura, 1997). Assessing collective efficacy was complicated because it required teachers to not only distinguish between their beliefs that particular behaviors produced certain results and their beliefs about their capabilities to bring about those behaviors, but also to judge the capability of the staff as a whole (Goddard, 2001). In addition to considering whether individual teachers could best make this judgment by contributing to an aggregated score based on perceptions of themselves or by each making a predictive assessment about the whole staff, factors such as how individuals tended to rate others compared to themselves and teachers' perceptions about their efficacy relative to that of others also influenced the measurement of collective efficacy (Goddard, 2001; Goddard & LoGerfo, 2007; Tschannen-Moran & Barr, 2004).

In a study designed to determine whether collective efficacy was self-referenced, meaning that each teacher responded to statements worded as *I can*, or group-referenced, in which case each teacher responded to sentences that talked about what *teachers in this school can* do to work effectively with students, Goddard and LoGerfo

(2007) created two surveys randomly distributed to different groups of teachers in 96 high schools. They found that scores collected using survey items that asked teachers about their capabilities as a group, that is, when sentences were worded to state what *teachers in this school can* do, strongly predicted group achievement and therefore had better predictive validity than surveys that used self-referent items. These results followed from findings about teaching efficacy; teachers evaluated their capabilities in terms of how their performance compared to their perceptions of the performances of fellow teachers (Ashton, Buhr, & Crocker, 1984). In general, researchers concluded that aggregating individuals' survey responses was the most valid way to measure collective efficacy (Bandura, 1993; Goddard, 2001; Goddard & Goddard, 2001; Tschannen-Moran & Barr, 2004) but that items should be constructed so they referred to the capabilities of the group (Bandura, 1993; Goddard, 2001; Goddard & LoGerfo, 2007).

Measuring Collective Efficacy

Goddard et al. (2000) developed a measure of collective teacher efficacy that took a group orientation and asked respondents to assess the effectiveness of the staff as a whole. Their decision to create an instrument that attempted to measure perceptions of collective capability was based on the belief that it was important to operationalize a group-level construct by asking group-level questions. They used the 16-item version of the Gibson and Dembo (1984) instrument but adapted it so that all items were written with a group orientation. It was also revised to include positively and negatively worded items about both competence and the task. After a field test and pilot study, they used it to determine the relationship between achievement and

mathematics in 47 urban elementary schools. Results confirmed that the Collective Teacher Efficacy scale (CTE) that they developed had construct validity and internal reliability. Although it was used only at the elementary school level, the researchers considered social cognitive theory (Bandura, 1986), descriptions of human agency, and the four sources of efficacy (Bandura, 1993), and suggested that the group-oriented items assessing collective efficacy would remain the same at all levels (Goddard et al., 2000).

Measuring Principal Efficacy

Bandura (2001) recommended that measures of efficacy include references to the task within a context and that they include considerations of the perceived difficulty of the task and the strength of the efficacy beliefs. This meant that measures had to assess the range of behaviors needed to succeed on a specific task and that the instrument should examine the level and strength of efficacy beliefs (Bandura, 1997, 2001). Some researchers found that this recommendation made it difficult to construct principal efficacy instruments and that applied measures had problems similar to those found in teacher efficacy measures (Dimmock & Hattie, 1996; Tschannen-Moran & Gareis, 2004). Hillman's (1986) attempt to create an instrument comprised of forced choice responses to situations was difficult to analyze and was more closely aligned with attribution theory than social cognitive theory (Tschannen-Moran & Gareis, 2004). Attempts to use vignettes to describe efficacy responses to possible work situations proved to be unstable or unreliable (Dimmock & Hattie, 1996; Tschannen-Moran & Gareis, 2004). Participants in a sample of 121 Dutch primary school teachers and principals completed the Teacher and Principal Sense of Efficacy scale (TPSEs), an

instrument that consisted of eight student-oriented and eight school-oriented tasks. Because the results showed that teachers reported more concern and efficacy for student-oriented tasks and principals indicated greater levels of efficacy with school-oriented tasks, the instrument was not a valid measure of the principal efficacy construct (Imants & DeBrabander, 1996). As one of three potential ways to measure principal efficacy, Tschannen-Moran and Gareis (2004) tested an adaptation of the Collective Teacher Efficacy (CTE) scale developed by Goddard et al. (2004). Weak factor loadings indicated that the instrument was not sufficiently valid or reliable for use in measuring principal efficacy (Tschannen-Moran & Gareis, 2004).

Tschannen-Moran & Gareis (2004) developed the *Principal Sense of Efficacy Scale* (PSES), an instrument modeled after Tschannen-Moran and Woolfolk-Hoy's (2001) *Teacher Self-Efficacy Scale* (TSES). It attempted to examine both the respondent's sense of the difficulty of the task and an assessment of their competence. Principals were asked to respond to each item by considering the combination of their current ability, resources, and opportunity. This instrument had stronger construct validity and reliability than previously tested measures (Tschannen-Moran & Gareis, 2004). When it was field tested, the response rate of 28% disappointed researchers, but the surveys were mailed to 1,925 principals so the sample was reasonably large. The format for the *Principal Self-Efficacy Scale* (PSES) was the same as the one used to measure teacher efficacy, which limited the possibility of confounds introduced if teachers and principals could interpret the surveys differently because of a difference in directions and format. Tschannen-Moran & Gareis (2004) noted that the instrument needed continued testing.

Quantitative and Qualitative Aspects of Measuring Efficacy

Research identified efficacy as a useful construct for explaining differences in teacher (Allinder, 1994; Anderson et al., 1988; Ashton et al., 1982a; Gibson & Dembo, 1984; Ross & Gray, 2006) and principal practices (Hipp & Bredeson, 1995; Leithwood & Jantzi, 2008; Tschannen-Moran & Gareis, 2004) that influenced student achievement. Since efficacy emerged in 1977 as a strong predictor of motivation and behavior that affected success with learning, the instruments that were developed have shown that the construct could be validly and reliably measured (Bandura, 1977a, 2001b; Gibson & Dembo, 1984; Goddard, 2002b; Tschannen-Moran & Gareis, 2004; Tschannen-Moran & Woolfolk-Hoy, 2001). Although the research addressed the correlations between student and teacher efficacy (Brown et al., 2004; Marat, 2007), teacher and collective efficacy (Goddard, 2001; Goddard & Goddard, 2001; Goddard et al., 2000), and teacher and principal efficacy (Ross & Gray, 2006; Tschannen-Moran & Gareis, 2004), there have been no studies that examine how individual teacher efficacy, collective efficacy, and principal efficacy relate to each other within a school and how that relationship correlates with student achievement. Middle schools were the unit of analysis for some studies that involved the relationship between one or two levels of efficacy (Brown et al., 2004; Goddard & Goddard, 2001; Lucas, 2003; Ross, 1994). However, there have been no published studies that examine correlations among efficacy at the teacher, collective and principal levels, and achievement in middle school. Additionally, no researchers have examined how efficacy at more than one level influences achievement in middle school.

Wheatley (2005) reviewed the teacher efficacy research and concluded that almost all of the assessments were based on responses to Likert-scale items that were then categorized to indicate high or low levels of efficacy. Although efficacy was viewed as a continuous variable (Bandura, 1977a), these categories limited the description of actual efficacy (Wheatley, 2005). Tschannen-Moran et al. (1998) called for researchers to attempt to develop more interpretive methods, and Wheatley (2005) responded to this by proposing that mixed-methods studies be employed so that the global nature of the quantitative results could be augmented with interpretive information. Qualitative efficacy research used interviews and observations primarily to describe the qualities and characteristics of efficacious teachers and to identify the practices and behaviors of teachers with varying efficacy perceptions (Cantrell & Callaway, 2008; Czerniak & Schriver, 1994; Frase, 1998; Puchner & Taylor, 2004).

There have been few studies that examine how specific practices increase teacher efficacy. Cousins et al. (1992) conducted a multiple case study and identified conditions within a school that fostered collaboration that then positively influenced teacher efficacy. Assessment results indicated that teacher efficacy increased when team teaching, multi-age grouping, and a healthy school climate were in place (Ashton et al., 1982b), when there was perceived participation in decision-making (Ross, 1994a), and when teachers participated in cognitive coaching (Edwards et al., 1998). Several researchers commented on the importance of making efforts to directly develop teacher efficacy (Goddard, 2001; Goddard et al., 2004; Tschannen-Moran et al., 1998), and principal efficacy (Tschannen-Moran & Gareis, 2004), and suggested that using the four sources of efficacy information was the best starting place. Participation in staff

training activities that provided teachers with a prescribed set of practices for working effectively with students showed some measurement of positive influence on teacher efficacy, and this was a means of providing a mastery experience, although it was uncertain whether the effects would be sustained (Fritz, Miller-Heyl, Kruetzer, & MacPhee, 1995; Ross, 1994b). Studies showed that explicit approaches that strengthened the interpretation and use of mastery experiences resulted in higher self-reported levels of efficacy for individual teachers (Tschannen-Moran & McMaster, 2009; Woolfolk-Hoy & Spero, 2005), for the teachers collectively (Goddard, 2001) and for principals (Tschannen-Moran & Gareis, 2004).

Purpose and Relevance of Study

The purpose of this study was to look at the relationship between teacher and collective efficacy in middle schools. Prior research established, through separate studies, that there was a link between student achievement and each level of efficacy (Armor et al., 1976; Goddard et al., 2000; Leithwood & Jantzi, 2008) and a relationship between teacher efficacy and collective efficacy (Goddard & Goddard, 2001). Therefore, I looked at those two aspects of efficacy in the context of middle schools. I selected the middle schools in a Pacific Northwest metropolitan area that had relatively excellent student achievement ratings. The principals and teachers at those schools completed surveys about their efficacy beliefs. Survey responses allowed the researcher to examine the degree to which individual teachers' efficacy beliefs related to teachers' judgments of collective efficacy and principals' efficacy. The surveys included open-ended questions that explored how the characteristics of schools' cultures contributed to efficacy at the teacher, collective, and principal levels.

For the past three decades, efficacy studies were based on self-reported data (Multon et al., 1991; Shahid & Thompson, 2001) and focused on identifying antecedents and outcomes (Ashton, et al., 1982a; Ross, 1994). Some of the key antecedents were characteristics of individuals in the profession, such as experience (Hoy & Woolfolk, 1990), gender (Anderson et al., 1988) and professional preparation (Hoy & Woolfolk, 1993). Other antecedents pertained to job descriptions (Anderson et al., 1988; Midgley, Feldlaufer, & Eccles, 1988; Raudenbush, Rowan, & Cheong, 1992) and working conditions (Leithwood, 2007; Rosenholtz, 1989). Outcomes were categorized as the teacher attitudes and practices that influenced student learning and achievement (Ashton & Webb, 1986; Riggs and Enochs, 1990). Researchers have made attempts to distinguish the effects of efficacy at the teacher (Imants & De Brabander, 1996), principal (Tschannen-Moran & Gareis, 2004), and collective levels (Goddard & Goddard, 2001).

This study examined those three levels of efficacy and identified characteristics of schools and some practices that developed efficacy. Results of the study contributed to educators' understanding of the relationship between efficacy and achievement by providing some insight into what promotes efficacy within a school. Increased efficacy is associated with higher levels of achievement (Ashton et al., 1982a; Leithwood & Jantzi, 2008; Moore & Esselman, 1992). Because efficacy was related to achievement at the teacher (Ashton et al., 1982b; Armor et al., 1976, Berman et al., 1977), principal (Leithwood & Jantzi, 2008), and collective levels (Goddard & Goddard, 2001), the strength of the relationship between levels of efficacy within a school was part of understanding the learning culture within a school. Efficacy was sometimes considered

an indistinct construct that eluded practitioners (Tschannen-Moran & Woolfolk-Hoy, 2001; Wheatley, 2005) because it was based on perceptions of competence and these beliefs were difficult to measure (Gibson & Dembo, 1984; Guskey & Passaro, 1993), categorize (Guskey & Passaro, 1993) or correlate directly to performance in context (Dellinger, Bobbett, Olivier, & Ellett, 2008; Wheatley, 2005). Identifying the practices that developed efficacy added to teachers' and principals' understanding of how beliefs might relate to actions. This provided potentially empowering awareness that contributed to developing practices that increased achievement.

Bandura (1997) specified that teachers' efficacy beliefs vary according to task. He noted that teaching involved many different types of actions and a teacher's sense of efficacy did not remain uniform across subject areas, tasks, or job roles. When he constructed an instrument to measure efficacy, it had seven subscales (Bandura, n.d.). Two of the subscales were captured by larger numbers of items on the 30-item instrument. Instructional efficacy, perceiving oneself as having the capability to influence academic achievement, was a key subscale. Disciplinary efficacy, believing that one could execute the actions to positively influence student behavior, was another subscale that was represented by a larger number of items (Bandura, n.d., 1997, 2001b, 2006a). I labeled these two aspects of teaching efficacy as academic efficacy and (b) behavioral efficacy. The other efficacy subscales included: (a) efficacy to influence decision making, (b) efficacy to influence school resources, (c) efficacy to enlist parental involvement, (d) efficacy to enlist community involvement, and (e) efficacy to create a positive school climate (Bandura, 2006a).

Because I focused on teaching efficacy's relationship to learning outcomes and selected middle schools for the study that demonstrated relatively high student achievement, the research questions centered on academic efficacy and behavioral efficacy. Efficacious teachers took actions that positively affected student achievement (Armor et al., 1976; Berman et al., 1977; Ashton & Webb, 1986; Moore & Esselman, 1992) and worked with student behavior so that it did not diminish students' learning (Ashton & Webb, 1986; Gibson & Dembo, 1984; Meijer & Foster, 1988). Within high achieving middle schools, teachers' beliefs about their own efficacy and their views about the collective efficacy of the staff to influence achievement and behavior were examined to determine whether they were related. Principals' academic and behavioral efficacy beliefs were also compared to teachers' individual and collective beliefs. I also looked at teachers' and principals' observations about the factors that contributed to teacher, collective, and principal efficacy in their schools. The intent of the study was to provide results that would contribute to researchers' and educators' understanding about efficacy relationships within high performing middle schools and to identify factors that strengthen teacher, collective, and principal efficacy.

Research Questions

My research questions examined the relationships between academic efficacy and behavioral efficacy at the teacher and collective levels in the middle schools that participated in the study. Also, the principals' academic and behavioral efficacy beliefs were calculated so that they could be compared to teachers' efficacy views. My questions were:

I. What is the relationship between schools' collective efficacy beliefs and teachers' efficacy beliefs?
    a. What is the relationship between the School's Overall Collective Efficacy Beliefs and the Teacher's Overall Efficacy Beliefs?
    b. What is the relationship between the School's Academic Collective Efficacy Beliefs and the Teacher's Academic Efficacy Beliefs?
    c. What is the relationship between the School's Behavioral Collective Efficacy Beliefs and the Teacher's Behavioral Efficacy Beliefs?

II. Is there a significant difference between the School's Overall Collective Efficacy Beliefs and the Teacher's Overall Efficacy Beliefs?

III. Is there a significant difference between the School's Academic Collective Efficacy Beliefs and the Teacher's Academic Efficacy Beliefs?

IV. Is there a significant difference between the School's Behavioral Collective Efficacy Beliefs and the Teacher's Behavioral Efficacy Beliefs?

V. Do the principal's efficacy beliefs match the teacher's efficacy beliefs?

CHAPTER III

METHODOLOGY

Middle school teachers and principals completed web-based questionnaires that assessed their beliefs about their effectiveness on specific tasks which were categorized as exemplifying academic efficacy and behavioral efficacy. I identified middle schools for the sample from the 53 middle schools within a large metropolitan area in the Pacific Northwest. Using the annual report card ratings of schools and districts produced by the Oregon Department of Education, schools with relatively excellent performance ratings in Mathematics and English/Language Arts on the *Oregon Assessment of Knowledge and Skills* (OAKS) for the 2010-2011 school year were selected for the study. Teachers and principals in the selected schools were invited to complete three different web-based surveys. All teachers in each school were invited to complete a teaching efficacy survey (see Appendix A) and a collective efficacy survey (see Appendix B). The principals of the schools were asked to complete a principal efficacy survey (see Appendix C). Each of the three surveys included open-ended questions that asked teachers and principals to describe the factors that contributed to their success with the tasks that defined their roles. This provided information about what teachers and principals perceived as the strongest sources of their efficacy beliefs.

The study was designed to show the correlations between teachers' overall efficacy beliefs and overall collective efficacy beliefs for all of the selected schools in order to explore the relationship between those two levels of efficacy. Items on the teacher efficacy, collective efficacy, and principal efficacy questionnaires were categorized to

show the strength of academic and behavioral efficacy. This allowed me to look overall at the relationship between teachers' academic efficacy beliefs and collective academic efficacy beliefs for the selected schools. Similarly, I could examine the overall relationship between teachers' behavioral efficacy beliefs and collective behavioral beliefs. The web-based questionnaires were designed for each participating school so I could determine whether there was a significant difference between teacher efficacy and collective efficacy in these domains: (a) school's overall collective efficacy beliefs and teacher's overall efficacy beliefs, (b) school's academic collective efficacy beliefs and teacher's academic efficacy beliefs, and (c) school's behavioral collective efficacy beliefs and teacher's behavioral efficacy beliefs.

Research Design

A descriptive survey design was used in this non-experimental quantitative study to collect data about teachers' self-efficacy and collective efficacy beliefs, and principals' self-efficacy beliefs. The survey design was employed to gather data about teachers' and principals' perceptions of their capabilities to act effectively in carrying out specific tasks that were classified as exemplifying academic efficacy and behavioral efficacy. A survey design was selected because it is a known method for collecting data that provided a quantitative description about trends, attitudes, or opinions of a population (Creswell, 2003). A survey design also allows for the necessary generalization from the sample to the population (Babbie, 1990). In this study, statistical generalizations were made concerning the relationships between teacher and collective efficacy, between teacher academic efficacy and collective academic efficacy, and between teacher behavioral efficacy and collective behavioral efficacy.

The cross-sectional descriptive survey design was the most efficient way to collect data from teachers and principals in schools that were spread over a 40-mile radius. Creating web-based surveys provided convenience and anonymity to the respondents.

The unit of analysis was the teachers who completed either the teacher efficacy and teacher collective efficacy survey. Although principals completed the principal efficacy survey, they provided only ancillary data because of the small number of them in the study. This unit of analysis ensured that the collected data could be compared with previous empirical data about teacher and collective efficacy.

There were 333 schools in Oregon that received an *Outstanding* rating in 2010-2011. Because middle schools across the state did not contain the same grade levels, and there were an increasing number of schools that included grades kindergarten through eight during the past five years, the state did not break down ratings by school level. There were 53 middle schools included in the study, with middle school defined as containing grades six through eight. Eleven of those schools received an *Outstanding* rating in 2010-2011. The index scores that determined the rating ranged from 91.2% to 114.3%. Adding the number of students who made growth by meeting or exceeding the cut scores allowed the percentage to exceed 100%. See Table 1 for complete information about the 11 schools' achievement ratings and scores.

The three survey questionnaires that I used combined previously developed survey instruments (Goddard et al., 2000; Tschannen-Moran & Gareis, 2004; Tschannen-Moran & Woolfolk-Hoy, 2001) with questions that would generate teachers' and principals' perceptions about the sources of efficacy information, based on the four categories that Bandura identified (1977, 1986, 1997). Each item that was taken from

each of the previously developed and used instruments was categorized as describing academic efficacy or behavioral efficacy (see Appendix D) so that the survey items addressed the research questions.

Table 1

Reading/Math Achievement and School Rating Percentages for Participating Schools

Participating School	Reading Achievement % Met/Exceeded	Math Achievement % Met/Exceeded	Rating and Index Formula
1	90	90	Outstanding 104.1
2	>95	91	Outstanding 109.9
3	89	78	Outstanding 92.3
4	94	90	Outstanding 106.2
5	>95	94	Outstanding 114.3
6	90	79	Outstanding 93.0
7	87	75	Outstanding 95.4
8	85	73	Outstanding 91.2
9	94	79	Outstanding 102.4
10	91	73	Outstanding 93.6

The three survey questionnaires that I used combined previously developed survey instruments (Goddard et al., 2000; Tschannen-Moran & Gareis, 2004; Tschannen-Moran & Woolfolk-Hoy, 2001) with questions that would generate teachers' and principals' perceptions about the sources of efficacy information, based on the four categories that Bandura identified (1977, 1986, 1997). Each item that was taken from each of the previously developed and used instruments was categorized as describing academic efficacy or behavioral efficacy (see Appendix D) so that the survey items addressed the research questions.

Because the correlation between teacher efficacy and student achievement (Ashton et al., 1982a; Gibson & Dembo, 1984; Tschannen-Moran et al., 2001), between collective efficacy and student achievement (Goddard & LoGerfo, 2004; Goddard et al., 2000) and between principal efficacy and student achievement (Leithwood & Jantzi, 2008; Leithwood et al., 2004; Tschannen-Moran & Gareis, 2004) had already been established, I designed the study to focus on the relationships between teacher and collective efficacy. Additional information about how efficacy developed was elicited by the open-ended questions.

Hypotheses

The data gathered from the teacher questionnaires were used to evaluate my hypotheses regarding the relationships between teachers' efficacy and collective efficacy in middle schools. Again, the responses to the principal questionnaire were examined to see how they triangulated the results from the two teacher questionnaires. I used the responses to the open-ended questions from teachers and principals in the three selected schools to identify factors that contributed to developing efficacy.

The first hypothesis was intended to confirm the link between teachers' positive efficacy beliefs and student achievement (Gibson & Dembo, 1984; Ross, 1994a; Tschannen-Moran et al., 1998) and between staff collective efficacy and schools' level of academic performance (Bandura, 2006a). High performing schools were selected for the study with the expectation that there would be evidence of efficacy at the teacher and collective levels that would be at least above average. My first hypothesis was that there is stronger than average efficacy at the teacher and collective levels in schools that demonstrate high levels of academic achievement. Researchers noted the influence

of collective efficacy on student achievement (Bandura 1997; Goddard, 2000; Tschannen-Moran & Barr, 2004) and its potential to increase teacher efficacy (Bandura, 2006a; Goddard et al., 2001). Bandura (2006a) emphasized that a group's attainments were the product of not only shared knowledge and skills but also of the interactive dynamic within the organization.

In looking at the relationship between collective efficacy and teacher efficacy within high performing schools, my second hypothesis was that the overall sense of collective efficacy is stronger but related to the level of teacher efficacy within middle schools. Based on Bandura's (1986) definitive description of perceived self-efficacy as a judgment of capability to execute given types of performances and his distinction that collective efficacy is not merely the sum of the efficacy beliefs of a group's members but rather an emergent group level property that functions independently of the individual beliefs of the group's members (Bandura, 2006a), the efficacy strength for specific tasks were likely to be greater at the collective level.

Consequently, my third hypothesis was that collective academic efficacy and collective behavioral efficacy will be slightly higher but related to teacher academic and behavioral efficacy within middle schools. Academic and behavioral efficacy exemplified the task specific nature of efficacy (Bandura, 1997). Goddard et al. (2000) justified Bandura's (1993, 1997) description of collective efficacy as an important school property by reviewing the connection between student achievement and teacher efficacy (Anderson et al., 1988; Armor, et al., 1976; Ashton & Webb, 1986; Ross, 1994a. Adding that from an organizational perspective, collective efficacy could

contribute to an understanding of the different effects that schools have on student achievement.

There was an identifiable but indirect relationship between principal leadership and student achievement (Leithwood & Jantzi, 2008), and it was suggested that principal efficacy was related to teacher efficacy (Imants & DeBrabander, 1996; Tschannen-Moran & Gareis, 2004, 2007). McCormick (2001) proposed that principals' self-efficacy was the key cognitive variable that affected how their motivation and task strategy development in order to create a leadership environment that fostered teacher efficacy. Although there were too few participating principals to quantitatively investigate the efficacy relationships, my fourth hypothesis was addressed by matching principals' efficacy scores to collective and teacher efficacy data. My fourth hypothesis was that principals' self-efficacy judgments would match teachers' individual and collective efficacy beliefs.

Setting and Participants

The schools involved in this study were middle schools within a 40-mile radius of a major city in the Pacific Northwest. Middle schools were selected because their general organization placed them between the contained classrooms at the elementary level and departmentalization in high school. The prevalence of teaming and the emphasis on having a means of building relationships with students through advisory or homeroom programs were aspects of middle school programs that influenced teacher efficacy (Brown et al., 2004; Jackson & Davis, 2000; Midgley et al., 1988,1989) and collective efficacy (Henderson, Jones, & Self, 1998; Tschannen-Moran & Barr, 2004). Variations in middle school program structure, ranging from those that were designed

to promote collaboration and interdisciplinary study to those that had departmentalization and scheduling that resembled a junior high school, existed within the schools selected for the study.

The selected middle schools were drawn from a convenience sample of public schools that are within a 40-mile radius of a major city in the Pacific Northwest. As of 2010, 53 public schools in 18 school districts existed within this metropolitan area that serve the middle school population. All of the schools defined middle school as serving students in the sixth, seventh, and eighth grades. The smallest school in the sample served 325 students and the population of the largest school was 1076. They were all in urban or suburban settings.

School Characteristics

From this sample, 11 middle schools from six school districts received *Outstanding* ratings on the Oregon School Report Card for 2010-2011 and were selected for the study. One principal declined to participate and did not want the staff at that school to receive the invitation to complete the surveys. Individual school websites and Oregon Department of Education (ODE) reports, available on the ODE website, were used to find information about school demographics and performance. The 10 schools that participated in the study varied in size from 454 students to 1,076 students. The percentage of students who qualified for free or reduced lunch ranged from 11% to 35%. Compared to other middle schools in the state of Oregon, six of the schools could be classified as upper socioeconomic status (SES) schools because the percentage of students who received free or reduced lunch was between 11% and 17%. Two middle schools were considered to be above average SES schools because 20%

and 22% of the students received free or reduced lunches, and two schools were classified as slightly above average SES schools with free and reduced lunch percentages of 35%.

Ethnic diversity in the 10 schools ranged from 15% to 47% minority. English Language Learners made up from zero to 4% of the school populations. Between 6% and 12% of the students in the schools received special education services. Within the selected schools, the percentage of students who met or exceeded Oregon State Benchmarks in Reading ranged from 85% to > 95%, and the percentage of students who met or exceeded the Math Benchmark ranged from 73% to 94%. The school characteristics and demographic distribution of students in the schools that participated in the study were summarized in Table 2 and Table 3.

Table 2

Number of Students in Identified Schools for 2010-2011 School Year

Identified School	Number of Students
School 1	1,076
School 2	459
School 3	555
School 4	507
School 5	454
School 6	842
School 7	480
School 8	646

Table 2 (continued).

Identified School	Number of Students
School 9	567
School 10	692

Table 3
Demographic Distribution of Students in Identified Schools

Percentage of Students Within Identified School										
Sub-Groups	1	2	3	4	5	6	7	8	9	10
Ethnicity										
Asian	26.7	1.1	12.3	4.3	3.0	8.7	0.8	2.8	5.7	4.8
Black	2.3	16.3	0.9	0.4	20.0	2.1	1.2	0.9	0.0	1.3
Hispanic	9.1	1.1	5.5	6.0	7.7	7.7	7.2	8.2	5.3	5.5
Multi-Ethnic	8.2	0.6	6.6	5.8	9.7	3.5	4.3	4.2	4.6	5.5
Native American	0.8	4.3	0.0	1.0	0.7	0.5	1.4	0.5	1.4	0.7
White	53.1	76.6	74.6	82.5	58.2	77.5	85.0	83.4	83.0	82.3
ELL Students[a]	3.7	2.7	1.4	0.0	0.5	2.2	1.6	0.9	0.5	0.6
IEP Students[b]	10.0	12.0	6.0	6.0	9.0	8.0	10.0	12.0	10.0	9.0
SES[c]	7.0	35.2	11.1	14.6	34.5	11.2	19.6	21.5	13.1	15.5

[a]English Language Learners (ELL).
[b]Individualized Education Plan (IEP), percentage that received special education services.
[c] Socioeconomic status (SES), percentage that received free or reduced lunch.

Although the 10 schools were in six different school districts, they had similar academic programs. All 10 schools were comprehensive middle schools that offered four core classes in language arts, social studies, math, and science as well as arts and

elective courses. Students attended school for an average of 6.5 hours. Four of the schools had a distinct advisory or homeroom time built into the schedule that was from 10 to 30 minutes in length. In all of the schools, teachers on grade level or interdisciplinary teams worked with the same group of students for their core subjects.

Participant Characteristics

Eleven principals and 323 teachers were identified for the study based on their schools' *Outstanding* ratings on the Oregon School Report Card for 2010-2011. One principal declined to allow teachers from the school to participate. It was also necessary to account for teachers who taught part time in two or more schools within a school district. Because each teacher would be required to complete the teacher efficacy and collective efficacy surveys two or more times to accurately contribute to aggregated scores, he or she was assigned to only one school. I did this by going through the staff list alphabetically and assigning the first teacher who taught in two or more schools to the first school, the next one to the second school, and so for forth, so that the part time teachers were evenly distributed across schools where they had split teaching assignments. I verified the accuracy of the staff lists on the schools' websites before using them to invite teachers to complete the surveys. Each teacher efficacy, collective efficacy, and principal efficacy survey included a question that asked respondents how many total years of experience they had as teachers or principals and a question that asked how long they had worked at their current schools.

After the adjustments described above, 10 principals and 276 teachers were invited to complete the surveys. There were 184 female and 92 male teachers. Within each of the 10 schools, the percentage of female teachers was always greater, but in one

school the percentage was greater by only 4%. The range was from 78% to 52% of female teachers on staff. Teachers in each of the 10 schools had an overall average of 13.2 years of experience; the range was 7.1 years to 18 years. The percentage of teachers who met the federal definition of being highly qualified to teach in the subject areas that comprised their teaching assignments ranged from 95.5% to 100%; the overall average was 98.8%. The overall average percentage of teachers in the 10 schools who had a Master's degree or higher was 74.9%, with a range of 57.4% to 86%.

A total of 120 teachers participated in the study by completing the teaching efficacy survey. Of those 120 teachers, 69 teachers completed both the teaching efficacy and collective efficacy surveys. Because each participant's anonymity was assured, the gender distribution was not determined. The overall average number of years of total teaching experience for the 120 teachers who completed the teaching efficacy survey was 12.9 years. The difference in the averages of total years of teaching experience among the 10 schools ranged from 7.6 years to 16.7 years. The average number of years that teachers who completed the teaching efficacy survey taught in their current schools was 7.7 years, and the range in the averages among the teachers from the 10 schools was from 2.6 years to 12.9 years.

For the 69 teachers who completed both the teaching efficacy and collective efficacy surveys, the overall average number of years of total teaching experience was 12.5 years, compared to 13.2 years for all teachers in the selected schools. The range in the averages among the 10 schools for total years of experience was from 8.3 years to 17.3 years. The 69 teachers who completed both surveys averaged 8.0 years of teaching in

their current schools and the averages among the 10 schools ranged from 3.0 years to 14.9 years. The 69 teachers who completed both surveys were from nine of the participating schools. In one school, no teachers completed the collective efficacy survey. Participating teachers' years of total teaching experience and the number of years they taught in their current schools were summarized in Appendix E. The average difference in the number of years participating teachers taught compared to all teachers was 1.9 years; this comparison for each school was shown in Appendix F.

The 10 participating principals had from 1 to 15 years of experience as principals. Seven of them had only been principals in their current schools. The average number of years of principal experience was 7.3 years and the average number of years in the current school was 4.2 years. One of the principals had earned a doctorate, two others were currently enrolled in doctoral programs, and seven had Master's degrees. Seven of the principals had worked as principals or assistant principals only in their current school districts. Two principals worked as assistant principals or principals in one other district prior to being principals in their current districts. One principal worked previously in two other school districts as an assistant principal. Participating principals' years of total experience and the number of years in their current schools were summarized in Appendix G.

Instruments

Teacher Sense of Efficacy Scale

Teachers completed the 24-item version of the *Teacher Sense of Efficacy Scale* (TSES) developed by Tschannen-Moran and Woolfolk-Hoy (2001). It was based on the researchers' theoretical model of teacher efficacy and emphasized that measures of

teacher efficacy were only valid and useful if they assessed both personal competence and an analysis of specific teaching tasks in particular contexts. Most of the instruments that were previously developed did not measure both dimensions of efficacy (Tschannen-Moran et al., 1998; Tschannen-Moran & Woolfolk-Hoy, 2001). The theoretical model depicted how the two dimensions of efficacy, namely, personal teaching efficacy and general teaching efficacy, emerged from the cognitive processing of the four sources of efficacy information.

Tschannen-Moran and Woolfolk-Hoy (2001) conducted a comprehensive analysis of survey items to identify elements that provided a valid, reliable, and useful assessment of teacher efficacy. They agreed with Bandura (1997) that most existing measures were too general and did not address the complexity of teaching but also acknowledged what Pajares (1996) described as an overemphasis on specificity at the expense of external validity and practical relevance. Their goal was to design an instrument that teachers viewed as accurately capturing their work (Tschannen-Moran & Woolfolk-Hoy, 2001). As a result, they developed a measure that adhered to the two dimensions of efficacy and that also borrowed from the 30-item instrument that Bandura (1997) created. Specifically, the key idea in the TSES that followed from Bandura's instrument was the development of items that reflect the varied tasks of teaching. The items ask teachers to assess their capabilities on specific teaching tasks, using a 9-point scale with responses ranging from *None at All* (1) to *A Great Deal* (9).

Tschannen-Moran and Woolfolk-Hoy (2001) developed, tested, and revised the instrument with ongoing input from colleagues. Their participants were from an Ohio State University (OSU) graduate seminar called *Self-efficacy in Teaching and Learning*.

The OSU survey selected and expanded on items from Bandura (1997) that covered the complete range of teaching tasks. Seminar participants included teacher educators, full time doctoral students, and practicing teachers, who had a range in teaching experience from 5-28 years and a mean of 11.9 years. The measure they developed was tested in three studies. As a result of the factor loadings in each of the three studies, the number of items was reduced and items were rewritten.

During Tschannen-Moran and Woolfolk-Hoy's (2001) first study, in which a 52-item instrument was tested on a sample of 224 preservice and inservice teachers, participants were also asked to rank each item on a 4-point scale in terms of that item's relevance to effective teaching. This confirmed that teachers saw each of the 52 items as pertinent to their work. The factor analysis used in each study also established reliability. However, because the researchers decided that factors had to account for more than 0.60 of the variance in respondents' scores, the results reduced the number of items to 32. The responses of the 217 inservice and preservice teachers in the second study eliminated items that had low ratings, loaded on more than one factor, or were redundant, leaving 18 items. The third study involved a sample of 183 inservice teachers. Because it was determined that including classroom management items was an important aspect of personal teaching efficacy, and the instrument at this point did not include enough items for valid assessment of this factor, Tschannen-Moran and Woolfolk-Hoy (2001) wrote more items for this area. At that point, they also established reliabilities for three subscales of teacher efficacy: (a) 0.87 for engagement, (b) 0.91 for instruction, and (c) 0.90 for classroom management. They found that it was

possible to maintain the high reliability of this 24-item instrument with a short form version that consisted of 12 items.

Tschannen-Moran and Woolfolk-Hoy (2001) examined construct validity by assessing the correlation of this measure with existing measures of teacher efficacy. They found that the instrument was reasonably valid. There were also moderate correlations with PTE, as measured by Gibson and Dembo (1984) survey items for two pilot studies, ranging from r = 0.48 ($p < 0.01$) to r = 0.64 ($p < 0.01$). The strongest correlations between the TSES and other measures were with scales that measured personal teaching efficacy. Tschannen-Moran and Woolfolk-Hoy (2001) concluded that this was because general teaching efficacy, the other dimension of the construct, did not capture teachers' sense of efficacy as reliably. Because this instrument was based on a theoretical model that reflected the most current understanding of the construct and was tested to confirm its validity and reliability (Klassen et al., 2009; Shore, 2004; Smolleck et al., 2006), it was selected for use within my study. The TSES was available online (see Appendix A).

Collective Teacher Efficacy Scale

Teachers also completed the 12-item *Collective Teacher Efficacy* (CTE) *Scale* developed by Goddard et al. (2000). They developed and tested an instrument based on a theoretical model that mapped the key elements of collective efficacy and its antecedents and consequences. The theoretical model was an adaptation of the teacher efficacy model developed by Tschannen-Moran et al. (1998) that was intended to demonstrate that collective teacher efficacy extended individual teacher efficacy to the organizational level. Although the sources of efficacy information were the same and

there was an assessment of competence and analysis of teaching tasks in context, the items have a group rather than an individual orientation. Goddard et al. (2000) believed that the group perspective reflects the collective experience of group members better than items that have an individual orientation. Bandura (1993, 1997) concurred that collective efficacy was best assessed by asking respondents to consider the effectiveness of their actions as a group.

The *CTE Scale* was the best instrument for my study because it stemmed from a theoretical and empirical analysis of the collective efficacy construct (Goddard et al., 2000; Tschannen-Moran & Barr, 2004). Because the analysis elaborated on the model developed for teacher efficacy, CTE was based on research that clarified definitions and interpretations of the construct and how it could be operationalized in schools (Goddard et al., 2000). CTE included items that covered the breadth of tasks and outcomes that teachers influenced collectively. Goddard et al. (2000) also confirmed collective efficacy's positive association with the differences between schools in reading and mathematics achievement. Construct validity for CTE was established by showing that the results from the pilot and full study demonstrated that the measure positively related to the following: (a) Bandura's (2000) measure of aggregated teacher efficacy, (b) aggregated PTE assessed by using Hoy and Woolfolk's (1993) adaptation of Gibson and Dembo's (1984) instrument, and (c) faculty trust in colleagues. There was moderate construct validity that ranged from $r = 0.54$ ($p < 0.01$) to $r = 0.62$ ($p < 0.01$). For my study, it was important to use instruments that not only had a strong research base but also used similar conceptual underpinnings of efficacy at the teacher and

collective levels in order to investigate efficacy relationships as they are perceived by staff members within a school.

Goddard et al. (2000) expanded on the teacher efficacy model developed by Tschannen-Moran et al. (1998), and the subsequent *TSES* (Tschannen-Moran & Woolfolk-Hoy, 2001). This was accomplished by wording items so they reflected group competence and analysis of teaching tasks. Goddard et al.(2000) were also influenced by the well-researched and frequently used Gibson and Dembo (1984) instrument. Goddard et al. (2000) used the 16-item version of this instrument as the starting point for the measure they developed. An awareness of how the wording of items influenced respondents informed their approach and items were intentionally varied so they reflected both a positive and negative orientation towards a topic (Guskey & Passaro, 1993, 1994).

The *CTE Scale* was field tested by six teachers and their feedback was used to revise the instrument before it was submitted for a pilot study with 70 teachers from 70 schools in five states. The revised form included 12 items. The response format was a 9-point Likert scale ranging from *Strongly Agree* to *Strongly Disagree*. Half of the schools selected for the pilot study were reputed to have a high level of conflict among faculty and the other half had reputations for relatively low levels of conflict (Goddard et al., 2000). To verify the criterion-related validity of the teacher efficacy scale, Goddard et al. had teachers complete measures that assessed the relationships between collective efficacy and conflict, powerlessness, faculty trust, and individual efficacy. Conflict and powerlessness were negatively related to collective efficacy, trust was positively and significantly correlated to collective efficacy, and the relationship

between individual and collective efficacy was positive and moderately correlated. The factor analysis of the pilot study results led the researchers to include additional items that would reflect group competence and task analysis. The instrument was found to be reliable and valid in two independent samples where the dependent variables were student achievement in mathematics and reading (Goddard et al., 2000).

A further study, with a more comprehensive sample of 452 teachers from 49 urban elementary schools in the Midwest, allowed Goddard et al. (2000) to aggregate responses to the school level. Collective efficacy explained 53.27% of the variance between schools in reading achievement and 69.64% of the variance in mathematics achievement. This study also confirmed that group competence and task analysis were highly related in schools and that this fit with the theoretical model for collective efficacy. Researchers concluded that the *CTE Scale* was a useful predictor of student achievement and that the theoretical basis for teacher efficacy could be extended to the organizational level (Goddard, 2001; Goddard & LoGerfo, 2007; Tschannen-Moran & Barr, 2004). The *CTE Scale* (see Appendix B) was available online (Tschannen-Moran, n.d.).

Principal Efficacy Scale

The principal in each of the 10 participating schools completed the *Principal Sense of Efficacy Scale* (PSES2), an instrument that was adapted from the *TSES* (Tschannen-Moran & Woolfolk-Hoy, 2001) by Tschannen-Moran and Gareis (2004). The empirical and theoretical basis for measuring principal efficacy has not been established as thoroughly as it has been for teacher and collective efficacy (Lucas, 2003; McCormick, 2001; Osterman & Sullivan, 1996; Tschannen-Moran & Gareis,

2004). The PSES2 was developed in an attempt to assess principal efficacy as a construct that fits a social cognitive theory framework (Bandura, 1977, 1986) and looks at efficacy judgments in terms of context specific tasks. This meant that the researchers extrapolated the two dimensions of teacher efficacy and designed an instrument that asked respondents for their perceptions about their competence and the difficulty of the task, which corresponded to general principal efficacy and individual principal efficacy.

Although Tschannen-Moran and Gareis (2004) prefaced their review of the antecedents and consequences of principal efficacy with a general assertion that the principal was associated with school change linked to student achievement, the specific findings about the relationships between principals' behavior as school leaders and achievement (Leithwood et al., 2004) became available after they developed the instrument. The PSES2 items paralleled those from the TSES and the CTE in terms of balancing principals' judgments of their own abilities to successfully accomplish a task with items that checked their beliefs about principals' capabilities to influence outcomes.

The PSES2 encompasses 18 items that begin with the phrase: *In your current role as principal, to what extent can you…* and use a 9-point scale that ranged from *None at All* (1) to *A Great Deal* (9). Tschannen-Moran & Gareis (2004) started by generating 50 items that are primarily based on professional standards from the Interstate School Leaders Licensure Consortium because they address the range of tasks that comprise a principal's work. An expert panel that included three professors of educational leadership and a practicing superintendent provided feedback for initial revisions. The

PSES2 was then field tested with ten former principals to clarify directions and relevance of the items.

A PSES2 pilot study with 544 principals from across Virginia confirmed the instrument's construct validity using measures of work alienation, trust in teachers, and trust in students and parents. Factor analysis led to the original 50 items being reduced to 18, with the criteria for factor loadings ranging from 0.45 to 0.81. Construct validity was moderate to strong for the two pilot studies, ranging from $r = 0.33$ ($p < 0.01$) to $r = 0.86$ ($p < 0.01$). Tschannen-Moran and Gareis (2004) acknowledged that further testing of the instrument was needed to verify the stability of the factor. The PSES2 was selected for my study because construct validity was verified and it conceptually corresponded to the other two efficacy measures that were administered within each school. The *PSE2* (see Appendix C) was available online (Tschannen-Moran, n.d.).

Open-Ended Questions

Each of the survey instruments included three open-ended questions that were designed to elicit responses about the sources of efficacy and what contributed to its ongoing development for teachers and principals. The questions were written to prompt respondents to consider sources of mastery experiences, vicarious experiences, social persuasion, and physiological or affective information because these four sources were consistently found to support and increase teacher efficacy (Tschannen-Moran et al., 1998), collective efficacy (Goddard, 2001), and principal efficacy (Tschannen-Moran & Gareis, 2004). Teachers and principals were asked to explain and describe what contributed to their successful work with students. The questions were generative

and avoided language that had a positive or negative connotation, as recommended by Guskey and Passaro (1993, 1994).

Corbin and Strauss (1990) proposed that adding open-ended questions to surveys allow researchers to discover patterns among responses and to identify possible theories and frameworks. In this study, open-ended questions pertained to the creating of conditions in schools that promoted efficacy. The questions made reference to context because the unique culture of each school influenced what respondents saw as sources of efficacy. Yin (2009) suggested that employing open coding to initially examine responses allow categories to emerge. I planned to identify categories and subcategories that related to the four sources of efficacy information in order to add a description of practices that supported the findings about the efficacy relationships. This allowed for some triangulation of the data. By using selective coding, a process of finding a story line that integrated the categories (Creswell, 1998), I had a means of connecting the open-ended question responses to the quantitative survey data in order to create a narrative about how efficacy functioned and developed within schools.

Pilot study for the open-ended teacher and collective efficacy questions. My open-ended questions were subjected to a pilot study. Eight fifth grade teachers and seven ninth grade teachers were invited to respond to the teacher and collective efficacy questions. Five principals, one from a high school, two from middle schools, and two from primary schools were asked to respond to the three open-ended principal questions. The teachers and principals in my pilot study worked in the school district. I randomly selected the teachers from the school district directory. Because only

thirteen schools in the district exist, I asked the principals to participate by sending a brief explanation of the study and an invitation to help with the pilot segment.

The open-ended questions of the pilot survey administered to the teachers and principals were structured to explore two aspects of the efficacy construct: (a) how specific examples of the four sources of efficacy information influenced their efficacy beliefs and (b) how the context and task affected efficacy beliefs. The teacher and collective efficacy questions were written to prompt responses that distinctly address what strengthens teacher beliefs and collective beliefs. Similarly, the principal efficacy questions focused on what developed efficacy beliefs based on the tasks associated with that role.

The responses to the first open-ended question suggested that it was worded too generally, without enough regard for task or context. Six of the teachers gave responses that were not based on experiences or reflections about school. Rather, responses either included more personal factors or were somewhat vague. This suggested that the validity of the item was weak. Because the responses varied so much it was likely an issue with reliability existed. Although the antecedents of teacher efficacy in a broad sense include beliefs about the profession (Ross, 1994a), my study focused on school factors. Creswell (1998) described the sub-questions that researchers use to probe central questions as being either issue oriented or topical. Issue-oriented questions elicit perceptions about problems, conflicts, complexity, or what needs to be resolved. Topical sub-questions cover the need for specific descriptive information. Using Creswell's suggestion about the purpose and focus of these questions and considering the problem of deciphering responses that did not refer to school or job-

related factors, I revised the first question so that it read: *What has helped you continue to become a better teacher while you have been at this school*?

Two of the open-ended collective efficacy questions were revised based on the responses from the pilot group. The first one seemed to be interpreted similarly to another question on the teacher efficacy survey, and it elicited four responses that did not speak of success as being related to outcomes with students. Thus, I revised the question to read: *Describe a specific feature of this school that prompts you to teach well*. To ensure that teachers knew the questions were asking them to consider their success in terms of outcomes with students, I revised the other question to read: *Explain what you see as the most powerful influence on this school's success in working with students*. The final revision to the open-ended questions for teachers was for the last question. More than half of the responses to that item from the pilot group listed or explained school procedures for working together but did not speak to the question's intent, which was to probe how the staff deals with obstacles. This type of question matched Creswell's (1998) description of an issue-oriented question. I revised it to read: *How does the staff work with challenges at this school?*

Pilot study for the open-ended principal efficacy questions. For my principal pilot study, the five principals answered three open-ended questions for the Principal Self-Efficacy Survey (PSES2). They were as follows: (a) what has helped you continue to become a better principal while you have been at this school? (b) describe the most effective things you do to support teachers in their work with students, and (c) what contributes most to your ability to create conditions that promote students' learning and achievement?

The principals' responses were more detailed and explanatory than those from the pilot teacher group. The five sets of responses provided task and job-related interpretations and also noted how difficulties were addressed. All of the responses discussed factors that were within the school or school district context. Because the responses indicated that the questions were worded to elicit information about sources of efficacy, I did not revise them. The questions seemed to be reasonably valid and reliable based on the five sets of responses from the principals.

Variables

Teacher efficacy and collective efficacy were the variables that were measured to look at the efficacy relationships in high performing middle schools. In order to examine efficacy relationships, the following four variables were included: (a) teachers' academic efficacy beliefs, (b) collective academic efficacy beliefs, (c) teachers' behavioral efficacy beliefs, and (d) collective behavioral efficacy beliefs. Items on the teacher efficacy and collective efficacy questionnaires were designed to address these variables and the research questions. The variables, items on the surveys, and research questions were linked and summarized in Table 4.

Extant data from the Oregon Department of Education web site and school websites added demographic, socioeconomic, and student performance information that was used along with the quantitative data to create a more detailed picture of efficacy in middle schools, but these factors were not variables that were measured. Efficacy was previously identified as a strong predictor of student achievement (Anderson, Greene, & Loewen, 1988; Ashton & Webb, 1986; Gibson & Dembo, 1984; Goddard et al., 2000; Leithwood et al., 2004; Ross, 1992). Consequently, this study focused on high

Table 4

Relationships Among Variables, Survey Items, and Research Questions

Variable	Survey Items
Research Question I a: What is the relationship between schools' collective efficacy beliefs and teachers' efficacy beliefs?	
Collective efficacy beliefs	CTE Questions: 1-12
Teacher efficacy beliefs	TSES Questions: 1-24
Research Question II b: What is the relationship between schools' academic collective efficacy beliefs and teachers' academic efficacy beliefs?	
Collective efficacy beliefs	CTE Questions: 1, 5, 6, 9
Teacher efficacy beliefs	TSES Questions: 2, 7, 10, 14, 17,18, 20, 23, 24
Research Question I c: What is the relationship between schools' behavioral collective efficacy beliefs and teachers' behavioral efficacy beliefs?	
Collective behavioral beliefs	CTE Questions: 2, 3, 4, 7, 8, 10, 11, 12
Teacher efficacy beliefs	TSES Questions: 1, 3, 4, 5, 6, 9, 12, 13, 15, 16, 19, 21, 22

Note 1. Variables 1 and 2 also relate to research question II: Is there a significant difference between the schools' overall collective efficacy beliefs and the teachers' overall efficacy beliefs?
Note 2. Variables 3 and 4 also relate to research question III: Is there a significant difference between the schools' academic collective efficacy beliefs and the teachers' academic efficacy beliefs?
Note3. Variables #5 and #6 also relate to research question IV: Is there a significant difference between the schools' behavioral collective efficacy beliefs and teachers' behavioral efficacy beliefs?

performing middle schools. The open-ended questions provided a means of examining possible factors that strengthened efficacy within schools and districts. It was predicted that the participating teachers and principals would report at least moderate levels of

efficacy in comparison to all middle schools, where student achievement varied. Principal efficacy was measured in order to match principal efficacy beliefs with teacher and collective efficacy beliefs, but because there were only ten principals involved in the study, statistical relationships about principal efficacy were not analyzed.

Data Collection

I used extant data to identify the relatively high performing schools from the 53 middle schools in the selected sample. The Oregon Department of Education (ODE) website provided access to the annual school report card ratings for every school district and school. Statewide assessment scores for reading and math were also available on the ODE website. School profile information that was available on the state report card, including attendance, socioeconomic status (SES), the percentage of English Language Learners (ELL), student race and ethnicity, number of staff members, average years of experience and level of education for teachers, and percentage of highly qualified teachers, was collected for purposes related to discussion of the data.

The three questionnaires addressed the teacher efficacy variables for the study. Initially, there were 11 schools identified as participants, so 33 surveys were created using *Web Survey Generator* (WSG), an interactive survey program created by Dan Whitinger, the assistant director of the Information Technology department in the West Linn-Wilsonville School District. The survey program was designed to allow district staff to design encrypted surveys or questionnaires with the same features offered by online providers such as SurveyMonkey and Zoomerang. Each questionnaire had its

own uniform resource locator (URL) that could be shortened, then copied and pasted into an email message to principals and teachers. The questionnaires were stored, accessed, and then completely removed from the district server. This survey tool was selected because it provided a secure and easy way to create multiple surveys, check for results during the window of time for data collection, and show both the quantitative results and the open-ended responses. Each principal received a different URL and the teachers from each school had a unique URL, which allowed me to see the participation levels at each school. *Web Survey Generator* showed how many teachers responded from each school and provided anonymity by not linking responses to email addresses or names. Information from the three efficacy questionnaires was entered into Excel spreadsheets, for the quantitative results, and into a Word document, for the open-ended responses.

Procedures

The process of collecting data from the three questionnaires occurred between November 27, 2011 and January 10, 2012. I used school web sites, spoke with administrative assistants at each site, and used email and phone conversations to invite principals and teachers to participant and then to encourage them to respond. All of the email messages sent to principals and teachers and the phone scripts used to call principals and administrative assistants are contained in Appendix H.

Principal Recruitment

On November 27, 2011, I sent a letter, via email, to the each principal from the 11 identified schools that explained the purpose of the study and invited them to participate. The letter requested their permission for teachers in each school to receive

invitations to complete the two questionnaires and included the link to the principal questionnaire. Principals were asked to reply to the message to give permission for teachers to be contacted. The email message stated that their consent to take the surveys was implied by using the link to complete the questionnaire. Between November 29 and December 2, 2011, I called each of the 11 principals to follow up on the email invitation, answer any questions, and check to secure their participation and permission to contact teachers. Principals' contact information was obtained from school websites.

The process for making contact with all of the principals, to check their understanding of the study and find out if they were willing to participate, was completed December 16. Four principals responded within a week of being contacted and indicated that their schools would participate. Additional phone calls and a follow up email message secured permission and participation from three principals. One principal had taken a medical leave for a month and confirmed interest in participating upon returning to work. Another principal was not present at the school on a day-to-day basis and declined to participate. There was a delay in communicating with two principals from the same school district. They each expressed interest when they were contacted by phone but the spam filter used by their district would not allow them to access the questionnaires. I spoke with the information technology director for the district and made adjustments to the way the questionnaires were sent to correct this. Once I knew that a principal was interested in participating, I went ahead and invited teachers from that school to complete the questionnaires. As each of the 10 principals confirmed that they would participate, I verified that all teachers' email addresses on

the school web sites were correct by contacting the administrative assistants at the schools. Although the WSG did not show principals' email addresses or names when they responded, these results were not completely anonymous because only one principal responded from each school. Participating principals were sent an Amazon Gift Card, valued at $15, as an appreciation for their time and help with the study.

Teacher Recruitment

Between December 5 and December 16, 2011, the teachers within each of the ten participating schools received an email message that explained the purpose of the research, briefly described the study, and invited them to complete two questionnaires. The email messages were sent to each teacher individually. The links to the questionnaires were contained in the message. Again, the email message stated that participants' consent was implied when they opened the link and completed the surveys. Teachers were informed that they could enter their names in a drawing for an Amazon Gift Card, valued at $15, by entering their email addresses at the end of the second questionnaire, as an appreciation for the time they took to complete the surveys. Twenty Amazon Gift Cards were sent to teachers via email.

The response rate was uneven. In some schools, half of the staff completed the surveys within two weeks, but in others there were fewer responses and they were coming in slowly. I sent a reminder and second request on December 17 that asked for responses by January 10, 2012. It seemed that this could have been due to the demands on teachers' time. I received email responses from teachers in all of the schools indicating that they had received the message and would find some time to complete it in the near future, but do not know if this happened. There were also certified staff

members at each school who worked in several schools within the school district. I included specialists and support staff, including school psychologists, counselors, special education teachers, and English Language Learner teachers, but questioned whether they would find the questionnaires relevant to their work in the school. Because the actual job descriptions varied and some of them did teach classes, they received the surveys, but may have opted not to complete them. If they provided support or services in several schools, they were only sent the email invitation to participate as part of the staff from one school. Overall, there were 21 certified staff members who could be counted as part of the staff in more than one school.

There were fewer teachers who completed both the *TSES* and *CTE* than who completed the *TSES* in all of the participating schools. Whether this was because the *CTE* link appeared as the second one that should be used or it was a time factor was not clear. When the invitation was initially sent to four of the schools, a few respondents sent reply emails that stated that the second link would not take them to the second survey. The designer of the *Web Survey Generator* acknowledged that this sometimes occurred. I re-sent the invitation to participate, with new links, to the teachers in those schools. The participation rate for each school, after accounting for those who worked in more than one school, was summarized in Table 5.

As can be seen from Table 5, response rates varied from 30% (school 1) to 63% (school 6) for teachers who completed the *TSES*, to from 0% (school 5) to 54% (school 9) for teachers who completed both the *TSES* and the *CTE*. These response rates reflect participation after the reminders were sent to all schools and the new links, second invitations, and reminders were sent to the four schools with initial response problems.

Table 5

Teacher Response Rate in Each of the Participating Schools

	Survey Completion Percentage	
School	TSES	TSES and CTE
1	30	8
2	41	22
3	33	22
4	46	36
5	32	0
6	63	21
7	48	39
8	48	42
9	57	54
10	36	17

Data Analysis

The WSG aggregated teachers' responses on the *TSES* and *CTE* and showed results using a bar graph display to indicate the percentage of respondents' from a school that selected each of the nine Likert choices for each item. Because this was not useful for determining overall teacher efficacy and collective efficacy or for finding academic and behavioral efficacy, the WSG percentages were used to extrapolate each teacher's response to each questionnaire item, and these were entered on an Excel

spreadsheet. The responses to the open-ended questions were copied and pasted from the WSG into a Word document that showed each respondent's response to the three questions by school. Principals' responses for the *PSES2* were similarly entered on an Excel spreadsheet and into a Word document so the correspondence between teacher and principal responses could be examined. Descriptive data and statistical analyses were used to answer the research questions with the collected data.

Descriptive Data Analysis

Descriptive statistics were used to determine and describe the strength of teacher and collective efficacy by finding the mean for teacher efficacy, collective efficacy, teacher academic efficacy, collective academic efficacy, teacher behavioral efficacy, and collective behavioral efficacy. The teacher data was aggregated to present results that represented all of the teachers who participated because there were only 120 responses to the *TSES* and 69 responses that indicated that respondents had completed both the *TSES* and the *CTE*. All of the items on the *TSES*, *CTE*, and *PSES2* were worded positively so larger raw scores indicated a stronger sense of efficacy.

Because not all teachers completed the *TSES* and the *CTE*, it was important to determine whether there was a difference in the mean scores between the two groups. Unpaired *t*-tests allowed me to distinguish the overall teacher efficacy and overall collective efficacy scores, the teacher academic and collective academic efficacy scores, and the teacher behavioral and collective behavioral efficacy scores for the group that completed only the *TSES* and the group that completed both the *TSES* and the *CTE*.

The descriptive statistics and a *t*-test provided the answer to my second research question. Pearson product-moment correlations were run to determine the strength of association between teachers' academic efficacy beliefs and behavioral efficacy beliefs, and between schools' collective academic efficacy beliefs and behavioral efficacy beliefs. This was necessary because a large part of the complexity of assessing efficacy stems from the importance of looking at beliefs about tasks in context. In order to make judgments about their teaching efficacy, teachers assessed themselves on tasks that were categorized as academic or behavioral. Therefore, I had to confirm the correlation between the categories in terms of them relating to the construct of teaching efficacy, but also establish that they were comprised of distinct tasks.

A *t*-test was employed to answer the third and fourth research questions. An examination of the mean for each principal's overall efficacy and the mean values for academic and behavioral efficacy was completed and then those values were matched with teacher and collective efficacy scores to answer the fifth question.

Statistical Analysis

The relationships among the variables in the study were analyzed using Pearson's product-moment correlations. Correlations were run between: (a) teachers' overall efficacy beliefs and schools' overall collective efficacy beliefs, (b) between teachers' academic efficacy beliefs and their behavioral efficacy beliefs, and (c) between schools' collective academic efficacy beliefs and collective behavioral beliefs. By setting up a pairwise correlation matrix, I examined the relationship that allowed me to address my first research question: What is the relationship between schools'

collective efficacy beliefs and teachers' efficacy beliefs? The matrix allowed me to look at the relationships described in (b) and (c) in order to answer that question.

The *t*-test provided a means of checking the correlation statistics in order to verify if there were three differences in the study: (a) between schools' collective efficacy beliefs and teachers' efficacy beliefs, (b) between schools' collective academic efficacy beliefs and teachers' academic efficacy beliefs, and (c) between schools' collective behavioral efficacy beliefs and teachers' behavioral efficacy beliefs. A *t*-table showed whether the calculated *t*-values were greater than the critical values needed to confirm the three differences ($p < .05$). I computed the square of the correlation coefficient (r^2) to estimate the strength-of-association between the variables for the three relationships that were examined.

Qualitative Analysis

I first read all of the responses, as recommended by Creswell (1998), to get a general sense of the data and begin an analysis of the open-ended responses that were added to the *TSES*, *CTE*, and *PSES2*. After coding the data based on patterns and themes, I developed notes that described first reactions and findings. A closer look at the actual words used in responses allowed for reduction and classification. Miles and Huberman (1994) suggested that translating words into metaphors helps to summarize key ideas and begin categorization. After closely reading the written words, I determined whether metaphors provided clarity and preserved the integrity of the responses and then made a list of tentative categories and codes, whether they were based on metaphors or just named (see Appendix I).

Using the coding sequence outlined by Corbin and Strauss (1990), I initially used open coding and examined the text of the responses to develop salient categories of information. Then, I searched for examples of text that represented each category, reduced the information, and classified it. Because the responses varied in length and complexity, there was not always enough information to categorize. When possible, I identified one category as the one that held the most interest because it contained the most information that described a central point. I employed axial coding, which is the process of looking at the interrelationships between categories and then creating a description or visual model that explains the relationships (Creswell, 1998). Finally, I looked for a story line (Corbin & Strauss, 1990; Creswell, 1998). Because multiple types of data to categorize did not exist, as is usually the case in grounded theory research, these coding steps were followed to yield themes and some general guidelines for identifying sources of efficacy within schools. The qualitative analysis provided additional information (triangulation) about efficacy beliefs used to augment results from the quantitative data.

CHAPTER IV

RESULTS

Survey Completion

Because 120 teachers completed the teacher efficacy survey (*TSES*) and 69 of those teachers also took the collective efficacy survey (*CTE*), a *t*-test was used to determine whether mean scores for overall teacher efficacy, teacher academic efficacy, and teacher behavioral efficacy were significantly different between these two groups. The two groups are defined as the one that completed only the *TSES* (T) and the one that took both the *TSES* and *CTE* (B) surveys. The mean scores for the two groups are summarized in Table 6.

Table 6

Mean Scores for Two Teacher Groups Based on Survey Completion

TSES and CTE	Count	Mean	SD	Min	Max	#Missing
TSES Survey Total %	120	78.03	7.92	58.33	100	0
CTE Survey Total %	69	80.38	9.10	55.56	100	51
TSES Academic Efficacy %	120	78.52	8.67	51.28	100	0
TSES Behavioral Efficacy %	120	77.45	8.54	54.55	100	0
CTE Academic Efficacy %	69	80.52	9.78	55.56	100	51
CTE Behavioral Efficacy %	69	80.25	10.23	48.15	100	51

For the *TSES* overall teaching efficacy score, the mean difference of 1.28 (p = 0.38), between the group that completed both the *TSES* and *CTE* (B) and the one that filled out only the *TSES* (T) is non-significant. There is a non-significant difference (mean difference = 1.98, p = 0.22) between the two groups for teachers' academic

efficacy beliefs and for teachers' behavioral efficacy (mean difference = 0.47, p = 0.77). Table 7 shows the *t*-tests statistics.

Table 7

t-Test Results for Groups B and T

Efficacy Scores B vs. T	Mean Difference	*df*	*t*-Value	*p*-Value
Total Efficacy B vs. T	-1.28	118	- 0.88	0.38
Academic Efficacy B vs. T	-1.98	118	- 1.24	0.22
Behavioral Efficacy B vs. T	- 0.47	118	- 0.30	0.77

Question 1

The first research questions asked about the relationship between schools' collective efficacy beliefs and teachers' efficacy beliefs. Specifically, it asked about three comparisons. The first was the relationship between the schools' overall collective efficacy beliefs and the teachers' overall efficacy beliefs. The second was the relationship between the schools' academic collective efficacy beliefs and the teachers' academic efficacy beliefs. The third was the relationship between the schools' behavioral collective efficacy beliefs and the teachers' behavioral efficacy beliefs.

Question 1 A: the relationship between the schools' overall collective efficacy beliefs and the teachers' overall efficacy beliefs. There was a moderate, and statistically significant (p = 0.004), correlation between the schools' overall collective efficacy beliefs and the teachers' overall efficacy beliefs. The Pearson product-moment

correlation coefficient for the relationship between collective efficacy (r_{ce}) and teacher efficacy (r_{te}) is $r_{ce\text{-}te} = 0.58$. The correlation is based on teachers' mean scores for teacher efficacy beliefs and collective efficacy beliefs and is derived from the matched scores of the 69 teachers who completed both the *TSES* and the *CTE*. Overall collective efficacy beliefs and teacher efficacy beliefs have 34% shared variance ($r^2 = 0.34$). Table 8 shows complete correlation statistics.

Question 1 B: the relationship between the schools' academic collective beliefs and the teachers' academic efficacy beliefs. There is a moderate correlation ($r_{ca\text{-}ta} = 0.56$) between the schools' collective academic beliefs (r_{ca}) and the teachers' academic efficacy beliefs (r_{ta}). Also, this correlation was statistically significant ($p = 0.01$). This relationship is slightly weaker than the correlation between overall collective efficacy and overall teacher efficacy. Again, the 69 matched mean scores for teachers' academic efficacy beliefs and collective academic efficacy beliefs were used to determine the correlation, as summarized in Table 6. Schools' academic collective beliefs and teachers' academic efficacy beliefs have 31% shared variance ($r^2 = 0.31$). See Table 8 for complete correlation statistics.

Question 1 C: the relationship between the schools' behavioral collective efficacy beliefs and the teachers' behavioral efficacy beliefs. The correlation between collective behavioral efficacy (r_{cb}) and teachers' behavioral efficacy (r_{tb}) is moderate and statistically significant ($p = 0.01$). A Pearson product-moment correlation coefficient of $r_{cb\text{-}tb} = 0.56$ represents the mean behavioral efficacy scores for the 69 teachers who completed the *TSES* and *CTE* and therefore had matched scores on the teacher beliefs and collective beliefs surveys. See Table 6 for a summary of mean

scores. The schools' behavioral collective beliefs and teachers' behavioral efficacy beliefs have 31% shared variance ($r^2 = 0.31$). See Table 8 for complete correlation statistics.

Table 8

Pairwise Correlation Matrix: Teacher Efficacy, Collective Efficacy, Academic and Behavioral Efficacy ($n = 69$)

	TT[1]	*CT*[2]	*TA*	*TB*	*CA*
Collective Total (CT)	0.58				
Teacher Academic (TA)	0.95	0.52			
Teacher Behavior (TB)	0.92	0.57	0.75		
Collective Academic (CA)	0.56	0.91	0.56	0.48	
Collective Behavior (CB)	0.50	0.91	0.39	0.56	0.66

Note 1. TT = Teacher Total.
Note 2. CT = Collective Total.

Individual School Results

The data was disaggregated to show the mean score for teachers' overall efficacy beliefs and the collective efficacy beliefs for each participating school, teachers' academic and behavioral efficacy beliefs by school, and the collective academic and behavioral efficacy beliefs. Teachers' overall collective efficacy beliefs are stronger than their teacher efficacy beliefs in seven schools. In six schools, the academic collective efficacy is greater than the academic teacher efficacy. Behavioral collective efficacy is stronger than behavioral teacher efficacy in seven schools. In the

two schools where overall teaching efficacy is greater than overall collective efficacy, the behavioral teaching efficacy is also higher. One school has stronger teaching efficacy scores for overall efficacy, academic efficacy, and behavioral efficacy.

The mean scores for overall teaching efficacy show variation by school, with a range of 16.61%. Overall collective efficacy mean scores have a 14.49% range. Academic efficacy mean scores show the greatest variation among the schools; teachers' academic efficacy score range is 19.24% and collective academic efficacy has a 16.75% range. Teachers' behavioral efficacy mean scores vary by 14.41% and collective behavioral efficacy has a 13.90% range. The mean scores for teachers who completed both the *TSES* and *CTE* in each of the nine schools are displayed in Table 9.

Table 9

Mean Percentages for Each School's Efficacy Beliefs[1] *(n = 69)*

School	Teachers' Overall Efficacy Beliefs	Overall Collective Efficacy Beliefs	Teachers' Academic Efficacy Beliefs	Collective Academic Efficacy Beliefs	Teachers' Behavioral Efficacy Beliefs	Collective Behavioral Efficacy Beliefs
1	58.71	69.62	58.19	73.45	59.30	65.66
2	68.58	73.86	68.03	74.94	69.10	70.77
3	72.73	75.85	72.71	82.14	72.68	73.81
4	75.32	78.29	77.43	80.03	73.71	76.94
5[2]						
6	72.82	69.89	70.78	72.50	73.29	71.55
7	69.31	63.80	66.73	65.39	69.10	63.04
8	67.01	68.49	68.39	67.85	65.75	67.88
9	71.03	74.61	70.30	74.59	71.29	75.43
10	70.15	74.75	68.91	74.01	71.03	75.25

Note 1. Percentage scores are based on teachers' *TSES* and *CTE* responses on a 9-point Likert scale.

Note 2. Teachers did not complete both surveys in this school.

Question 2

Question 2 asked if there was a significant difference between schools' overall collective beliefs and teachers' overall efficacy beliefs. Results show that overall collective beliefs were higher than teachers' overall efficacy beliefs. Teachers reported stronger efficacy beliefs about themselves as a group than as individuals. The mean scores (see Table 10) for overall teacher efficacy and overall collective efficacy are 77.48% and 80.38%, respectively. The standard deviation results associated with the percentages were 8.65 for teacher efficacy and 9.10 for collective efficacy.

Table 10

Mean Scores for Overall Teacher Efficacy and Overall Collective Efficacy

Survey	Count	Mean	Std. Dev.	Min	Max	Missing
Teacher Survey	69	77.48	8.65	58.33	100	0
Collective Survey	69	80.38	9.10	55.56	100	0

Table 11 displays the t-test results pertaining to the difference between teachers' overall efficacy beliefs and overall collective efficacy. As Table 11 shows, the mean difference between overall teacher and collective efficacy was -2.90, and this difference was statistically significant ($p = 0$ .004). The computed effect size ($d = 0.327$), based on criteria established by Cohen (1992), is small.

Table 11

t-Test Summary of the Difference between Teachers' Overall Efficacy Beliefs and Overall Collective Efficacy

	Mean Diff	*df*	*t*-Value	*p*-Value	Cohen's *d*
Overall Efficacy vs. Collective Efficacy	-2.90	68	-2.96	0.004	0.327

Question 3

Question 3 asked if there was a significant difference between schools' academic collective efficacy beliefs and teachers' academic efficacy beliefs. There was a 2.84% difference in the mean for academic collective efficacy (80.52%) and teacher academic efficacy (77.68%), as illustrated in Table 12. My results show that collectively the teachers had stronger academic efficacy beliefs than they did as individuals. Moreover, the difference between teachers' academic efficacy beliefs and their collective academic efficacy beliefs was significant ($p = 0.01$), as shown in Table 13. The effect size, based on criteria developed by Cohen (1992), is small ($d = 0.293$).

Table 12

Mean Scores for Teacher Academic Efficacy and Collective Academic Efficacy

Academic Item Response	Count	Mean	Std. Dev.	Min	Max	Missing
Teacher Academic	69	77.68	9.59	51.28	100	0

Collective Academic	69	80.52	9.78	55.56	100	0

Table 13

t-Test Summary of the Difference between Teachers' Academic Efficacy Beliefs and Collective Academic Efficacy Beliefs

	Mean Diff	*df*	*t*-Value	*p*-Value	Cohen's *d*
TSES Academic vs. CTE Academic	-2.84	68	-2.60	0.01	0.293

Question 4

Question 4 asked if there was a significant difference between the schools' behavioral collective efficacy beliefs and teachers' behavioral efficacy beliefs. The mean for behavioral collective efficacy is 80.25% and for teachers' behavioral efficacy the mean is 77.25%. See Table 14 for complete statistics. Again, the collective beliefs are stronger, and the difference (2.99%) is greater than the discrepancies between overall collective efficacy and overall teaching efficacy, and between academic collective efficacy and teachers' academic efficacy beliefs.

Table 14

Mean Scores for Teacher Behavioral Efficacy and Collective Behavioral Efficacy

Behavioral Item Response	Count	Mean	Std. Dev.	Min	Max	Missing
Teacher Behavioral	69	77.25	8.84	54.55	100	0
Collective Behavioral	69	80.25	10.23	48.15	100	0

The t-test results, summarized in Table 15, show that the difference between teachers' behavioral efficacy beliefs and collective behavioral efficacy beliefs is significant ($p = 0$ .01). The small effect size ($d = 0.313$) is based on the criteria described by Cohen (1992).

Table 15

t-Test Summary of the Difference between Teachers' Behavioral Efficacy Beliefs and Collective Behavioral Efficacy Beliefs

	Mean Diff	*df*	*t*-Value	*p*-Value	Cohen's *d*
TSES Beh vs. CTE Beh	-2.99	68	-2.75	0.01	0.313

Question 5

Principals' overall efficacy scores, when matched to teachers' scores by school, were very close to, or not as strong as teachers' overall efficacy beliefs and overall collective efficacy beliefs in five of the nine schools with complete scores. Principals' academic efficacy beliefs are greater than the teachers' and collective academic efficacy beliefs in seven schools. Teachers' behavioral efficacy beliefs and collective behavioral efficacy beliefs are greater than principals' behavioral efficacy beliefs in five schools. Again, because only 10 principals participated in the study, mean scores for efficacy beliefs are shown in Table 16 so they can be compared to teachers' scores, but are not used statistically.

Table 16

Principals' Overall Efficacy Beliefs, Academic Efficacy Beliefs, and Behavioral Efficacy Beliefs[1] *(n = 10)*

	Overall	Academic	Behavioral
1	85.60	90.00	85.00
2	83.33	85.00	83.11
3	79.41	85.00	78.80
4	71.08	80.00	70.00
5	84.11	90.00	82.91
6	67.80	75.00	66.91
7	86.11	85.00	86.29
8	64.39	70.19	65.00
9	71.12	65.40	71.87
10	64.40	60.11	65.00

Note 1. The percentage scores are based on principals' *PSES2* responses on a 9-point Likert scale.

Qualitative Results

Open-Ended Teacher Efficacy Responses

Responses from the 69 teachers who completed both the *TSES* and the *CTE* and from those who took only the *TSES* are similar. They fall into the same clusters and categories for the three questions.

Question 1 What has helped you continue to become a better teacher while you have been at this school? The initial coding yielded 18 categories (See Appendix H.). Further reading for themes and patterns shows that the majority fit within the same four clusters: (a) collaboration/peer support, (b) principal feedback/support, (c) school/district and outside professional learning, and (d) personal drive/effort and professionalism. The four clusters were almost equally represented in terms of the

number of responses associated with each of them. An awareness of high expectations from colleagues, the principal, and the community was also a factor.

Question 2: What are the most powerful influences on your decision making about instruction? Two categories emerge from the initial 13 response groupings (See Appendix H). The most powerful influences on teachers' decision making about instruction were their judgments about students and standards or course goals. Judgments about students included assessments of current skills and knowledge, perceptions about what individuals needed, and observed performance. Standards and course goals from departments and schools, districts, and the state equally influenced decision-making. There was also mention of an awareness of the importance of engaging students.

Question 3: What makes your teaching and daily work with students so effective at this school? Dominant themes were not as evident for this question. The initial 14 categories of responses (See Appendix H) showed some repeated mention of student characteristics, collegiality/collaboration, and focused leadership. The student characteristics category includes reports of motivated and prepared individuals. There were comments about good communication and clear expectations embedded in the responses in the focused leadership category.

Open-Ended Collective Efficacy Responses

Question 1: Describe a specific feature of this school that prompts you to teach well. There were nine initial response categories. The majority of the responses were about three school features: (a) collaboration structures, (b) principal support, and (c) unity. The collaboration structures included professional learning communities

(PLCs), teacher teams, subject area groupings, and informal meetings about instruction. Comments about unity suggested that there was a lot of give and take, solidarity and consistency, and strong feelings of support from colleagues. There was also mention of having an atmosphere of success and culture of continual learning.

Question 2: Explain what you see as the most powerful influence on this school's success in working with students. There were nine initial response categories. Responses from six of the schools emphasized the importance of demographics and students' home background as predisposing them to success in school. Having high expectations from colleagues, the principal, and the community was also important. Staff unity and having systems for serving the needs of all students (academically and behaviorally) was a third factor. There were scattered responses about a positive school climate and working in a school with skilled teachers.

Question 3: How does the staff work with challenges at this school? The six initial response categories did not yield a consistent theme. Approximately a quarter of the respondents reported that challenges were not addressed particularly well at their schools. There was some suggestion that using a team approach and problem-solving strategies was helpful, and there were repeated comments about there being an open, positive, and supportive atmosphere.

Open-Ended Principal Efficacy Responses

There was some repetition and a few patterns emerged, but because there were only ten sets of responses for principals, the comments merely suggested some perspectives that could be compared to those of teachers and used as additional information about efficacy perceptions in the schools.

Question 1: What has helped you continue to become a better principal while you have been at this school? Principals reported that their own reading and coursework, collaborating with teachers and administrators, and using data were most helpful. There was some mention of using specific programs and frameworks to work with staff.

Question 2: Describe the most effective things you do to support teachers in their work with students. Ensuring that there was time for collaboration, providing feedback and support, listening, and minimizing interruptions were actions that principals suggested were most effective. There were some comments about advocating for the staff as a whole and expressing confidence in teachers.

Question 3: What contributes most to your ability to create conditions that promote students' learning and achievement? There was repeated mention of scheduling collaborative time for staff as a means of creating conditions that support achievement. Principals also reported that they designed effective staff learning, used data and teachers' ideas, and maintained open communication and strong working relationships.

Summary

Collective efficacy was stronger than individual teacher efficacy in the middle schools that participated in this study. Overall collective efficacy beliefs were higher than teachers' overall efficacy beliefs. Collective academic efficacy was higher than teachers' academic efficacy. Finally, collective behavioral efficacy was stronger than teachers' behavioral efficacy. Teachers in the middle schools believed more strongly in

their collective effectiveness than in their individual capabilities to carry out academic and behavioral tasks.

There was a moderate relationship between teacher efficacy and collective efficacy. Overall teacher efficacy and overall collective efficacy, teacher academic efficacy and collective academic efficacy, and teacher behavioral efficacy and collective behavioral efficacy had moderate correlations. This indicated that teacher efficacy and collective efficacy influenced each other but only explained about 30% of the shared variance. The moderate correlations between teacher efficacy and collective efficacy extended to the two dimensions of the constructs: academic efficacy and behavioral efficacy.

The principal scores generally matched the overall efficacy scores. The open-ended responses suggested that collaboration, principal support and direction, and ongoing professional learning contributed to developing teacher and collective efficacy.

CHAPTER V

DISCUSSION

This study used questionnaires to assess the self-efficacy and collective efficacy beliefs of teachers, and the self-efficacy beliefs of principals, in high performing middle schools in a large metropolitan area. In the study, perceived self-efficacy is defined as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives (Bandura, 1977a). Results were consistent with findings from previous studies, conducted in elementary schools, that identified collective efficacy as a predictor of teacher efficacy. This study extended the relationship between teacher efficacy and collective efficacy to middle schools. Because the study included only high achieving schools that were all well within the upper quartile of Oregon middle schools in terms of socioeconomic status, the results focused solely on how collective efficacy influenced teacher efficacy. In prior studies, SES and achievement have been mitigating factors.

Although previous studies found that collective efficacy was stronger than other factors in predicting teacher efficacy, this study consistently showed that collective efficacy was stronger than teacher efficacy in high performing middle schools. This adds new insights to prior research about the potential for collective efficacy to increase individual teachers' efficacy beliefs. If collective efficacy is stronger than teacher efficacy, especially within a school, teachers may be indicating that they believe in the capacity of the organization to positively influence students' learning. Prior teacher efficacy studies have been either strictly quantitative or case study investigations. The

open-ended questions in this study allowed for triangulation and elaboration and were an addition that indicates the potential for using mixed methods studies to explore how efficacy develops in schools. Opportunities to understand this capacity, to collectively implement strategies that increase achievement, and to learn from each other could lead to stronger teacher efficacy, which in turn could improve students' performance. The open-ended questions used in this study corroborated the findings about the relationship between collective efficacy and teacher efficacy, serving as the starting point for identifying specific practices that can be employed to develop teachers' efficacy beliefs. Analysis of the open-ended questions suggests that collaboration and professional learning that is focused on the areas that teachers believe are important for improving student outcomes strengthen both a staff's collective efficacy perceptions and teachers' beliefs about their effectiveness.

My study examined academic and behavioral efficacy at the teacher and collective levels in high performing schools. Researchers have discussed the importance of recognizing the task and context specific nature of efficacy and have developed subscales to categorize different competencies. Previous studies, however, have not looked specifically at academic and behavioral efficacy as factors at any level of schooling. In this study, data was collected about the strength of the two factors, both relative to each other and to overall teaching efficacy and collective efficacy. In addition to affirming the existence of these two distinct factors of teaching efficacy, this study provides initial observations about how teachers' task specific beliefs vary at the individual and collective levels.

The ongoing emergence of varied approaches to examining efficacy has limited the number of studies that consistently use similar instruments. This is the first study where instruments that were derived from the same theoretical model and that addressed individuals' beliefs about their overall competence, as well as their perceived capabilities to execute specific tasks linked to students' learning and achievement, were used by teachers and principals within the same schools at one level of schooling. This parallel measurement approach was more likely to yield reliable results about the relationships among teacher efficacy, collective efficacy, and principal efficacy, both across schools and within a single school.

The study focused on these research questions:

I. What is the relationship between schools' collective efficacy beliefs and teachers' efficacy beliefs?
    a. What is the relationship between the School's Overall Collective Efficacy Beliefs and the Teacher's Overall Efficacy Beliefs?
    b. What is the relationship between the School's Academic Collective Efficacy Beliefs and the Teacher's Academic Efficacy Beliefs?
    c. What is the relationship between the School's Behavioral Collective Efficacy Beliefs and the Teacher's Behavioral Efficacy Beliefs?

II. Is there a significant difference between the School's Overall Collective Efficacy Beliefs and the Teacher's Overall Efficacy Beliefs?

III. Is there a significant difference between the School's Academic Collective Efficacy Beliefs and the Teacher's Academic Efficacy Beliefs?

IV. Is there a significant difference between the School's Behavioral Collective Efficacy Beliefs and the Teacher's Behavioral Efficacy Beliefs?

V. Do the principal's efficacy beliefs match the teacher's efficacy beliefs?

Results Summary

Collective Efficacy and Teacher Efficacy

In my study there was a moderate relationship ($r_{ce\text{-}te} = 0.58$) between schools' collective efficacy beliefs and teachers' efficacy beliefs. The difference between collective efficacy beliefs and teachers' efficacy beliefs was statistically significant (p = 0.004).The relationship between collective academic efficacy beliefs and teachers' academic efficacy beliefs ($r_{ca\text{-}ta} = 0.56$) was moderate. The correlations were statistically significant ($p = 0.01$) for collective academic efficacy beliefs and teachers' academic efficacy beliefs. The relationship between collective behavioral efficacy beliefs and teachers' behavioral efficacy beliefs was also moderate ($r_{cb\text{-}tb} = 0.56$), and again, those correlations were statistically significant for collective behavioral beliefs and teachers' behavioral efficacy beliefs ($p = 0.01$).

Within the higher performing school context of my study, overall collective efficacy beliefs (M = 80.38) were stronger than teachers' individual efficacy beliefs (M = 77.48). The difference between overall collective and teacher efficacy was significant ($p = 0$ .004). Within schools, collective efficacy beliefs were higher than teachers' efficacy beliefs in seven of the ten participating schools. Collective academic efficacy beliefs (M = 80.52) were stronger than teachers' academic efficacy beliefs (M = 77.68) and the difference was significant ($p = 0.01$). Similarly, collective behavioral efficacy beliefs (M = 80.25) were higher than teachers' behavioral efficacy beliefs (M = 77.25).

Again, the difference was significant ($p = 0.01$). Collective academic efficacy was higher than teachers' academic efficacy in six schools, and collective behavioral efficacy was stronger than teachers' behavioral efficacy in seven schools.

Principal Efficacy, Collective Efficacy, and Teacher Efficacy

When principals' overall efficacy beliefs are matched to teachers' overall efficacy beliefs, they are slightly stronger in five of the nine schools with complete scores, but stronger than overall collective efficacy scores in four schools. Principals' academic efficacy beliefs were equal to or stronger than teachers' academic efficacy beliefs and collective academic efficacy beliefs in seven of the nine schools. Principals' behavioral efficacy beliefs were stronger than teachers' behavioral efficacy beliefs in five schools but greater then teachers' collective behavioral beliefs in five schools. In looking at the mean scores, principals' overall efficacy beliefs (M = 75.74) were not as strong as overall collective efficacy (M = 80.38) or teacher efficacy perceptions (M = 77.48). Principals' academic efficacy beliefs (M = 72.56) were weaker than collective academic efficacy (M = 80.52) and teachers' academic efficacy beliefs (M = 77.68). Finally, principals' behavioral efficacy beliefs (M = 75.49) were not as strong as collective behavioral efficacy (M = 80.25) or teachers' behavioral efficacy beliefs (M = 77.25).

Open-Ended Responses

Teachers' open-ended responses emphasized the importance of collaboration and ongoing staff learning that is focused on student needs and outcomes. Support from the principal in the form of feedback, affirmation, and permission to pursue goals the staff views as linked to students' progress and achievement were perceived as contributing

to teachers' beliefs about their effectiveness with students. They reported that they make instructional decisions based on their own assessments and judgments about students' learning and academic needs but also use district curriculum and state standards as guides. Teachers' responses about their individual beliefs and collective beliefs indicated that focused leadership that allows them to work in a unified way on strategies, interventions, and programs that have been adopted by the school helps to ensure classroom and school wide success. Although most teachers mentioned that ongoing professional learning improves their teaching, responses varied by school, by district, and by individual in terms of the form of learning. According to the participants, standards and course goals from departments and schools, districts, and the state equally influence decision-making about instruction.

Collectively, teachers viewed unity that is established through collaboration, principal support and direction, and school cultures focused on continual learning as elements that prompt them to teach well. Teachers perceived that working effectively with students as a school is influenced by demographics and expectations from peers, administrators, and the community. Beliefs about how their schools' meet challenges varied. Unity and collaborative problem solving are strategies that some teachers mentioned as resources. A quarter of the respondents reported that dealing effectively with challenges is an area that needs improvement.

Principals indicated that collaboration with other administrators and staff members at their schools contributes to their individual improvement, to their ability to support teachers in their work with students, and to increased learning and achievement. They also cite, using data, their own reading and coursework, and specific programs or

frameworks to improve their effectiveness as instructional leaders. Principals noted that making time for collaboration and listening, along with maintaining open communication, promotes student achievement in their schools.

Limitations

The results of this study are influenced most significantly by the use of survey methodology, the sample size, participants, and the complexity of measuring efficacy. Additionally, there are other limitations that had an impact on the internal, statistical, construct, and external validity of the study.

Threats to Internal Validity

The greatest threat to internal validity was selection. Survey methodology presents threats to internal validity in this study because participants were voluntary rather than being randomly assigned. All teachers in the selected schools received the invitation to participate, but as Gall, Borg, and Gall (1996) point out, those who actually respond are considered volunteers, which constitute a subgroup of the sample who are able to respond differently. Because all those who responded were teachers, the demographic variables that differentiated volunteers from non-volunteers, especially socioeconomics and level of education, were not as problematic. The schools selected for the study had demonstrated high levels of achievement for the previous school year. This helped to hold extraneous variables constant because responses were not as likely to be influenced by attitudes and beliefs that could be associated with working in schools with a wide range of performance levels. The average difference in years of teaching experience for those who chose to participate

compared to all teachers in the selected schools was 1.9 years, indicating that the participants did not vary greatly in experience from the sample.

Another threat was the sampled population. Only teachers and principal from high performing schools participated in this study. It is unknown if the same statistical patterns would be found if low performing or under performing schools had been included in my research sample.

Threats to Statistical Conclusion Validity

Validity and reliability of measures specific to subjects. I did not run validity and reliability measures on the survey instruments that were specific to the subjects in the study. The collective efficacy instrument used in the study was tested for validity and reliability in Virginia middle schools. The mean for socioeconomic status, measured by the percentage of students receiving free or reduced lunches, for the participating schools in the Virginia convenience sample was 37%; it was 20.2% in this study, which indicates that they were close to being within the same quartile. I used the longer forms of the TSES and CTE because they had stronger reliabilities. The Cronbach's Alpha was .94 for the 24-item TSES and .97 for the 12-item CTE.

Statistical power. The effect sizes were small for the correlations between teachers' efficacy beliefs and collective efficacy beliefs (ES = 0.33), teachers' academic efficacy beliefs and collective academic efficacy beliefs (ES = 0.29), and teachers' behavioral efficacy beliefs and collective behavioral efficacy beliefs (ES = 0.31). Increasing the size of the sample by prompting a greater participation rate would have increased the statistical power. The participation rate for completion of the teacher efficacy questionnaire (TSES) ranged from 30% to 63%, but the range dropped to

between 8% and 54% for those who completed both the TSES and the collective efficacy survey (CTE).

During the data collection phase, I monitored the participation rate closely and saw that there was a much greater completion rate for the TSES. After sending two additional email messages that reminded teachers that there were two survey links, I consulted with the information technology director who developed the online survey program. We found that the interface between the program and the settings that at least two of the school districts used to minimize computer spam and viruses could cause the second survey to open with the message that told participants that the surveys were complete and thanked them for their participation. Although this was corrected and the surveys were resent, it is likely that most participants had already spent time completing the TSES and did not return to complete the second survey.

Threats to Construct Validity

Mono-method bias is potentially a problem because teacher efficacy, collective efficacy, and principal efficacy were each measured using a single survey. I used three surveys that emerged from the same definition of the efficacy construct and its operational dimensions. The three survey instruments were the only measures that had been developed before the start of this study that were consistent with Bandura's (1997, 2000, 2001b) prerequisite that measurements assess both dimensions of teacher efficacy, the sense of personal competence, and beliefs about effectiveness across the range of tasks that comprise teaching. They were also the only measures based on the same conceptualization of the construct and that had been used with teachers in all subject areas in middle schools. The measures were also selected because they had

each been subjected to at least two pilot studies tested, were found to have at least moderate construct validity, and had strong reliability. Using some of the other existing efficacy instruments or developing three new measures would have allowed for triangulation and strengthened construct validity.

Findings

The results of this study replicate previous conclusions about the reciprocal relationship between teacher efficacy and collective efficacy (Goddard & Goddard, 2001; Tschannen-Moran & Barr, 2004), and also aligned with findings that collective efficacy is related to teacher efficacy (Goddard & Goddard, 2001). Previous researchers suggested that the degree to which individual efficacy could predict collective efficacy, and the reverse, depended on the level of interdependence within the organization (Bandura, 2000; Tschannen-Moran et al., 1998) and that school systems had intermediate levels of interdependence (Bandura 1997, 2000). In describing lower levels of interdependence as loose coupling, Orton and Weick (1990) proposed that organizations have means of articulating and focusing attention on shared values and making use of enhanced leadership to compensate for a relative lack of connectedness and integration. The moderate correlation between collective efficacy and teacher efficacy in this study indicates that there is enough interdependence in the schools' functioning to begin looking at collective efficacy as an inroad for establishing normative practices that lead to improved student outcomes.

The challenges that schools face in meeting academic standards could be at least partially attributed to difficulties with attaining the levels of commitment and confident implementation of strategies that raise achievement. This attests to the value of

principals and district leaders learning how to increase collective efficacy. Robust collective efficacy within a school promotes commitment and normative behavior (Goddard, 2001; Goddard & Goddard, 2001) as well as the academic emphasis (Goddard & LoGerfo et al., 2004) and influence on individual teacher efficacy (Goddard & LoGerfo, 2007) that contributes to increasing student learning and achievement. If principals and district leaders directly address and increase levels of interdependence by setting up structures and then modeling and teaching staff members how to function adeptly as teams, they may cultivate higher perceptions of collective efficacy, which in turn can bring about teamwork and group functioning that goes beyond affirming and supporting each other. This could require new learning for principals and district leaders as they identify and practice leadership behaviors that result in collaboration that is focused on student learning and outcomes.

Question 1: Findings and Interpretation about the Relationship between Collective Efficacy and Teacher Efficacy

The moderate correlation between collective efficacy and teacher efficacy supports previous assertions that collective efficacy functions as an emergent group-level characteristic that evolves through the working interactions of a school staff (Bandura, 2000; Goddard et al., 2000). The collective efficacy of a staff is grounded in the beliefs of individuals about their capabilities to effectively carry out teaching tasks but is also potentially greater than the sum of individual teachers' attributes (Bandura, 2000) and beliefs (Goddard, 2000) because it is influenced by school dynamics and the quality and purposefulness of teacher' interactions as a faculty (Bandura, 2000; Goddard, 2001). The level of the collective efficacy beliefs in each of the ten schools studied

verified that it emerges as a staff characteristic and suggested that its strength can be influenced through the interplay of three factors: (a) school wide outcomes that constitute mastery experience, (b) means of interpreting and processing outcomes that lead to positive and affirming understandings about effectiveness, (c) structures that enable teachers to translate past results that illustrate their capabilities into a future direction.

All 10 middle schools in my study had *Outstanding* Oregon State Report Card ratings for the three consecutive school years leading up to and including the year of this study, meaning that mastery experience in terms of statewide performance indicators was reported at the highest possible level. The increased attention given to these ratings because of NCLB and highly publicized annual results might have added to perceptions of the importance of the statewide report card. Teachers in this study had past mastery experiences that could potentially influence decisions about future collective actions and goals, and positively influence efficacy beliefs. Mastery experience was found to have the most profound impact on efficacy beliefs when the four sources of efficacy were repeatedly identified in teacher and collective efficacy research (Goddard, 2001; Tschannen-Moran & McMaster; 2009; Woolfolk-Hoy & Spero, 2005). Teachers who participated in this study stated that they saw themselves as belonging to high achieving schools where students, teachers, parents, and the community support and value education and academic performance. This indicated that they have most likely interpreted statewide assessment results as mastery experience.

It cannot be assumed that high achievement ratings will translate into mastery

experience information that increases collective efficacy. It may have been the processing of mastery experience and the ongoing interpretation of performance results that significantly influenced teacher and collective efficacy (Goddard, 2001; Labone, 2004). The relatively high achievement along with the reported opportunities for regular collaboration and feedback suggests that there is some effective means of processing and interpreting potential mastery experiences occurring in the schools in this study. The moderately strong relationship between teacher and collective efficacy in the ten middle schools parallels Goddard and Goddard's (2001) findings that teacher efficacy in elementary schools associated with their samples increased as collective efficacy increased. Although it is not known whether increases in collective efficacy lead to increases in teacher efficacy, results from this study and previous studies do suggest that principals could build staff unity around improving achievement and use collaborative processes to develop staff members' skills in interpreting performance outcomes and determining the next actions. It is highly likely that this would increase collective efficacy.

Teachers' perceptions of their own capabilities might have contributed to the overall beliefs of a staff that were greater than the sum of individuals' views and were probably more apt to influence collective efficacy when there were factors that affected staff members' interpretations of efficacy information (Ross et al., 2003), which could have been the case in schools that all received high achievement ratings from the state. Teachers in the ten schools commented that support and feedback from their principals contributed to their effectiveness in working with students. Because the middle schools in this study had teams or professional learning community in place, it was more likely

that they were able to process and be collectively influenced by past achievement. The cumulative effect of individual positive interpretations of this information could have increased collective efficacy (Goddard, et al., 2000) and along with the opportunities for discussing and acting on the interpretation of it, supports the correlation between teacher and collective efficacy.

Goddard (2001) noted that the collective use of past mastery experience influenced future actions. The three or more years of *Outstanding* ratings received by schools in this study may have a continually affirming effect that in turn leads to actions that lead to a cycle of collective efficacy and high performance. Within the six school districts represented, there were middle schools in three of them with similar SES that did not maintain *Outstanding* ratings for three years and did not receive it in 2010-2011, although almost half of them did receive the highest rating at least once in a three-year period. In two of the school districts, there were only the two middle schools that participated in the study and in one district, there was a 10% difference in SES between the school that received *Outstanding* ratings for three years and the four other middle schools. This suggests that the mastery experience and collective efficacy cycle exist in the schools selected for the study. Results from this study indicate that individual teacher efficacy and achievement information can be effectively processed when principals focus collaboration on student achievement, and if the dynamic for interpretation is robust and focused on future actions, collective efficacy can emerge in a school and contribute to strong academic performance.

The significant correlation between teacher academic efficacy and collective academic efficacy, and between teacher behavioral efficacy and collective behavioral

efficacy, corresponds to previous findings in three areas: (a) the subscales used to measure teacher and collective efficacy, (b) the relationship between teacher efficacy and collective efficacy, and (c) the effects of an academic focus. The teacher efficacy and collective efficacy surveys used in the study were developed using key elements of earlier instruments. Both surveys identified subscales for the two areas of teaching that covered most of the key teaching tasks (Goddard, 2002; Tschannen-Moran & Woolfolk-Hoy, 2001; Tschannen-Moran & Barr, 2004). The areas referred to as academic efficacy and behavior efficacy in this study were called *instructional strategies* and *student discipline* in previous studies, and strong correlations existed between the subscales and overall teaching efficacy and collective efficacy. This suggests that the relationship between teacher efficacy and collective efficacy includes the subscales of academic and behavioral efficacy.

Results from my study strengthen previous findings about the relationship between achievement and efficacy. Teacher academic efficacy promotes student achievement (Allinder, 1994; Ashton & Webb, 1986; Bandura, 1993) and there is a reciprocal relationship between collective efficacy and student achievement (Tschannen-Moran & Barr, 2004). In addition to demonstrating high levels of achievement in reading and mathematics, the 10 schools in my study were characterized by an emphasis on high expectations and academic excellence. Collective efficacy is a key predictor of differences in reading and mathematics achievement in schools (Bandura, 1993; Goddard et al., 2000). This study affirmed the potential for improving achievement in schools by developing collective efficacy within a teaching staff. By regularly using achievement data and having participatory processes in place that involve the entire

staff in interpreting results and determining actions based on those results, principals could ensure that mastery experience is a continual and relevant source of collective efficacy. Increasing collective efficacy might contribute greatly to improving achievement.

Question 2: Findings and Interpretation about the Difference between Overall Collective Efficacy and Overall Teacher Efficacy

The significant difference between overall collective efficacy beliefs and overall teacher efficacy beliefs aligns with the results from Goddard and Goddard's (2001) study in elementary schools. That is, in my study and Goddard and Goddard's study, there was a positive and reciprocal relationship between teacher and collective efficacy. However, in Goddard and Goddard's study, teacher efficacy was slightly greater than collective efficacy, whereas in my study, collective efficacy beliefs were stronger. The teaming structures that allow for regular collaboration in the middle schools may contribute to collective efficacy becoming stronger than individual teacher efficacy. Bandura (1993) emphasized that because desired outcomes in an organization are reached gradually, the evaluation of progress has a profound effect on self-appraisal and this can alter the time it takes to attain results. Again, the mastery experiences based on achieved assessment outcomes, along with the support and school wide unity focused on high expectations for students, are likely catalysts for stronger collective efficacy. This suggests that creating structures that promote collaboration can help to increase collective efficacy if principals also are skilled in facilitating the interpretation of achievement results with teachers so that the staff sees specific indicators of progress that can be used to determine future actions.

Goddard and Goddard (2001) found that collective efficacy predicted teacher efficacy. This was affirmed in this study. Bandura (1997) concluded that teachers do not function in isolation but are influenced by other teachers because social cognitive theory postulated that self-efficacy was shaped by the social dynamic of the organization. The level of the collective efficacy perceptions in the schools in this study, and the finding that they are stronger than individual teachers' beliefs, suggest that a sense of overall effectiveness can evolve in schools where isolation is replaced with structures and dynamics that advance teachers' interest and skills in collaborating to improve student learning. Teachers' responses almost unanimously reflected a positive view about the unified work of their schools and the role the principals played in facilitating collaboration and providing helpful support and feedback. Leadership that not only brings people together but that also allows the staff to develop a coherent and purposeful means of using results as the starting point for future actions, and that creates a school culture that has a normative effect on each teacher, is necessary for developing collective efficacy that in turn may increase teacher efficacy. This means that principals must be skilled at recognizing organizational dynamics and using structures and resources to focus teachers' work on instructional practices that are associated with improved outcomes, at working collaboratively with a staff to solve problems so there is a real sense of collective effectiveness, and at aligning professional learning with both teachers' daily work with students and with goals that are fixed on increasing achievement.

Results suggest that stronger collective efficacy is a starting point, an indicator that a staff is capable of raising teachers' individual efficacy. In accordance with Goddard's

(2001) contention that collective efficacy brings normative press to a school, the higher levels of overall collective efficacy compared to overall teacher efficacy in seven of the ten schools in the study indicate that the cultures in these schools press teachers to persist with strategies and efforts that promote improved achievement. Although all teachers may not yet believe that they can individually bring about these results, this study confirmed that collective efficacy is an important factor in creating a culture for high academic achievement. Goddard (2001) noted that when collective efficacy is greater, the normative press increases. Because of the strong link between academic achievement and teacher efficacy, my study suggested that developing collective efficacy in a school can lead to increasing individual teacher efficacy, which strengthens teachers' persistence and efforts in working effectively with students. Again, strong collective efficacy begins with principals whose leadership skills and approaches are oriented towards developing teachers' capacities for focused collaboration centered on student learning. Cultivating and improving the quality of collaboration differs from promoting the collegiality that is generally acknowledged as desirable in an organization. In order to guide collaboration that contributes to collective efficacy, principals need to model thinking through and using interpretations of student performance data with teachers and engage them in determining actions that emerge from common understandings of practices that align with improved achievement.

Previous studies noted that high levels of collective efficacy can lessen the decrease in efficacy that individual teachers experience in their first years of teaching (Chester & Beaudin, 1996; Tschannen-Moran et al., 1998) and offset the uncertainty faced by

teachers who are relatively new to the profession or to a school (Goddard & Goddard, 2001). In this study, 17% of the participants had taught for three years or less. Teachers in Oregon have probationary status for three years. The percentage of probationary teachers in the participating schools ranged from 0 to 31%. The mean difference between schools' overall collective efficacy and teachers' individual efficacy beliefs was 2.90, which represented less than 15% of the incremental difference between respondents' viewing that they have *quite a bit* of an effect and *a great deal* of an effect on students' academic and behavioral success. It is possible that the difference between collective efficacy and teacher efficacy was not that great because of the power collective efficacy has to positively influence individual teacher efficacy and to raise the efficacy of newer teachers. Similarly, 51% of the participating teachers had taught in the schools in the study for three years or less and the number of newer teachers in the schools ranged from 8% to 81%. This suggests that having structures within a school that not only encourage but that actively engage teachers in collaboration centered on student learning and achievement in order to develop collective efficacy can gradually strengthen teacher efficacy. Collective efficacy is normative and this allows it to shape the school culture by reinforcing practices that promote achievement and beliefs in teachers' effectiveness. Teachers who are new to a school where there is robust collective efficacy will experience the professional dynamics of working with these norms in place, which is likely to increase their individual teaching efficacy. Furthermore, it seems leadership that is attentive to the aspects of school culture could strengthen collective efficacy. Shared decision making about academic and instructional priorities, purposeful collaboration that leads to goal

setting, ongoing feedback and support that is focused on student learning appears to be essential, at both the school and district levels.

Question 3: Findings and Interpretation about the Difference between Collective Academic Efficacy Beliefs and Teachers' Academic Efficacy Beliefs

Academic efficacy, a dimension of teacher efficacy and collective efficacy that corresponds with the subscales that Tschannen-Moran and Woolfolk-Hoy (2001) called instructional *strategies and student engagement* and that Bandura (2006) labeled *instruction*, was significantly stronger when measured collectively rather than individually. This affirms the contention that collective efficacy is a property of the school that can influence individuals once it is developed (Goddard, 2001; Goddard et al., 2000; Goddard et al., 2004; Tschannen-Moran and Barr, 2004). In schools like the ones in my study, where student achievement is strong, and where teachers and principals voice their beliefs about emphasis on learning and academic performance, it follows that collective efficacy is stronger than individual teacher efficacy. The schools in my study were characterized as high academic performers and this gave them the mastery experience information that could then be interpreted and used as the basis for efficacy perceptions and future actions.

Although the difference between academic collective efficacy and academic teacher efficacy was significant, the mean for individual teacher efficacy responses in all of the schools showed that teachers believed they could carry out academic tasks at a level that was expressed as being greater than *quite a bit*, as measured on a Likert scale, which suggests that the strength of the collective beliefs is influencing individuals. This underscores the importance of developing collective efficacy in a school. One

consideration that can be acted on especially well in middle schools is the level of organizational interdependence. The teaming and professional learning community structures that were in place in the ten schools in this study are likely present in many middle schools in the United States as this was one of the key recommendations in both *Carnegie Council on Adolescent Development* reports (1989, 2000). Seventy-nine percent of principals in middle schools reported that they had teams in 2000, an increase over the 57% in 1992 (Valentine, Clark, Hackman, & Petzko, 2002). Teaming structures offer a means of creating more tightly structured schools that foster interdependence among teachers. The potential for developing strong levels of collective efficacy and strengthening the relationship between collective efficacy and teacher efficacy is greater when schools are organized to promote interdependence and the collaboration that can result from it. Teachers' open-ended responses confirmed that they rely on collaboration, peer and principal feedback, and the sense of unity in their schools as sources of support that allow them to work effectively with students. If principals facilitate collaboration so that the focus is on academic outcomes, it is more likely that teachers will be collectively attentive to results. If principals also guide staff members in interpreting results and using them to determine effective strategies for improved achievement, the cycle of mastery experience that fuels increased efficacy can begin.

Mastery experience, the strongest source of efficacy information, operates at the individual and collective levels (Goddard, et al., 2000) and influences collective efficacy more than SES and other demographic variables (Goddard, 2000). The mastery experiences that consistently occurred in all of the schools in the study were

the state math and reading assessment results. It is likely that these results contributed substantially to collective efficacy levels that ranged between 64 % and 78%, especially in light of the public awareness and commentary about schools' ratings, which are based on statewide assessment scores. The mean difference between teacher academic efficacy and collective academic efficacy was slightly smaller than the differences between teacher behavioral efficacy and collective behavioral efficacy, and between overall teacher efficacy and overall collective efficacy. This could mean that in schools like the ones in my study, where academic performance is relatively high and has led to recognized mastery experience and where teachers report that improving student achievement is universally viewed as a focus point, strong collective efficacy will influence teacher efficacy more powerfully. The mean scores for teacher academic efficacy and collective academic efficacy were slightly higher than for teacher behavioral efficacy and behavioral efficacy and for overall teaching and collective efficacy. This slight difference could indicate that because academic efficacy exemplifies the tasks that most define the purpose of schools, successes that are brought forward through mastery experience coupled with the verbal persuasion in the form of continual support and feedback from principals can have a potent effect on collective and teaching efficacy.

The effects of teacher and collective efficacy on achievement suggests that there is value in principals and school district leaders identifying and implementing means of effectively processing data that could become mastery experience information, target feedback, and verbal support. Learning how to process results as a staff is a key area for improving school and district goal setting and determining the use of actions and

resources that will be used to work towards goals.

Bandura (1997) emphasized that academic efficacy often determine the degree to which teachers work with academic learning. When collective academic efficacy is higher, teachers are more apt to adopt the strategies that generate future mastery experiences. Teachers were the source of information but their perceptions created the levels of teacher efficacy and collective efficacy in each school. Because a key source of master experience information for teachers was the school report card based on national NCLB criteria, it is likely that the highly visible and publicized school ratings affected perceptions of the school and within the school, which accounted for the stronger collective efficacy ratings in the majority of the schools in the study.

What matters most is how principals and teachers use and build on that mastery experience. Identifying the strategies and approaches that promote academic growth for all students is an essential step for schools to take if they are going to use the generalized results of statewide assessments as mastery experience information. This study suggests that having an unwavering school-wide focus on improving achievement and student learning, a focus that is shared and acted upon by principals and teachers in their daily work, is a place to start. Teachers in all ten schools noted that they felt that the principal, the community, and their peers made continual improvement in learning for students a priority. When schools set measurable goals, translate them into instructional strategies, collect data and confer as a staff about progress, use the data to make valid interpretations about learning, they are putting a cycle of continual learning that results in mastery experience information in place. This establishes a foundation for making use of mastery experience to trigger continued improvement that influences

academic collective efficacy and academic teaching efficacy. Although goal setting is a common practice in schools and school districts, crafting goals that directly align with improved student learning, determining specific classroom practices and teaching strategies that put those goals into action, and developing ongoing ways to collect data, interpret it and adjust instruction, would contribute greatly to developing teacher and collective efficacy while also improving achievement.

Question 4: Findings and Interpretation about the Difference between Collective Behavioral Efficacy Beliefs and Teachers' Behavioral Efficacy Beliefs

The significant difference between collective behavioral efficacy beliefs and teachers' behavioral efficacy beliefs affirms that collective efficacy predicts teacher efficacy as stated in Goddard & Goddard (2001). The difference between the means for collective behavioral efficacy and teacher behavioral efficacy is slightly greater than between the collective and teacher means for academic efficacy and overall efficacy. The mean for behavioral efficacy could have been lowered by the 17 % of respondents who were teachers with three or fewer years of experience. While they are learning to effectively work with strategies that support learning, especially classroom management, newer teachers generally have lower efficacy beliefs (Ross, 1994a; Tschannen-Moran & Woolfolk-Hoy, 2007).

For middle school teachers who are working with students as they transition from essentially working with one teacher throughout the school day to responding to the instruction of five or more adults on a daily basis, learning how to form relationships with students built on trust and high expectations for learning can be a challenge, especially during the first three years of teaching (Ashton, 1984). Teachers' perceived

self-efficacy affects how well students manage the transition from elementary school to middle school (Midgley et al., 1989). Because there is an increase in students' academic and social self-doubts while they are making this transition, teachers need to be empowered to address these needs (Jackson & Davis, 2000). Middle school principals and district leaders who not only increase teachers' awareness of their students' need for support but who also work with staff to develop character education programs grounded in the confluence of academic performance and social and ethical behavior could increase teacher efficacy as the staff learns to work with behavior in ways that integrate it with academics and successful learning. Although it is necessary for principals at all levels to empower teachers collectively and individually, middle school principals need to be especially attuned to how teachers perceive their capabilities and be able to orchestrate staff learning that leads to the competent and confident use of strategies that allow middle school students to realize their own capabilities and see that they are making progress. Strategies and approaches that promote a growth mindset, in both teachers and students, offer an overall outlook that principals can use as a basis for the language used in communicating with all constituencies and to examine and revise practices(Dweck, 1986, 2006). Grouping students, assessment, teaching work habits, and talking to students and parents about progress are key areas that can be approached from a growth mindset as a means of addressing self-doubt.

Working in a school with a positive atmosphere and support from colleagues and principals has been shown to contribute to a school culture where teachers take responsibility for students' learning and believe that students will make progress

academically and with behavior (Ashton, 1984; Moore & Esselman, 1994; Ross, 1994a; Tschannen-Moran & Woolfolk-Hoy, 2007). Before teachers have taught long enough to have mastery experiences that become sources of efficacy information, they are more vulnerable to contextual factors in their schools (Tschannen-Moran & Woolfolk-Hoy, 2007). The vulnerability of new teachers to the effects of school culture, collaboration, and collegial and administrative support makes skillful attention to these factors a primary concern for principals.

Findings from previous studies described how difficult it was to increase the efficacy of experienced teachers who have established belief patterns (Bandura, 1997; Shahid & Thompson, 2001; Tschannen-Moran et al., 1998). This means that principals must view school culture, collaborative processes, and means of providing ongoing feedback and support as an integral facet of school goals and initiatives so that all teachers continually participate in building a strong culture. While it is imperative that new teachers have sources of efficacy that are rooted in the school learning environment, it cannot be assumed that experienced teachers will become more efficacious without ensuring that they also continually experience means of processing and using efficacy information. Bandura (1997) pointed out that it is most challenging to change the efficacy beliefs of experienced teachers. This suggests that they must teach in a culture where practice is made public and processing is clear and tied to classroom instruction. School districts and principals could harness new teachers' potential and simultaneously ensure that they are constantly developing efficacy in experienced teachers by creating support structures that bring beginning teachers and experienced teachers together to plan, collect data, reflect and revise lessons and

strategies that can become mastery experiences.

This study affirmed that contextual factors including collaborative structures, principal support, and overall school climate contribute to collective and individual efficacy and offset the less certain beliefs of newer teachers. Teachers in the ten schools largely reported that they worked in positive and supportive environments. Although there was a difference between teacher behavioral efficacy and collective behavioral efficacy, the mean scores for both showed that teachers believed they could make between *quite a bit* and *a great deal* of an impact on students' classroom behavior and attitudes towards learning. Collective behavioral efficacy and teachers' behavioral efficacy beliefs may have been slightly lower than either overall collective efficacy and teacher or collective academic efficacy and teachers' academic efficacy beliefs because students' behavior in classrooms is visible to teachers daily whereas indicators of academic achievement, especially in schools with relatively high assessment scores, may not present the same regular concern.

Bandura (1993) noted that teacher efficacy improves with commitment and that having the efficacy to deal with disruptive behavior and lack of achievement develops when a staff learns how to resolve problems. Principals need to model problem solving and engage teachers in focusing on those issues that have the largest impact on achievement, meaning that the teacher tasks associated with behavior efficacy need to be linked to effective engagement and instruction. Teachers' open-ended responses confirm that school unity and using problem-solving strategies as a staff underpin their capabilities for working with challenges. They view themselves as working in successful schools. Participating teachers cite demographics and the belief that they

teach in schools where most students are supported at home and prepared to learn as key reasons for that success. Because there tends to be a lot of pride in the work of the school, it follows that teachers perceive collective behavioral efficacy as being stronger than their beliefs about how they individually carry out the teaching tasks associated with teacher behavioral efficacy. Bandura (1993) pointed out that self-efficacy is the product of a complex process that involves self-persuasion and that a school with collective efficacy that is stronger than teacher efficacy can be seen as a healthy organization that is progressing to improve instruction. Teachers' judgments about students determine how they work with them. Efficacy affects teachers' judgments of students (Allinder, 1994; Ashton, 1984; Gibson & Dembo, 1984). The cultures of schools with higher levels of collective efficacy can influence both teachers' judgments and practices. If principals ensure that teachers are hearing that they are part of schools that work effectively with students and also provide the time, modeling, and facilitation that allows teachers to collaboratively solve problems and address challenges, there will be a foundation for developing collective efficacy. There are opportunities in this process for principals to use verbal persuasion, along with mastery experience information, to further develop collective efficacy. Teachers working in setting where this occurs are more likely to begin the self-talk that prompts self-persuasion, which will lead to increased teacher efficacy.

Question 5: Findings and Interpretation about the Match between Principals' Efficacy Beliefs and Teachers' Efficacy Beliefs

The small number of participating principals makes it necessary to match, but not correlate, their efficacy beliefs with teachers' efficacy beliefs. This means that the

results indicate a relationship, at most, and can be used to look at the overall efficacy patterns within the ten schools. There is greater variation between principals' efficacy scores and teachers' collective efficacy ratings. The overall mean for principal efficacy (75.74) is lower than the mean for teachers' overall collective efficacy (80.38). Similarly, the mean for principals' academic efficacy (72.56) is lower than the mean for teachers' collective academic efficacy (80.52), and the mean for principals' behavioral efficacy (75.49) is less than the mean for teachers' collective behavioral efficacy (80.25). However, principals' mean efficacy ratings are slightly higher than teachers' individual efficacy scores for overall efficacy and for behavioral efficacy. Principals' mean score for overall efficacy (75.74) was somewhat greater than the mean for teachers' overall efficacy (77.48), and the mean for principals' behavioral efficacy (75.49) is slightly higher than the mean for teachers' behavioral efficacy (77.25). The mean for teachers' individual academic efficacy (77.68) is somewhat higher than the mean for principals' academic efficacy. The differences between the means for principals' efficacy ratings and teachers' efficacy scores are so slight that they do not merit the conclusion that principals and teachers in these schools have important differences in their individual efficacy beliefs. However, results do underscore the power of collective efficacy and its potential to become a force within a school that is greater than the aggregate of individual perceptions that can influence each person's beliefs.

The results align with Goddard's (2001) conclusion that principals must develop an empowered faculty. The relatively small difference between teacher efficacy and principal efficacy suggests that leadership efforts and actions have centered on

processes that create unity, collaboration that is focused on increasing learning and successful performance for students, and the feedback and support that provides teachers with the information they need to continually improve. Teachers' open-ended responses repeatedly reflected that the principals in their schools give them feedback that affirm the work they are doing and also give them permission to pursue individual goals that focus on students' success.

Principals have the key role and responsibility within schools for facilitating the interpretation of information that can become mastery experiences for the staff. The relationship between principals' efficacy beliefs and teachers' efficacy beliefs and between collective efficacy and the individual beliefs of teachers and principals confirms the findings of Ware and Kitsantas (2007) about the importance of principals' work in making sure that performance goals are met and that individuals receive affirmation for their contributions. Principals and teachers in this study displayed relatively strong individual efficacy perceptions and their open-ended responses reflected that they believe that their joint efforts to continue their own learning and determine actions that foster improved learning for all students are factors that contribute to their efficacy beliefs. Teachers attribute their success in working effectively with students on a daily basis to the focused leadership of their principals. Principals' responses indicated that they view supporting teachers through affirmation and feedback, keeping the staff free to focus on their schools' work towards improved learning, and facilitating collaboration as the key ways they work with teachers so that they are effective instructors.

Principals in this study are identified as individuals who not only ensure that there

is time for collaboration but that the purpose of collaboration is to strategize and problem solve in order to improve student learning. Teachers generally viewed themselves as members of unified faculties. These leadership characteristics can be starting points for developing collective efficacy. However, as Goddard (2001) noted, empowering a faculty and developing collective efficacy is difficult and complex. In their open-ended responses, principals commented that using data and designing effective staff learning allows them to create conditions in their schools that promote student achievement. Leading a staff in interpreting data can lead to identifying master experiences if the data is linked to specific actions and goals and if principals are skilled in guiding teachers towards seeing those links and planning future strategies (Goddard, LoGerfo et al., 2004).

In this study, principals had relatively strong achievement data to work with and could focus on maintaining and improving upon results that already could be attributed to an effective staff. In schools where significant improvement is necessary, including schools in this study, where it is important that the staff does not become complacent about results, there needs to be a means of working with principals to make sure that they understand and can articulate the relationships between goals, strategies, and achievement outcomes. If the goals and strategies are narrowly focused on statewide assessment scores, the underlying quality of daily student learning may not be addressed. This means that school district administrators must lead for instructional improvement and involve principals in learning how to design professional development that occurs at the building level and is embedded in daily communication and interactions with staff. Staff learning that engages teachers in what is most

important to them, the strategies that they see as connected to improved student learning is necessary for increasing individual and collective efficacy (Ross et al., 2003; Ware & Kitsantas, 2007) .

Future Research

Future research should take place in two main areas. The first area is an expansion and replication of my current study. The second area is the expansion and modification of the efficacy construct.

Expansion and Replication Studies

Replication across a variety of educational settings. Research that synthesizes the definition and description of efficacy in a variety of educational settings and that is focused on learning is necessary in order to understand if perceptions of capabilities hold across educational settings. The research regarding efficacy beliefs in various educational settings is necessary to counter alternative plausible arguments. While my research was conducted in high performing schools, a replication study in low performing schools is necessary to ensure that my efficacy findings and patterns hold. Moreover, replication in urban and rural environments would also be informative.

Changing how principal efficacy is measured. Although the relatively newer construct of principal efficacy is not described as extensively in the literature, results from this study suggest that there could be a relationship between principal efficacy and efficacy at other levels within middle schools. Much more research is needed to determine that the tasks selected to measure principal efficacy align with the current focus on school improvement and maximizing the use of resources. The academic efficacy and behavior efficacy categories are likely to need revision for principal

efficacy. There has been little research to date about how to increase the efficacy of practicing principals.

Pairing efficacy ratings with objective measures. A majority of the efficacy studies conducted over the past three decades used questionnaires. Self-reporting is reasonably appropriate for measuring efficacy because individuals' perceptions are the source of the assessment so there is no dissonance between what is reported and what actually occurs. However, self-assessments of personal skills, like self-efficacy, tend to be more flawed than one would suspect (Dunning, Heath, & Suls, 2004; Ehrlinger, Johnson, Banner, Dunning, & Kruger, 2008) and many people tend to suffer from the Dunning-Kruger Effect (Pavel, Robertson, & Harrison, 2012). The correlation between self-assessments of skill versus objective performance competence is even smaller (Dunning et al., 2004). People's perceptions often do not mesh with objective measurements. Importantly, people's general evaluations of their skills and character, such as personal efficacy in academics or behavior, may not always be closely aligned to their objective performances that should reflect those skills and traits (Dunning, 2006). Thus, research that adds observations of practice and the study of artifacts to the self-reported data would provide a more comprehensive understanding of efficacious teachers and principals.

Adding student efficacy scales. Findings from this study seem to affirm the relationship between teacher efficacy and collective efficacy. The significant amount of previous research that attests to the contribution of strong efficacy—at teacher, collective, and principal levels—to academic achievement implies that understanding the interaction of efficacy at these three levels could help educators learn how to

develop efficacy within a school. Adding student efficacy is also a key factor. In addition, not only looking at the correlations between levels of efficacy but also employing methodology that allows researchers to identify some specific examples of how adult and student levels influence each other could provide useful information to school and school district leaders.

Pairing efficacy to achievement. Lastly under this expansion and replication section, future research should look at how student, teacher, principal, and collective efficacy is connected to achievement. It is also important to look at efficacy versus student demographics and student characteristic variables in order to determine which one has the greater influence over achievement. To understand if efficacy actually relates to achievement or how efficacy interacts with student demographics and student characteristics work with learning outcomes is needed.

Expansion and/or Modification of the Efficacy Construct

Refining efficacy constructs. Teacher efficacy, collective efficacy, and principal efficacy are promising constructs worth understanding because of the strong relationship between each of them and student achievement. Research that continues to refine the constructs, investigates how efficacy develops, and provides much more information about applications for practice in schools is needed for educators to find it relevant and useful.

The academic and behavioral efficacy findings raise questions about how the tasks used to measure efficacy are framed and categorized. Future research should work on consistency with regard to naming tasks as academic or behavioral, and previous studies have included other categories in their measures of teacher and collective

efficacy. Furthermore, research that focuses on identifying the key tasks that describe effective teaching and school leadership would be helpful.

Elaboration of the four sources of efficacy. Further research is needed to elaborate on the four sources of efficacy that Bandura (1997) identified for educational settings. Because it is individuals' perceptions of the influence of each source, finding out more about how individuals interpret the information from each source could inform the work of principals and school district leaders who want to increase efficacy. Studies that take a generative approach and explore what teachers and principals regard as influential examples of mastery experiences, vicarious experiences, social persuasion, and affective elements would deepen understanding about how to develop efficacy. This could have a profound effect on professional development.

Use of alternative measurement systems. Finally, as part of the expansion and modification of the efficacy construct, future research should look at alternative efficacy measurement systems. Measuring efficacy has presented problems with construct validity because of difficulties with determining whether the instruments include task items that are the best indicators of teacher efficacy. Future studies might consider the use of confirmatory factor analysis to help determine how the various efficacy items relate to each other and are clustered to form subscales. Gibson and Dembo (1984) suggested that confirmatory factor analysis would be an effective means of checking construct validation, but Henson (2001) noted that there has been little exploration of ways to use factor analysis to address the integrity of instruments. This is an area for future research. It would increase the reliability of measurement instruments if researchers made the use of nonparametric tests part of studies that

employ surveys with Likert inventories. The forced choice format that has been used for almost all of the efficacy studies in the past three decades has provided researchers with many examples of ordinal representations of efficacy ratings, meaning that meta-analyses could be conducted to look at relationships among the item scores for the frequently used TSES instrument.

Conclusions

Efficacy is a promising construct for educators to understand as part of improving learning, instruction, and student achievement in schools. This study established that there are strong relationships between teacher and collective efficacy in high performing schools and that principal efficacy also matches those beliefs. Self-efficacy is currently understood as a catalyst for action because it is the foundation of human agency. The study suggests that the intentional actions that result from efficacious teachers and principals can promote increased learning and achievement.

Educators look to research for evidence of practices that emerge as the most potent and reliable means of increasing students' learning. Efficacy research is an important contribution to the understanding of those practices because it focuses on learners' and practitioners' dispositions towards learning and taking action, which in turn, shape the actions. This study provides a glimpse of the beliefs and attitudes that teachers and principals within ten schools use as the basis for their daily planning, interactions, and reflections on their work with students. It serves as a starting point for using efficacy research to inform leadership and instructional practices because the study: (a) affirms the relationship between efficacy and student achievement, (b) shows that there is a positive link among efficacy beliefs at the teacher, collective, and principal levels, (c)

indicates that using the relative strength of collective efficacy could be a way to increase individual teacher efficacy, and (d) suggests ways for principals to develop efficacy within a teaching staff. The value in understanding how efficacy influences learning is in its potential for knowing more about how people learn so that practices include the language and processes that encourage learners' agency and promote choices of actions that increase learning.

By examining the efficacy perceptions of teachers and principals in relatively high achieving middle schools, this study focused on the beliefs behind the actions of educators in schools that are considered successful. Those beliefs are one variable that influences teachers' and principals' practices. Teacher efficacy first emerged as a variable that outweighed socioeconomic factors as an influence on the sustained and effective implementation of reading and math programs (Berman, et al., 1977; Coleman et al., 1976). With the increased and emphatic attention on raising achievement for all students and eliminating achievement gaps, it is important to look at variables that are grounded in what each learner and each educator brings to a school setting. Efficacy is a variable that can be examined and developed across settings. This study showed that collective efficacy is an indicator, and possibly a predictor, of efficacy at other levels. Additionally, starting with structures and practices that develop collective efficacy is a way to begin strengthening the beliefs of the staff so that they influence individual teacher beliefs and instructional practices.

Efficacy is not a straightforward construct to measure or to develop. Perceptions and beliefs are difficult to quantify and correlate with specific practices. However, the importance of understanding the deeper motivations and influences on teaching and

learning must be considered as part of preparing and continuing to develop effective teachers and principals. This study proposed that looking at efficacy as a variable within schools and working with staff to interpret data and use it to determine actions collaboratively requires that principals and school district administrators have a working understanding of the potential to use mastery experiences, vicarious experiences, social persuasion, and affective states as part of their leadership practices. It is likely that efficacy and growth mindset will continue to be recognized as variables that exert influence on learners and educators and that affect their performance, and that future research will strengthen the connections between the two constructs that were suggested in this study.

Finally, studies that examine variables that contribute to success, to strong achievement for all students, are especially helpful to educators because they allow for a generative process of developing and revising effective practices. This study, along with the body of efficacy research in education, showed that there are practices, such as purposeful collaboration, unified problem solving, and supportive feedback from principals, that can be implemented in all settings. There is much work to be done if efficacy is going to be a useful factor for understanding and developing learning at all levels. By focusing on the construct as an element that is combined with the real tasks of teachers and principals, and paying attention to providing the mastery experiences, vicarious experiences, and using leadership voice for social persuasion, increasing efficacy would result in increased student achievement.

APPENDIX A

TEACHER SELF-EFFICACY SCALE

Teacher Beliefs - TSES

This questionnaire is designed to help us gain a better understanding of the kinds of things that create challenges for teachers. Your answers are confidential.

Directions: Please indicate your opinion about each of the questions below by marking any one of the nine responses in the columns on the right side, ranging from (1) "None at all" to (9) "A Great Deal" as each represents a degree on the continuum.

Please respond to each of the questions by considering the combination of your *current* ability, resources, and opportunity to do each of the following in your present position.

	None at all		Very Little		Some Degree		Quite A Bit		A Great Deal
1. How much can you do to get through to the most difficult students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
2. How much can you do to help your students think critically?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
3. How much can you do to control disruptive behavior in the classroom?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
4. How much can you do to motivate students who show low interest in school work?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
5. To what extent can you make your expectations clear about student behavior?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
6. How much can you do to get students to believe they can do well in school work?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
7. How well can you respond to difficult questions from your students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
8. How well can you establish routines to keep activities running smoothly?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
9. How much can you do to help your students value learning?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
10. How much can you gauge student comprehension of what you have taught?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
11. To what extent can you craft good questions for your students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
12. How much can you do to foster student creativity?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
13. How much can you do to get children to follow classroom rules?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
14. How much can you do to improve the understanding of a student who is failing?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
15. How much can you do to calm a student who is disruptive or noisy?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
16. How well can you establish a classroom management system with each group of students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
17. How much can you do to adjust your lessons to the proper level for individual students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
18. How much can you use a variety of assessment strategies?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
19. How well can you keep a few problem students form ruining an entire lesson?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
20. To what extent can you provide an alternative explanation or example when students are confused?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
21. How well can you respond to defiant students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
22. How much can you assist families in helping their children do well in school?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
23. How well can you implement alternative strategies in your classroom?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
24. How well can you provide appropriate challenges for very capable students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨

25. How many years of teaching experience do you have? _____

26. How many years have you taught at this school? _____

Please consider your current teaching conditions, school factors, and resources. Give specific responses.

27.) What has helped you continue to become a better teacher while you have been at this school?

28.) What are the most powerful influences on your decision making about instruction?

29.) What makes your teaching and daily work with students so effective at this school?

APPENDIX B

COLLECTIVE TEACHER EFFICACY

Collective Teacher Beliefs

This questionnaire is designed to help us gain a better understanding of the kinds of things that create challenges for teachers. Your answers are confidential.

Directions: Please indicate your opinion about each of the questions below by marking any one of the nine responses in the columns on the right side, ranging from (1) "None at all" to (9) "A Great Deal" as each represents a degree on the continuum.

Please respond to each of the questions by considering the *current* ability, resources, and opportunity of the teaching staff in your school to do each of the following.

	None at all		Very Little		Some Degree		Quite A Bit		A Great Deal
1. How much can teachers in your school do to produce meaningful student learning?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
2. How much can your school do to get students to believe they can do well in schoolwork?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
3. To what extent can teachers in your school make expectations clear about appropriate student behavior?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
4. To what extent can school personnel in your school establish rules and procedures that facilitate learning?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
5. How much can teachers in your school do to help students master complex content?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
6. How much can teachers in your school do to promote deep understanding of academic concepts?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
7. How well can teachers in your school respond to defiant students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
8. How much can school personnel in your school do to control disruptive behavior?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
9. How much can teachers in your school do to help students think critically?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
10. How well can adults in your school get students to follow school rules?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
11. How much can your school do to foster student creativity?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
12. How much can your school do to help students feel safe while they are at school?	①	②	③	④	⑤	⑥	⑦	⑧	⑨

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⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨
⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨
⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

13. How many years of teaching experience do you have? _____

14. How many years have you taught at this school? _____

Please consider your current teaching conditions, school factors, and resources. Give specific responses.

15.) Describe a specific feature of this school that prompts you to teach well.

16.) Explain what you see as the most powerful influence on this school's success in working with students.

17.) How does the staff work with challenges at this school?

APPENDIX C

PRINCIPAL SELF-EFFICACY SCALE

Principal Questionnaire

This questionnaire is designed to help us gain a better understanding of the kinds of things that create challenges for principals in their school activities.

Directions: Please indicate your opinion about each of the questions below by marking one of the nine responses in the columns on the right side. The scale of responses ranges from "None at all" (1) to "A Great Deal" (9), with "Some Degree" (5) representing the mid-point between these low and high extremes. You may choose any of the nine possible responses, since each represents a degree on the continuum. Your answers are confidential.

Please respond to each of the questions by considering the combination of your *current* ability, resources, and opportunity to do each of the following in your present position.

"In your current role as principal, to what extent can you…"		None at All		Very Little		Some Degree		Quite a Bit		A Great Deal
1.	facilitate student learning in your school?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
2.	generate enthusiasm for a shared vision for the school?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
3.	handle the time demands of the job?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
4.	manage change in your school?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
5.	promote school spirit among a large majority of the student population?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
6.	create a positive learning environment in your school?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
7.	raise student achievement on standardized tests?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
8.	promote a positive image of your school with the media?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
9.	motivate teachers?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
10.	promote the prevailing values of the community in your school?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
11.	maintain control of your own daily schedule?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
12.	shape the operational policies and procedures that are necessary to manage your school?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
13.	handle effectively the discipline of students in your school?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
14.	promote acceptable behavior among students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
15.	handle the paperwork required of the job?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
16.	promote ethical behavior among school personnel?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
17.	cope with the stress of the job?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
18.	prioritize among competing demands of the job?	①	②	③	④	⑤	⑥	⑦	⑧	⑨

19. How long have you been a principal? _____

20. How many years have you been the principal at this school? _____

Please consider current support, school and district working conditions, and resources. Give specific responses.

21.) What has helped you continue to become a better principal while you have been at this school?

22.) Describe the most effective things you do to support teachers in their work with students.

23.) What contributes most to your ability to create conditions that promote students' learning and achievement?

APPENDIX D

ACADEMIC EFFICACY AND BEHAVIORAL EFFICACY QUESTIONS FROM SURVEYS

Teacher Beliefs: Teacher Self-Efficacy Scale (TSES)	
Academic Efficacy Questions	**Behavioral Efficacy Questions**
2. How much can you do to help students think cri	1. How much can you do to get through to the most difficult students?
7. How well can you respond to difficult questions from your students?	3. How much can you do to control disruptive behavior in the classroom?
10. How much can you gauge student comprehension of what you have taught?	4. How much can you do to motivate students who show low interest in schoolwork?
11. To what extent can you craft good questions for your students?	5. To what extent can you make your expectations clear about student behavior?
14. How much can you do to improve the understanding of a student who is failing?	6. How much can you to get students to believe they can do well in schoolwork?
17. How much can you do to adjust your lessons to the proper level for individual students?	8. How well can you establish routines to keep activities running smoothly?
18. How much can you use a variety of assessment strategies?	9. How much can you do to help your students value learning?
20. To what extent can you provide an alternative explanation or example when students are confused?	12. How much can you do to foster creativity?
23. How well can you implement alternative strategies in your classroom?	13. How much can you do to get children to follow classroom rules?

24. How well can you provide appropriate challenges for very capable students?	15. How much can you do to calm a student who is disruptive or noisy?
	16. How well can you establish a classroom management system with each group of students?
	19. How well can you keep a few problem students from ruining an entire lesson?
	21. How well can you respond to defiant students?
	22. How much can you assist families in helping their children do well in school?
Collective Beliefs: Collective Efficacy Scale (CES)	
Academic Efficacy Questions	**Behavioral Efficacy Questions**
1. How much can teachers in your school do to produce meaningful student learning?	2. How much can your school do to get students to believe they can do well in schoolwork?
5. How much can teachers in your school do to help students master complex content?	3. To what extent can teachers in your school make expectations clear about appropriate student behavior?
6. How much can teachers in your school do to promote deep understanding of academic concepts?	4. To what extent can school personnel in your school establish rules and procedures that facilitate learning?
9. How much can teachers in your school do to help students think critically?	7. How well can teachers in your school respond to defiant students?
	8. How much can school personnel in

	your school do to control disruptive behavior?
	10. How well can adults in your school get students to follow school rules?
	11. How much can your school do to foster creativity?
	12. How much can your school do to help students feel safe while they are at school?

Principal Beliefs: Principal Self- Efficacy Scale (PSES)	
Academic Efficacy Questions	**Behavioral Efficacy Questions**
In your current role as principal, to what extent can you…	In your current role as principal, to what extent can you…
1. facilitate student learning in your school?	2. generate enthusiasm for a shared vision for the school?
7. raise student achievement on standardized tests?	3. handle the time demands of the job?
	4. manage change in your school?
	5. promote spirit among a large majority of the student population?
	6. create a positive learning environment in your school?
	8. promote a positive image of your school with the media?
	9. motivate teachers?

	10. promote the prevailing values of the community in your school?
	11. maintain control of your daily schedule?
	12. shape the operational policies and procedures that are necessary to manage your school?
	13. handle effectively the discipline of students in your school?
	14. promote acceptable behavior among students?
	15. handle the paperwork required of the job?
	16. promote ethical behavior among school personnel?
	17. cope with the stress of the job?
	18. prioritize among competing demands of the job?

APPENDIX E

PARTICIPATING TEACHERS' YEARS OF TEACHING EXPERIENCE

School #1 Total Years Teaching	Years at School
3	3
27	11
7	6
10	9
3	1
9	9
13	2
6	6
12	12
19	13
20	8
30	6
4	1
1	1
27	2

School #2 Total Years Teaching	Years at School
9	9
13	6
6	6
23	20
25	2
3	1
9	8
30	20
6	6
22	16
4	4
6	4

School #3 Total Years Teaching	Years at School
6	6
10	10
30	19
31	14
7	4

School #4 Total Years Teaching	Years at School
28	28
5	4
16	1
6	6
6	5
13	13
14	14
12	12
4	4
3	3
16	3
21	1
5	5

School #5 Total Years Teaching	Years at School
10	5
5	5
19	6
28	5
12	1
4	1
6	4
*	*

School #6 Total Years Teaching	Years at School
28	17
6	6
10	10
17	8
25	1
10	10
8	1
8	8
20	9
24	10
8	4

4	2	4	4
3	1	34	20
9	9	17	11
24	19	32	20
School #7 Total Years Teaching	**Years at School**	**School #9 Total Years Teaching**	**Years at School**
19	19	8	8
22	22	1	1
7	1	12	3
16	10	6	1
8	8	1	1
7	7	7	6
14	5	17	3
8	7	9	4
5	3	1	1
5	5	1	1
*	*	11	2
School #8 Total Years Teaching	**Years at School**	14	1
		16	3
14	3	12	3
10	10	4	3
18	8	2	1
15	8	**School #10 Total Years Teaching**	**Years at School**
26	13		
8	8	13	13
8	8	7	5
29	11	2	1
27	22	4	4
5	1	15	8
15	2	10	5
13	13	28	28
9	6	7	2
13	6	4	4
10	3	33	30
		28	26
		26	15
		20	15
		27	25

APPENDIX F

AVERAGE YEARS OF EXPERIENCE FOR TEACHERS IN SELECTED SCHOOLS

School	Average Years of Experience for Participating Teachers	Average Years of Experience for All Teachers
1	12.7	12.7
2	13.0	12.1
3	13.8	15.4
4	7.6	12.5
5	12.0	15.2
6	16.7	18.0
7	11.1	12.5
8	14.7	14.5
9	7.6	7.1
10	16.0	11.5

APPENDIX G

PARTICIPATING PRINCIPALS' YEARS OF EXPERIENCE AS PRINCIPALS

School	Total Years in Principal Role	Years as Principal at Current School
1	7	7
2	15	7
3	13	3
4	4	4
5	1	1
6	3	3
7	12	3
8	6	6
9	3	2
10	3	3

APPENDIX H

PARTICIPANT RECRUITMENT MATERIALS

Email Invitation Sent to Principals for Participation in Pilot Study

Hello ,

You are invited to participate in a pilot study that will involve responding to three open-ended questions that will become part of a survey that is sent to middle school principals. The survey is part of a research project designed to examine how teachers and principals within a school view the challenges they face in their work. The purpose of your participation in this pilot study is to provide sample responses that give the researcher information about the clarity and focus of the questions. These questions will be added to a principal questionnaire with set response choices that has already been through a pilot study.

The researcher is Barbara Soisson, principal at Wood Middle School in the West Linn-Wilsonville School District and doctoral student at the University of Oregon. Dr. Keith Hollenbeck is supervising this research project.

The study explores teachers' and principals' beliefs about the capabilities, resources, and opportunities they have within their schools to create conditions for all students to learn. If you choose to participate, you will spend 10-15 minutes responding to three questions that can be accessed using the link to Web Survey link that is included below. Responses to these questions are not linked to names or email addresses when they are returned to the researcher. The Web Survey program is set up only to provide anonymous responses to survey questions. This information is being gathered only to modify the questions that will then be sent to a large number of middle school principals. All responses are confidential and will be used only for the researcher's doctoral study. Responses will not be shared or saved after they are used to revise the questions. Names of individuals, schools, and school districts will not be used in any of the researcher's writing about the project and its results.

Of course participation is voluntary. You will not be exposed to any significant risk while being involved in this research study. Although you will not receive a direct personal benefit, this study could help researchers understand the factors that contribute to teachers' and principals' beliefs about their abilities to promote learning in schools. It may also add to your awareness of your leadership practices and how they are linked to students' learning.

Thank you for considering this invitation. Completing the questions within ten days would be helpful. Please contact me if you have any questions or concerns about responding to the questions or about this study.

Here is the link to the three survey questions:

Sincerely,

Barb Soisson, Principal, Wood Middle School
(503) 673-7505
soissonb@wlwv.k12.or.us
Wood Middle School
West Linn-Wilsonville School District

Dr. Keith Hollenbeck, Faculty Advisor
(541) 346-0804
khollen@uoregon.edu
Educational Methodology, Policy and Leadership
University of Oregon

For questions about rights as a research subject or in the event of a research-related injury, please call the Protection of Human Subjects Department, University of Oregon: (541) 346-2510.

Phone Script Used to Contact Participants for Participation in Pilot Study

Hello, _____. This is Barb Soisson, principal at Wood Middle School. I'm calling because I sent you an email message a few days ago that invited you to participate in a research study that I am doing to complete my doctoral dissertation at the University of Oregon. The study looks at how

teachers and principals in a school view the challenges they face in their work. The purpose of *your* participation in this pilot study is to provide responses to three questions so I can evaluate the quality of the questions, specifically, their clarity and focus.

I'm calling today to see if there are any questions I can answer. I know that this is a really busy time of year. I've attempted to design the questions so it takes 10-15 minutes of your time. The email message has a link to the questions. Of course this is voluntary and I am not asking you to tell me whether you will be participating. I do want to make sure you know that the information will be used only to revise questions that will become part of a survey that will be sent to a large number of middle school principals. The Web Survey program is set up so that researchers cannot link responses to names, email addresses, schools, or school districts. All responses are confidential and the information will only be used to develop questions for the research study and will not be shared. If you are interested in seeing the entire survey that will be sent to principals, I'd be glad to send it to you as an email attachment.

Thanks for listening, and again, thanks for considering participating in the study.

Email Invitation Sent to Principals for Participation in Pilot Study

You are invited to participate in a pilot study that will involve responding to three open-ended questions that will become part of a survey that is sent to middle school teachers. The survey is part of a research project designed to examine how teachers and principals within a school view the challenges they face in their work. The purpose of your participation in this pilot study is to provide sample responses that give the researcher information about the clarity and focus of the questions. These questions will be added to a teacher questionnaire with set response choices that has already been through a pilot study.

The researcher is Barbara Soisson, principal at Wood Middle School in the West Linn-Wilsonville School District and doctoral student at the University of Oregon. Dr. Keith Hollenbeck is supervising this research project.

The study explores teachers' and principals' beliefs about the capabilities, resources, and opportunities they have within their schools to create conditions for all students to learn. If you choose to participate, you will spend 10-15 minutes responding to three questions that can be accessed using the link to Web Survey that is included below. Responses to these questions are not linked to names or email addresses when they are returned to the researcher. The Web Survey program is set up only to provide anonymous responses to survey questions. This information is being gathered only to modify the questions that will then be sent to a large number of middle school principals. All responses are confidential and used only for the researcher's doctoral study. Responses will not be shared or saved after they are used to revise the questions. Names of individuals, schools, and school districts will not be used in any of the researcher's writing about the project and its results.

Of course participation is voluntary. You will not be exposed to any significant risk while being involved in this research study. Although you will not receive a direct personal benefit, this study could help researchers understand the factors that contribute to teachers' and principals' beliefs about their abilities to promote learning in schools. It may also add to your awareness of your teaching practices and how they are linked to students' learning.

Thank you for considering this invitation. Completing the questions within ten days would be helpful. Please contact me if you have any questions or concerns about responding to the questions or about this study.

Here is the link to the three survey questions:

Sincerely,

Barb Soisson, Principal, Wood Middle School
(503) 673-7505
soissonb@wlwv.k12.or.us
Wood Middle School
West Linn-Wilsonville School District

Dr. Keith Hollenbeck, Faculty Advisor
(541) 346-0804
khollen@uoregon.edu
Educational Methodology, Policy and Leadership
University of Oregon

Letter Sent Via Email to Invite Principals to Participate in the Study

November 27, 2011

Dear_____,

You are invited to participate in a research project designed to examine the beliefs that teachers and principals hold about meeting the challenges they face daily to create conditions that promote students' learning and achievement. This invitation is being extended to the 11 middle school principals in six school districts in the Portland Metro area whose schools received an *Outstanding* rating on the 2010-2011 Oregon State Report Card. The study will explore how principals and teachers view the specific ways that they influence student achievement. You can participate in this study by doing two things: 1.) Complete a brief web-based survey that you will access through the link included in this email message 2.) Respond to this email to give your consent so the researcher can extend an invitation to teachers at [name of middle school] to complete a similar two-part survey that they will receive in an email message.

The researcher is Barbara Soisson, the principal at Wood Middle School in the West Linn-Wilsonville School District, and a doctoral student at the University of Oregon. Dr. Keith Hollenbeck is supervising this research project.

Of course it will be stated that participation is voluntary for each individual who receives an invitation to take the surveys. Survey responses are encrypted and cannot be linked to individuals' names or email addresses. The data is aggregated for each school. All responses are confidential and the information will be used only for the purpose of reporting and discussing findings in a doctoral dissertation. Names of individuals, schools, and school districts will not be used in any of the researcher's writing about the project and its results.

Because principals and teachers are extremely busy, the researcher has kept the surveys as short as possible. If you choose to participate, it will take between 10 and 20 minutes. This study could help researchers understand the factors that contribute to teachers' and principals' beliefs about their abilities to promote learning in schools. If you participate and are interested in seeing the data that shows the collective view of participants' beliefs at your school, the researcher would be glad to send that information to you as an email attachment. To obtain valid results, the researcher needs all 11 middle schools participate in the study. Being a principal myself, I realize the impact of additional demands on your time, and am sending a $15 Amazon.com gift card to principals who are willing to participate.

You will receive a follow-up phone call to find out if there are questions or concerns and to check to see if you are willing to participate. Also, feel free to contact the researcher by phone or email if you have questions or concerns. Thank you for reading this and considering being a participant.
Here is the link to the survey if you choose to participate:

Sincerely,

Barb Soisson, Principal, Wood Middle School
(503) 673-7505
soissonb@wlwv.k12.or.us
Wood Middle School
West Linn-Wilsonville School District

Dr. Keith Hollenbeck, Faculty Advisor
(541) 346-0804
khollen@uoregon.edu
Educational Methodology, Policy and Leadership
University of Oregon

Follow Up Email Message Sent to Principals to Invite Them to Participate

Hello [name of principal],

I recently sent you a letter that invited you to participate in a research project designed to examine the beliefs that teachers and principals hold about meeting the challenges they face daily to create conditions that promote students' learning and achievement. This invitation is being extended to 15 middle school principals in seven school districts in the Portland Metro area. The study will explore how principals and teachers view their current capacities, resources, and opportunities to positively influence student achievement.

You can participate in this study by doing two things: 1.) Complete the brief web-based survey that can be accessed through the link at the end of this email message. 2.) Consent to the researcher extending an invitation to teachers at [name of middle school] to complete a brief two-part web-based survey that they would receive in an email message.

The researcher is Barbara Soisson, the principal at Wood Middle School in the West Linn-Wilsonville School District, and a doctoral student at the University of Oregon. Dr. Keith Hollenbeck is supervising this research project.

Of course, participation is voluntary for each individual who receives an invitation to take the surveys. Survey responses are encrypted and cannot be linked to individuals' names, email addresses, schools, or school districts. All responses are confidential and the information will be used only for the purpose of reporting and discussing findings in a doctoral dissertation. Names of individuals, schools, and school districts will not be used in any of the researcher's writing about the project and its results. If you participate and are interested in seeing the data that shows the collective view of participants' beliefs about their capacity for meeting challenges at your school, the researcher would be glad to send that information to you as an email attachment.

The surveys are brief; they will take 10-20 minutes for principals and teachers to complete. There is minimal risk in participating by responding to the survey questions. You will not be exposed to any significant risk while being involved in this research study. Although you will not receive a direct personal benefit, this study could help researchers understand the factors that contribute to teachers' and principals' beliefs about their abilities to promote learning in schools. It may also add to your awareness of your leadership practices and how they are linked to students' learning. To obtain valid results, the researcher needs all 15 middle schools participate in the study. Being a principal myself, I realize that this request places demands on your time, and am sending a $15 Amazon.com gift card to principals who are willing to participate. There will also be a drawing so 20 teacher participants receive gift cards.

Thank you for reading this and considering being a participant. **If you choose to participate, taking the survey implies your consent. The link to the survey for principals is:**
Please respond to this email to indicate if the researcher may send an email invitation to teachers to take surveys.

Sincerely,

Barb Soisson, Principal, Wood Middle School
(503) 673-7505
soissonb@wlwv.k12.or.us
Wood Middle School
West Linn-Wilsonville School District

Dr. Keith Hollenbeck, Faculty Advisor
(541) 346-0804
khollen@uoregon.edu
Educational Methodology, Policy and Leadership
University of Oregon

Phone Script Used to Follow Up With Principals for Participation in Pilot Study

Hello, [name of principal]. This is Barb Soisson, principal at Wood Middle School. I'm calling to follow up on a letter and an email I've sent you recently that invited you to participate in a research study that I am doing to complete my doctoral dissertation at the University of Oregon. The study looks at how

teachers and principals in a school view the challenges they face in their work. I know how busy principals are and have attempted to make participation as simple and brief as possible.

Of course this is voluntary and I am not asking you to tell me whether you will be participating. I do want to emphasize that the information will be aggregated to create a composite profile. Respondents' names, school names, and school district names will not be used in any part of this project. All responses are confidential and the findings will only be discussed in my dissertation. However, it may be of interest to you to see the collective data for your school, should you choose to participate. It would show the strength of teachers' beliefs about their capabilities to influence students' learning.

I'm calling today to see if there are any questions I can answer or if you have any concerns.

Thanks for listening, and again, thanks for considering participating in the study.

[If the principal indicates interest in participating, the script will continue.] Is there a contact person at your school who I could speak with about the easiest way to obtain teachers' email addresses? They may be on your website but it would be helpful to speak with a secretary or someone who could verify how I could get an accurate list. The email addresses would be used to send the invitation to teachers to take the surveys. They will not be kept or linked to names. I would also like to send a flyer with the same information that teachers will receive in the email to the contact person so they can be placed in teachers' mailboxes.

Thank you for talking with me. I will contact _____ and then use the email addresses to invite teachers. They will also be informed that the study is voluntary and confidential.

Phone Script Used to Verify Staff Lists with Administrative Assistants

Hello, [name of contact person]. This is Barbara Soisson. I'm the principal at Wood Middle School in the West Linn-Wilsonville School District and a doctoral student at the University of Oregon. Recently, I've spoken with [name of principal] about a research study involving 11 middle schools and he/she has given me permission to invite teachers at [name of middle school] to take brief surveys.

I'm calling you because I need to find out the best way to get the email addresses for the teachers and [name of principal] said that you would be the best person to let me know how to do that. If you would like to verify that it is permissible for me to get the addresses, I'd be glad to call back.

[Questions to use, depending on responses] Is the listing on your school website updated and accurate? Is it possible to get a list of email addresses faxed to me? The addresses will be used to send teachers an email message inviting them to participate in the study. The addresses will not be linked to names or used in any other way. Thank you for listening and for helping me to proceed with this. I know how busy you are and really appreciate your help.

Letter Sent Via Email to Invite Teachers to Participate in the Study

December 5, 2011

Dear (Name of Teacher),

You are invited to participate in a research project designed to examine the beliefs that teachers and principals hold about meeting the challenges they face daily to create conditions that promote students' learning and achievement. This invitation is being extended to teachers in the 11 middle schools in six school districts in the Portland Metro area that received an *Outstanding* rating on the 2010-2011 Oregon State Report Card. You can participate in this study by completing two brief web-based surveys that

you will access through the link included in this email message. [Name of principal] has approved teachers at _____Middle School participating in this project and is a participant.

The researcher is Barbara Soisson, the principal at Wood Middle School in the West Linn-Wilsonville School District, and a doctoral student at the University of Oregon. Dr. Keith Hollenbeck is supervising this research project.

Of course participation is voluntary. Survey responses are encrypted and cannot be linked to individuals' names or email addresses. The data is aggregated for each school. All responses are confidential and the information will be used only for the purpose of reporting and discussing findings in a doctoral dissertation. Names of individuals, schools, and school districts will not be used in any of the researcher's writing about the project and its results.

Because teachers are extremely busy, the researcher has kept the surveys as short as possible. If you choose to participate, it will take between 15 and 20 minutes. This study could help educators understand the factors that contribute to teachers' beliefs about their abilities to promote learning in high performing schools. To obtain valid results, the researcher needs a high level of participation. I realize the impact of additional demands on your time. Twenty participants' email addresses will be randomly drawn and those individuals will receive a $15 Amazon gift card. Please complete the surveys by December 16, 2011.

Please contact the researcher by phone or email if you have any questions or concerns. Thank you for reading this and for considering being a participant.

Here are the links to the surveys if you choose to participate:

Sincerely,

Barb Soisson, Principal, Wood Middle School Dr. Keith Hollenbeck, Faculty Advisor

(503) 673-7505 (541) 346-0804

soissonb@wlwv.k12.or.us khollen@uoregon.edu

Wood Middle School Educational Methodology, Policy and Leadership

West Linn-Wilsonville School District University of Oregon

Reminder Email Sent to Teachers to Encourage More Participation

December 28, 2011

Dear

You may have already completed the surveys about teachers' beliefs for the Portland Metro Area Middle School Research Project. If so, thank you so much for taking the time to participate. Your name will be entered into a drawing for a $15 Amazon gift card, a small appreciation for your help with this study.

In order to obtain valid results, it is important that there be enough respondents from _____ Middle School. Please consider completing the two surveys. You can access the surveys using the links below. Again, the survey results are not linked to respondents or to their email addresses. All information is confidential. {Name of principal] has approved of _____ Middle School teachers' voluntary inclusion in the study and is a participant.

Here are the survey links:

Thank you,

Barb Soisson, Principal, Wood Middle School
(503) 673-7505
soissonb@wlwv.k12.or.us
Wood Middle School
West Linn-Wilsonville School District

Dr. Keith Hollenbeck, Faculty Advisor
(541) 346-0804
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APPENDIX I

INITIAL CODING CATEGORIES FOR OPEN-ENDED SURVEY RESPONSES

Teacher Efficacy Survey Open-Ended Response Categories		
25. What has helped you continue to become a better teacher while you have been at this school?	**26. What are the most powerful influences on your decision making about instruction?**	**27. What makes your teaching and daily work with students so effective at this school?**
Collegiality/Peer Support Collaboration Using Ideas from Peers Observing Peers Principal Support Principal Critique/Feedback Challenge from Principal School-Based Learning District-Based Learning Coursework/Workshops Structured PLC Teaming Trial/Failure/Success Cycle Personal Drive to Improve Professionalism	Collaborating with Colleagues Students' Individual Needs Students' Skills/Knowledge Student Performance Assessment Results State Standards District Standards and Goals School and Course Goals Research Past Successes and Failures Engaging Students Mentoring/Coaching Planning Time	Culture of Improvement Student Characteristics: Motivated, Prepared Collegiality Collaboration Parent/Community Support Students' SES Relationships/ Rapport with Students Own Enthusiasm, Caring For Students Own Drive to Improve Positive School Climate Clearly Communicated Expectations Focused Leadership

Experience Reflection/Revision Cycle High Expectations: Staff, Principal, Community		High Achievement Expectations Effective Routines and Classroom Management
Collective Efficacy Survey Open-Ended Response Categories		
13. Describe a specific feature of this school that prompts you to teach well.	**14. Explain what you see as the most powerful influence on this school's success in working with students.**	**15. How does the staff work with challenges at this school?**
High Expectations: District, Self, Colleagues, Administration Collaboration Teaming/PLCs Supportive Principal Culture of Sharing and Unity Skilled Teachers Culture of Continual Learning Atmosphere of Success Student Characteristics: Prepared	Structures for Collaboration Demographics/SES Skilled Teachers Students' and Families Work Ethic and Values High Expectations at All Levels Commitment to All Students' Success Positive Climate Staff Unity Systems for Serving All Students	Team Approach Communicate, Listen to All Use Problem-Solving Strategies Academic and Behavior Interventions Administrative Support Atmosphere of Trust, Openness Positive Orientation

Principal Efficacy Survey Open-Ended Response Categories		
19. What has helped you continue to become a better principal while you have been at this school?	**20. Describe the most effective things you do to support teachers in their work with students.**	**21. What contributes most to your ability to create conditions that promote students' learning and achievement?**
Own Reading, Coursework Collaboration with Teachers Administrative Collaboration Using Data Using Programs/Frameworks Ability to Work Alongside Staff	Collaboration Time Listen Provide Feedback and Support Express Confidence in Staff Advocate for Staff Minimize Interruptions	Scheduled Collaboration Time Design Effective Staff Learning Trust Teachers, Use Their Ideas Use Data Open Communication Strong Relationships

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